San Diego County Air Pollution Control District

San Diego, California

ENSR

Final Environmental Impact Report for San Diego 1991 Regional Air Quality Strategy

ENSR Consulting and Engineering

April 1992

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Prepared for

San Diego County Air Pollution Control District
San Diego, California

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1.0 INTRODUCTION

This Environmental Impact Report (EIR) evaluates the proposed San Diego 1991 Regional Air Quality Strategy (RAQS). As such, this is a program EIR prepared to assess the impacts that result from implementing the strategies contained in the RAQS. The RAQS was developed by the San Diego County Air Pollution Control District (APCD or District). The RAQS is fully documented in the District's report *San Diego 1991 Regional Air Quality Strategy*, dated July 1991.

Section 1 presents the background for this EIR. Section 2 is a summary of the conclusions documented in the remainder of the report. Section 3 contains a detailed project description, and Section 4 presents the environmental setting for this EIR. Environmental impacts and mitigation measures are contained in Section 5, while environmental consequences of the alternatives to the project are presented in Section 6. Sections 7 discusses cumulative impacts. Significant irreversible impacts are discussed in Section 8. Section 9 discusses the relationship between short-term uses and long-term productivity. Finally, Section 10 discusses growth-inducing impacts.

This document is the Final Environmental Impact Report (FEIR) for the San Diego 1991 RAQS. On May 23, 1991, a Notice of Preparation (NOP) and Initial Study (IS) were distributed to appropriate agencies and interested parties. Comments on the scope of the analysis in the EIR were accepted until the close of the comment period (June 23, 1991). The NOP and comments to the NOP and IS are contained in Appendix A, and responses to both are contained in Appendix B. Appendix C contains the EIR mailing list. On August 1, 1991, a Draft EIR was issued with an ensuing 45-day comment period which closed on September 16, 1991. Public input was also solicited at a public meeting, held on September 12, 1991. Appendix D contains a transcript of this meeting and responses to public comments at their meeting. Since then, the transportation measures in the Draft EIR were revised by the San Diego Association of Governments (SANDAG), into a Transportation Control Measures (TCM) Plan, which was approved by the District on March 27, 1992. The Addendum to this FEIR discusses the incorporation of the TCM Plan.

This FEIR contains text from the Draft EIR modified as appropriate in response to comments received and revisions to the Transportation Control Measures. Changes in the text are indicated by a line in the right margin. Appendix E contains all written comments received and responses to the comments. The comments are arranged in the chronological order in which they were received by the District.

1.1 Purpose and Need

The proposed RAQS is a regional plan with the objective of improving air quality in the county by reducing ozone and carbon monoxide (CO) concentrations. Ozone is the product of a complex chain of chemical reactions which occur in the atmosphere in the presence of sunlight. The primary compounds in these chemical reactions are reactive organic gases (ROG) and oxides of nitrogen (NO_x). Thus, ROG and NO_x emissions are said to be precursors to the formation of ozone.

As part of the planning process required by the California Clean Air Act (CCAA), the Air Resources Board (ARB) formally designated San Diego County as a nonattainment area for the state standards for ozone and particulate matter less than 10 microns in diameter (PM_{10}) in June 1989. The western portion of San Diego County (west of the Laguna mountains) is also a nonattainment area for CO and nitrogen dioxide (NO_2).

The goal of the 1991 RAQS is to develop a definitive plan for attaining and maintaining the state ozone standard in San Diego County at the earliest practicable date by concurrently reducing ROG, NO_x, and CO emissions from a broad range of sources. The California Clean Air Act (CCAA) requires all nonattainment areas to prepare attainment plans for the state standard by July 1, 1991. The 1991 RAQS is prepared to satisfy this CCAA requirement. According to the CCAA, there are three categories of air quality nonattainment areas: moderate, serious, and severe. An area is designated "severe" if the ARB finds and determines that it cannot attain and maintain the applicable state air quality standard(s) until after December 31, 1997. Although San Diego County has not yet been formally designated as a "severe" nonattainment area, it is anticipated that the County will be designated as such after the RAQS is submitted to the ARB. The CCAA provides several mandates for severe nonattainment areas which the 1991 RAQS anticipates. Among these is the requirement to reduce annual emissions by 5 percent per year, or by the maximum extent feasible, for all pollutants for which state standards are not met.

1.2 Background and History

The federal Clean Air Act (CAA) Amendments of 1977 required all states to attain the National Ambient Air Quality Standards by December 31, 1987. These amendments required states to submit plans that "demonstrated" attainment of the applicable standards by the statutory deadline.

The California Clean Air Act of 1988 (CCAA) added Chapter 10, District Plans to Attain State Ambient Air quality standards, to Part 3 of Division 26 of the California Health and Safety

Code (HSC). This chapter of the HSC requires, among other things, that districts develop plans to achieve the state ambient air quality standards as expeditiously as practical. These plans must include regulations that require control technologies for reducing emissions from existing sources.

Ozone (smog) is a pollutant of great concern in San Diego County. In 1990, San Diego County exceeded the federal ozone standard on 39 days and the state standard on 139 days. This is an improvement from 10 years ago when the federal standard was exceeded on 87 days and the state standard on 167 days in 1980. Pollution transported from the Los Angeles basin is a contributor to these violations. The CCAA requires the South Coast Air Quality Management District to mitigate the impact of its emissions from the Los Angeles area to San Diego County.

The CCAA requires that a revised plan to control smog, carbon monoxide, and nitrogen dioxide be submitted to the ARB this year to provide for attainment of the air quality standards as expeditiously as practicable. Actions to address state particulate standards are deferred until an ARB report on the feasibility of attaining these standards is submitted to the Legislature in 1991, and specific requirements are established by the state.

An area's air pollution is severe if the state board finds and determines that the district cannot attain and maintain the applicable state standard until after December 31, 1997. San Diego County has not yet been formally designated as a severe nonattainment area. Appropriate designation will not occur until after the initial plans are submitted to the ARB in 1991. However, attainment of the ozone standard in San Diego County by December 1997 is unlikely, and the ARB has required that the San Diego APCD prepare the 1991 RAQS to meet all the requirements for a severe area.

The CCAA issues several mandates for severe nonattainment areas. Among these are the following requirements:

- Attainment of the state air quality standards by the earliest practicable date.
- Annual emission reductions of 5 percent per year beginning in 1988 for all air pollutants for which state standards are not met.
- A permitting program designed to achieve no net increase in emissions of nonattainment pollutants or their precursors from all new or modified permitted stationary sources.

- The application of best available retrofit control technology (BARCT) for existing emission sources.

- Provisions to develop area and indirect source control programs.

- Adoption and implementation of transportation control measures to substantially reduce trip growth and vehicle miles travelled growth, achieve a 1.5 average vehicle occupancy for weekday commute trips by 1999, and have no net increase in vehicle emissions after 1997.

- Measures to achieve the use of a significant number of low-emission motor vehicles by operators of motor vehicle fleets.

- Submission of an attainment plan in 1991 and triennial updates thereafter.

According to CCAA, if the 1991 RAQS is unable to meet the above mentioned 5 percent requirement, then all feasible measures must be implemented. Preliminary analysis by the APCD indicates that the 5 percent annual reduction target will not be met in San Diego County, and all feasible measures will be required.

1.3 Legal Authority

As mentioned above, the CCAA requires all nonattainment areas in the state to develop new plans to meet federal and state air quality standards at the earliest practicable date. The ARB has designated the Air Pollution Control District as the responsible agency for San Diego County.

1.4 Lead and Responsible Agencies

The following are lead and responsible agencies for this project:

- The San Diego County Air Pollution Control District (APCD or District) is the applicant and proponent of this project. This agency has jurisdiction over stationary sources of air emissions in San Diego County. District rules and regulations govern the siting and modifications of sources of air pollution within the County.

- The California Air Resources Board (ARB) has jurisdiction in California for mobile sources of air emissions and oversight responsibility for local air pollution control districts in the state.

- The U. S. Environmental Protection Agency (EPA) has overall responsibility for ensuring the implementation and enforcement of the federal Clean Air Act. The state of California has been delegated responsibility for compliance with provisions in this act. However, Region IX of the EPA retains oversight of the California State Implementation Plan, under which the San Diego County RAQS falls.

2.0 SUMMARY

2.1 Project Description

The 1991 RAQS contains control strategies designed to improve air quality by concurrently reducing emissions of ROG, NO_x, and CO. As such, it is a complex document containing many sources of data, assumptions, and methodologies. Main elements of the 1991 RAQS are: Air Quality, Baseline Emissions Inventory, Stationary and Area Source Control Measures, Transportation Control Measures, and Emission Forecasts.

2.1.1 Background

In response to attainment requirements of the federal Clean Air Act Amendments of 1977, the California Clean Air Act of 1988 (CCAA) added Chapter 10 to Part 3 of Division 26 of the California Health and Safety Code. This chapter requires that air pollution control districts develop plans to achieve the state ambient air quality standards as expeditiously as practical. Because California standards are more stringent than federal standards, achieving state standards will automatically satisfy federal standards.

As part of the CCAA process, the Air Resources Board (ARB) formally designated San Diego County as a nonattainment area for the state standards for ozone and particulate matter less than 10 microns in diameter (PM_{10}) in June 1989. The western portion of San Diego County (west of the Laguna Mountain Range) is also a nonattainment area for carbon monoxide (CO) and nitrogen dioxide (NO_2).

Ozone (smog) is a pollutant of great concern in San Diego County. Ozone is the product of a complex chain of chemical reactions which occur in the atmosphere in the presence of sunlight. The primary compounds in these chemical reactions are reactive organic gases (ROG) and oxides of nitrogen (NO_x). Because of this, ROG and NO_x are said to be precursors to the formation of ozone, and the reduction of emissions from these precursors will reduce ozone concentrations.

The CCAA requires that a revised plan to control smog, carbon monoxide, and nitrogen dioxide be submitted to the ARB this year to provide for attainment of the air quality standards as expeditiously as practicable. Actions to address state particulate standards are deferred until an ARB report on the feasibility of attaining these standards is submitted and specific requirements are established by the state.

An area's air pollution is considered severe if the state board finds and determines that the district cannot attain and maintain the applicable state standards until after December 31, 1997. San Diego has not yet been formally designated as a severe nonattainment area. Appropriate designation will not occur until after the initial plans are submitted to the ARB in 1991. However, attainment of the ozone standard in San Diego County by this date is unlikely, and the ARB has required the San Diego APCD to prepare the 1991 RAQS to meet all the requirements for a severe area.

Among other things, the CCAA requires a severe nonattainment area to attain the state air quality standards by the earliest practicable date and to achieve annual emission reductions of 5 percent per year beginning in 1988 for all air pollutants for which state standards are not met. According to the CCAA, if the 1991 RAQS is unable to meet this 5 percent requirement, then all feasible measures must be implemented.

The emission reductions anticipated by implementation of the 1991 RAQS do not meet the 5 percent annual emission reduction required by the CCAA. From 1987 to the year 2000, implementation of the 1991 RAQS is projected to reduce ROG emissions by 3.3 percent per year, NO_x emissions by 2.0 percent per year, and CO emissions by 4.1 percent per year. Because this strategy does not attain the 5 percent per year reductions, all feasible measures to reduce emissions of pollutants are incorporated in the 1991 RAQS.

2.1.2 Project Characteristics

The control measures in the RAQS are the basis of the project description for the purpose of this EIR. Control measures in the RAQS appear in the form of emission limits, procedural rules, and other compliance measures. Most environmental impacts are associated with the assumed technologies or compliance methods that will be adopted by sources to comply with control measures specified in the RAQS.

Table 2.1-1 summarizes control measures that are proposed in the RAQS for adoption and implementation. The measures can be classified as to their intent. Some measures are intended to reduce NO_x and have either an "NI" (industrial) or an "NA" (areawide) number designation in Table 2.1-1. Other measures are intended to reduce emissions of ROG, and these measures have either an "RI" (industrial) or an "RA" (areawide) number designation in the table. Conservation measures intended to reduce both NO_x and ROG emissions are designated by an "EC," and mobile source control measures designed to reduce CO, NO_x, and ROG emissions are designated by an "TC" in Table 2.1-1.

TABLE 2.1-1

Control Measures Proposed for Adoption and Implementation

Number	Control Measure	Description
RI-1	Bulk Gasoline Storage Tank Degassing	Restricts uncontrolled emissions during cleaning and decommissioning of underground gasoline storage tanks.
RI-2	Automobile Refinishing	Requires use of low-ROG coatings and solvents, high efficiency transfer equipment, and various improvements in operating procedures.
RI-3	Solvent Cleaning and Degreasing Operations	Revises Rules 67.6 and 11 to require controls for currently exempt equipment.
RI-4	Polyester Resin Operations - Fiberglass Manufacturing	Revises Rule 67.12 to require low-ROG solvents, high efficiency transfer equipment, and various improvements in operating procedures.
RI-5	Substitute Cleanup Solvents	Requires use of low-ROG solvents and improved handling procedures.
RI-6	Metal Parts and Products Coatings	Requires use of low-ROG solvents, high efficiency transfer equipment, and various improvements in operating procedures.
RI-7	Marine Vessel Coating Operations	Requires use of low-ROG coatings and closed applicator cleaning systems.
RI-8	Underground Tank Decommissioning and Soil Decontamination	Requires 90% efficient emission controls during onsite treatment of soil.
RI-9	Paint and Ink Manufacturing	Requires use of low-ROG coatings, closed tool cleaning systems, improvements in operating procedures, and add-on control devices for large firms.
RI-10	Can and Coil Coatings	Revises Rule 67.4 to require zero-ROG sealing materials or add-on control devices.
RI-11	Wood Products Coatings	Revises Rule 67.11 to eliminate low usage exemption and require low-ROG coatings or add-on control equipment.
RI-12	Adhesives	Requires use of low-ROG coatings, high efficiency transfer equipment, enclosed cleanup systems, improved record keeping, and add-on control devices.
RI-13	Commercial Bakeries	Requires 90% reduction of ROG emissions from large commercial bakeries.
RI-14	Foam Blowing and Plastics Expanding	Requires low-ROG blowing agents or add-on emission control devices.
RI-15	Kelp Processing and Bio-Polymer Manufacturing	Revises Rule 67.10 to increase efficiency control from 90% to 95%.
RI-16	Plastic Parts, Rubber, Composites, and Glass Operations	Requires low-ROG coatings and solvents; high transfer efficiency equipment, closed equipment cleaning systems, and improved operating procedures.

TABLE 2.1-1 (Cont.)

Control Measures Proposed for Adoption and Implementation

Number	Control Measure	Description
RI-17	Petroleum Dry Cleaning	Revises Rule 67.2 by lowering petroleum solvent usage exemption and increasing ROG emission controls for large firms.
RI-18	Polyester and Epoxy Resin Operations - Further Fiberglass Manufacturing	Revises Rule 67.12 to eliminate low usage exemption.
RI-19	Semiconductor Manufacturing and Electronic Packaging Operations	Requires add-on emission control devices, use of low-ROG cleaners, and improved solvent handling procedures and record keeping.
RI-21	Ethylene Oxide Sterilizers	Requires add-on emission control devices, equipment modifications, and improved reporting and testing procedures.
RI-22	Groundwater Decontamination	Requires add-on controls and improved reporting and monitoring.
NI-1	Selective Catalytic Reduction for Large Utility Boilers	Requires selective catalytic reduction (SCR) for large utility boilers.
NI-2	Further Controls on Turbines	Revises Rule 68 requiring higher efficiency water or steam injection and selective catalytic reduction for large turbines operated more than 6,000 hours per year.
NI-3	Selective Catalytic Reduction for Lean Burn Engines	Requires SCR for lean burn engines operating on natural, digester or landfill gas.
NI-4	Small Internal Combustion Engines (200-500 hp)	Requires combustion modifications or flue gas treatment for 200-500 HP engines.
NI-5	Small Internal Combustion Engines (50-200 hp)	Requires combustion modifications or flue gas treatment for 50-200 HP engines.
NI-6	Controls for Industrial and Commercial Boilers	Requires a range of control devices for boilers of less than 100 million BTU/hr.
NI-7	Selective Catalytic Reduction for Large Non-Utility Boilers	Requires selective catalytic reduction (SCR) for large non-utility boilers.
RA-1	Consumer Products	Requires consumer products be reformulated with low-ROG formulations.
RA-2	Small Utility and Lawn/Garden Equipment	Requires reduction in emission limits for 1994 and subsequent engines.
RA-3	Commercial Charbroiling	Requires emissions be controlled, probably with electrostatic precipitators.
RA-4	Architectural Coatings	Modifies Rule 67.0 to require lower solvent content for previously exempt categories and future reductions from currently controlled categories.
RA-5	Barbecue Grill Charcoal Ignition	Prohibits sale and use of high-ROG emission lighter fluid.

TABLE 2.1-1 (Cont.)

Control Measures Proposed for Adoption and Implementation

Number	Control Measure	Description
RA-6	Deodorants and Antiperspirants	Requires low-ROG aerosol reformulation or substitution to nonaerosol types.
RA-7	Marine Gasoline Refueling	Requires use of vacuum assist vapor recovery systems for gasoline dispensing.
–	New Source Review	Requires no increase in emissions from new or modified sources.
NA-1	Low-NO_x Residential Water Heaters	Requires low-NO_x natural gas water heaters.
NA-2	Low NO_x Central Furnace Heaters	Requires natural gas fired, low-NO_x central furnaces to be installed in new multi- and single-family homes and in existing homes when furnaces are to be replaced.
NA-3	Low-NO_x Commercial Water Heaters	Requires low-NO_x natural gas water heaters.
EC-1	Residential Solar Hot Water Heaters - New Homes	Requires solar-assist equipment on natural gas and electric water heaters in new homes.
EC-2	Swimming Pool Solar Water Heaters - New	Requires solar-assist equipment on new natural gas-fired heated swimming pools.
EC-3	Hot Tub/Spa Solar Water Heaters - New	Requires solar-assist equipment on new hot tubs and spas.
EC-4	Commercial Solar Hot Water Heaters - New Development	Requires solar-assist equipment on natural gas-fired and electric water heating in new commercial buildings.
EC-5	Residential Solar Hot Water Heaters - Retrofit Existing Homes	Requires solar-assist equipment on natural gas and electric water heaters upon home resale.
EC-6	Swimming Pool Solar Water Heaters - Retrofit	Requires solar-assist equipment on natural gas heated pools upon home resale.
EC-7	Hot Tub/Spa Solar Water Heaters - Retrofit	Requires solar-assist equipment on natural gas heated hot tubs and spas upon home resale.
TC-1	Trip Reduction and Parking Management Program	Promotes trip reductions higher vehicle occupancy through various programs.
TC-2	Alternative Transportation Mode Capacity Expansion	Supports TC-1 by promoting alternative transportation means.
TC-3	Traffic Management Program	Provides for traffic flow improvements through computerization of traffic signals.
TC-4	Land Use	Reduces emissions by altering land usage through various programs.
–	Indirect Source Control Program	Requires new indirect sources (e.g., shopping centers) to mitigate emissions.

2.2 Significant Environmental Impacts and Mitigation Measures

This is a program EIR that assesses the implementation of a regional plan. In a program EIR, specific site data and other quantitative information normally found in an EIR are not available. Because of this, analysis in a program EIR is necessarily more general and qualitative as is recognized in guidelines of the California Environmental Quality Act. The reduction of ROG, CO, and NO_x emissions is the goal of the 1991 RAQS. Projections of future emission reductions stemming from the implementation of this RAQS are summarized in Figure 3.2-1 of Section 3. This EIR analyzes the potential adverse impacts to the environment that can be expected from the implementation of the RAQS. Table 2.2-1 summarizes these potential impacts and their corresponding mitigation measures. As can be seen in this table, many of the adverse impacts result from the adoption of selective Control Measures catalytic reduction (SCR) systems to reduce NO_x emissions from boilers. In this SCR application, large quantities of ammonia must be transported to and stored on a project site. If a large, catastrophic release of ammonia occurs, significant impacts could occur to many environmental issue areas as outlined in Table 2.2-1. However, compliance with existing safety requirements in the handling and storage of ammonia and implementation of an emergency response plan makes the occurrence of harmful impacts from this event highly unlikely and, therefore, insignificant.

2.3 Insignificant Environmental Impacts

All other issue areas have been determined to have insignificant or no adverse impacts from the implementation of the 1991 RAQS

2.4 Alternatives to the Project

The California Environmental Quality Act requires an EIR to describe reasonable alternatives to the proposed project that could feasibly attain the project's basic objectives. The proposed 1991 RAQS is the San Diego County APCD's preferred alternative for achieving the objective of improved air quality within the county. Two additional alternatives are evaluated in the EIR: the no-project alternative and the less-stringent control alternative. A discussion of these alternatives is provided below.

2.4.1 No-Project Alternative

This alternative consists of not implementing the proposed RAQS. The existing rules and regulations in effect would continue in place and any future air quality regulation would be in accordance with the existing strategy. No additional air pollution control requirements would

TABLE 2.2-1

Summary of Adverse Impacts and Mitigation Measures

Issue Area	Description of Impacts	Significance	Mitigating Circumstances or Mitigation Measures	Residual Impact
AIR QUALITY	**Localized Ozone Effects:** NO_x reduction measures, while resulting in benefits to the environment, can cause local increases in ozone due to the process of scavenging.	Not Significant	None recommended because the measure is estimated to be regionally beneficial.	Not Significant
	Ammonia Slip: In selective catalytic reduction (SCR) to reduce NO_x emissions from boilers and IC engines, there are low level emissions of unreacted ammonia.	Not Significant	Concentration levels of ammonia from this process will not be significant; require installation of appropriate monitors and controllers within the fluegas system; require regular SCR maintenance.	Not Significant
	Accidental Release of Ammonia: In SCR systems, there is a potential for release during operation or transportation, causing a risk to humans and other living organisms.	Unlikely, but Significant	Require proper emergency equipment and training; establish an emergency response plan.	Not Significant
	Accidental Release of Vapor Recovery Media: Improper disposal or handling of spent vapor recovery media, such as carbon canisters, can result in the release of toxics and hydrocarbons to the air.	Not Significant	Coordinate with responsible agencies to ensure compliance with regulations regarding handling/ transport of hazardous materials; encourage continuous carbon regeneration systems.	Not Significant
	Substitution to Low-ROG Substances: Reformulating coatings, cleaners and solvents to low-ROG content might result in compounds being used that are hazardous and toxic. Improper disposal or handling of these could result in hazardous emissions.	Not Significant	Coordinate with responsible agencies to promote public awareness programs.	Not Significant
WATER RESOURCES	**Accidental Release of Ammonia:** In SCR systems, accidental, catastrophic release of ammonia during operations or transportation presents a health risk to water based resources.	Not Significant	Require proper emergency equipment and training; establish an emergency response plan.	Not Significant
	Accidental Release of Vapor Recovery Media: Improper disposal or handling of spent vapor recovery media, such as carbon canisters, can result in the release of toxics and hydrocarbons to ground water.	Not Significant	Coordinate with responsible agencies to ensure compliance with regulations regarding handling/transport of hazardous materials; encourage continuous carbon regeneration systems.	Not Significant

TABLE 2.2-1 (Cont.)

Summary of Adverse Impacts and Mitigation Measures

Issue Area	Description of Impacts	Significance	Mitigating Circumstances or Mitigation Measures	Residual Impact
WATER RESOURCES (Cont.)	**Substitution to Low-ROG Substances:** Accidental release of water based products (with low-ROG content) could contaminate water resources.	Not Significant	Coordinate with responsible agencies to promote public awareness programs; require pre-treatment of wastewater in wet scrubbing.	Not Significant
BIOLOGICAL RESOURCES	**Effect of Construction on Biological Habitat:** Transportation construction projects could eliminate or reduce biological habitat	Possibly Significant	Where possible, build away from biologically sensitive areas; coordinate with other agencies to institute measures to ensure protection of resources.	Not Significant
	Accidental Release of a Catalyst Used in SCR: The catalyst, vanadium pentoxide, is toxic, and an accidental release is possible during change-out of the catalyst.	Not Significant	No mitigation measures are identified for this impact. This is unlikely to occur and adequate safety regulations exist.	Not Significant
	Ammonia Slip: In selective catalytic reduction (SCR), there are low level emissions of unreacted ammonia.	Not Significant	Concentration levels of ammonia from this process will not be significant; require installation of appropriate monitors and controllers within the fluegas system; require regular SCR maintenance.	Not Significant
	Accidental Release of Ammonia: In SCR systems, accidental, catastrophic release of ammonia during operations or transportation presents a risk to biological resources.	Unlikely, but Significant	Require proper emergency equipment and training; establish an emergency response plan.	Not Significant
	Accidental Release of Vapor Recovery Media: Improper disposal or handling of spent vapor recovery media, such as carbon canisters, can result in the release of compounds harmful to biological resources.	Not Significant	Coordinate with responsible agencies to ensure compliance with regulations regarding handling/ transport of hazardous materials; encourage continuous carbon regeneration systems.	Not Significant
	Substitution to Low-ROG Substances: Accidental release of water based products (with low-ROG content) could be harmful to biological resources.	Not Significant	Coordinate with responsible agencies to promote public awareness programs; require pretreatment of wastewater in wet scrubbing.	Not Significant
NOISE	**Reduced Congestion Could Cause Increased Vehicle Speeds:** Increased vehicle speeds can lead to small increases in noise, especially at peak hours.	Not Significant	Existing noise ordinances will mitigate this impact. No mitigation measures are identified.	Not Significant

TABLE 2.2-1 (Cont.)

Summary of Adverse Impacts and Mitigation Measures

Issue Area	Description of Impacts	Significance	Mitigating Circumstances or Mitigation Measures	Residual Impact
NOISE (Cont.)	**Emission Control Equipment:** Such equipment could increase noise levels to objectionable levels.	Not Significant	Existing noise ordinances will mitigate this impact. No mitigation measures are identified.	Not Significant
TRANSPORTATION AND CIRCULATION	**Parking Controls:** Controls could result in fewer parking spaces in lots that could result in increased on-street parking.	Not Significant	Local parking ordinances and procedures will alleviate impacts from this.	Not Significant
PUBLIC SERVICES	**Effects on Waste Water Treatment Facilities:** Improper handling or discharge of wastewater (e.g., technologies such as steam regeneration of carbon and wet scrubber devices) could contaminate sewers and water supplies.	Possibly Significant	Compliance with sewer discharge regulations minimizes this impact. Require pre-treatment of wastewater when wet scrubbers are used; enforce compliance discharge requirements.	Not Significant
	Accidental Release of Ammonia: In SCR systems, the catastrophic release of ammonia during operations or transportation could increase demands for emergency services.	Not Significant	Adequate emergency facilities exists. The need to use these will be reduced by requiring proper on-site emergency equipment, training, and establishment of an emergency response plan.	Not Significant
ENERGY AND UTILITIES	**Energy Requirements of Emission Controls:** Emission control equipment increases demands for electricity.	Not Significant	Coordinate with utilities and governments to promote energy conservation.	Not Significant
	Energy Requirements of SCR: SCR requires energy to operate, resulting in increased demands for natural gas.	Not Significant	Demands are small relative to regional uses, and available supplies exist.	Not Significant
	Induced Residential Switching from Natural Gas to Electric Water Heating: Depending on annualized costs and other preference factors, homes may be switched to electric water heating to avoid investing in a solar assist system, causing a possibly large increase in electric capacity needs.	Significant	The APCD will modify proposed measures to require homes with electric water heaters to also install solar assist units. This will eliminate the incentive to switch to electric water heating.	Not Significant
AESTHETICS	**Emission Control Equipment:** Add-on emission control equipment might be architecturally unappealing.	Not Significant	Most equipment will be installed in industrial areas. Work with responsible agencies to require alternate placement and employ other strategies to minimize the impact.	Not Significant

TABLE 2.2-1 (Cont.)

Summary of Adverse Impacts and Mitigation Measures

Issue Area	Description of Impacts	Significance	Mitigating Circumstances or Mitigation Measures	Residual Impact
RECREATION	**Accidental Release of Ammonia:** In SCR systems, the catastrophic release of ammonia during operations or transportation could cause short-term harm to resources in recreational areas.	Unlikely, but Significant	Require proper emergency equipment and training; establish an emergency response plan.	Not Significant
RISK OF UPSET	**Accidental Release of Ammonia:** In SCR systems, the catastrophic release of ammonia during operations or transportation could cause loss of life and property.	Unlikely, but Significant	Require proper emergency equipment and training; establish an emergency response plan.	Significant
HUMAN HEALTH	**Accidental Release of a Catalyst Used in SCR:** The catalyst, vanadium pentoxide, is toxic, and an accidental release is possible during change-out of the catalyst.	Not Significant	No mitigation measures are identified for this impact. This is unlikely to occur and adequate safety regulations exist.	Not Significant
	Ammonia Slip: In selective catalytic reduction (SCR), there are low level emissions of unreacted ammonia.	Not Significant	Concentration levels of ammonia from this process will not be significant; require installation of appropriate monitors and controllers within the fluegas system; require regular SCR maintenance.	Not Significant
	Accidental Release of Ammonia: In SCR systems, there is a potential for release during operation or transportation, causing a risk to humans.	Unlikely, but Significant	Require proper emergency equipment and training; establish an emergency response plan.	Not Significant
	Accidental Release of Vapor Recovery Media: Improper disposal or handling of spent vapor recovery media, such as carbon canisters, can result in the release of toxics harmful to humans.	Not Significant	Coordinate with responsible agencies to ensure compliance with regulations regarding handling/ transport of hazardous materials; encourage continuous carbon regeneration systems.	Not Significant
	Substitution to Low-ROG Substances: Reformulating coatings, cleaners and solvents to low-ROG content might result in exempt compounds being used that are hazardous and toxic. Improper disposal and handling of these could result in emissions harmful to humans.	Not Significant	Coordinate with responsible agencies to promote public awareness programs.	Not Significant

TABLE 2.2-1 (Cont.)

Summary of Adverse Impacts and Mitigation Measures

Issue Area	Description of Impacts	Significance	Mitigating Circumstances or Mitigation Measures	Residual Impact
HUMAN HEALTH (Cont.)	**Reformulation of Barbecue Charcoal Lighter Fluid:** The practice of using gasoline to ignite barbecues might increase.	Not Significant	Promote public information and education programs to warn the public of dangers and inform the public of safe alternatives.	Not Significant
HAZARDOUS WASTE	**Catalyst Used in SCR:** The catalyst contains vanadium pentoxide, a toxic which must either be recycled or disposed of at a Class I landfill.	Possibly Significant	Require recycling or return to the original vendor for processing rather than disposal of the catalyst at a Class I landfill.	Not Significant
	Additional Hazardous/Toxic Materials from Emission Controls: Many measures result in increased quantities of hazardous materials (e.g., carbon canisters in vapor recovery systems) which will place demands on Class I landfills.	Possibly Significant	Where feasible, require recycling; encourage continuous carbon regeneration systems; promote thermal incinerators as a means of disposal of hazardous materials.	Not Significant

be imposed, although existing state and local regulations, especially with respect to motor vehicle emissions, would continue to control emissions in the future. No new NO_x, CO, and ROG controls would be imposed by regulation.

The impact of greatest significance with the implementation of the no-project alternative would be the air quality within the District. There would be higher emissions, overall, of both ROG, CO, and NO_x and subsequent slower progress toward reducing ozone levels. A secondary benefit of reduced NO_x emissions is the reduction of other air pollutants, such as particulate matter. Implementation of the no-project alternative would cause these emissions to be higher than with the proposed RAQS. Benefits from implementing the no-project alternative will result from avoiding the adverse impacts expected from implementing the proposed project. All of the adverse impacts from implementing the proposed project either can be mitigated to a level of nonsignificance or are unlikely. Furthermore, the no-project alternative does not satisfy the need of the project to comply with requirements of the California Clean Air Act, which requires the District to do everything feasible to attain the clean air standards.

2.4.2 Less-Stringent Alternative

This alternative has three components. First, it proposes to drop energy conservation measures for existing homes because of their potential financial burden to homeowners. This will reduce future costs to the public to retrofit homes before resale, but will have no significant adverse environmental impacts as compared to the Project. Second, this alternative will adopt less stringent employee trip reduction measures, which will result in more vehicle trips and allow more congestion than the proposed RAQS, resulting in higher automobile emissions of ROG, CO, and NO_x.

Finally, the less-stringent alternative is designed to eliminate or reduce risks associated with the use and transportation of anhydrous ammonia required in selective catalytic reduction (SCR) applications. This alternative eliminates SCR as the preferred alternative technology for controlling NO_x emissions from boilers used in the generation of electric power (NI-1). Urea injection with combustion modification (UI/CM) will be the alternative to SCR. As a result, the less-stringent alternative will result in higher levels of NO_x emissions than will the proposed project.

Another adverse impact associated with the implementation of the less-stringent alternative would be the potential impacts to existing water supplies. The urea injection process requires large quantities of water. While this amount will be small compared to total usage in the area, it could be considered significant during drought conditions.

2.5 Cumulative Impacts

The California Environmental Quality Act requires an EIR to discuss cumulative impacts. Cumulative impacts can result from individually minor but collectively significant impacts from projects taking place over a period of time. This fact calls for an assessment of the 1991 RAQS in relation to other individual projects related to or affected by this project. Because this is a program EIR, the direct impacts discussed above in Sections 2.2 and 2.3 address the potential cumulative environmental effects of all measures proposed for implementation in the 1991 RAQS.

The Regional Air Quality Strategy is a regional plan. Because of its widespread effect, it impacts and is impacted by projects both within San Diego County and in adjacent air districts. Projects within the county which could provide cumulative impacts include commercial, residential, and agricultural development consistent with the San Diego County General Plan. Attainment plans prepared by adjacent air pollution control districts will also produce effects which would be cumulative to those discussed as direct impacts in this EIR.

Although the impacts of a single project or plan may not be significant when considered in isolation, the cumulative impacts of associated projects may be significant when these projects are considered collectively.

2.5.1 Air Quality

The South Coast Air Basin (SCAB) is located immediately north of San Diego County and has similar air quality problems and concerns. Depending on wind and other conditions, pollutants can move from SCAB into San Diego County. The RAQS is intended to improve air quality in the county. Specifically, the RAQS will significantly reduce emissions of NO_x, CO, and ROG, the two key precursors to ozone. Thus, air quality will be improved in adjacent air districts which might otherwise be adversely affected by these pollutants generated in San Diego County. Conversely, because these adjacent regions have similar plans for improving the air quality for their respective jurisdictions, a reduction in pollutants transported into San Diego County is expected.

Electrification is a favored approach to improving air quality in the South Coast Air Quality Management Plan (AQMP). The EIR for Santa Barbara County's RAQS (SBCAPCD, 1990) provides a detailed discussion of the adverse air quality impacts of generating electricity to provide for the added cumulative demand caused by the various attainment plans within the region. Impacts to air quality will depend on many variables, including how additional electricity is produced, where it is produced, and at what time it is produced. The conclusion

reached in the document is that there are too few data to provide any more than highly speculative results. Nevertheless, the potential exists for increased electric production in the southern California area which can lead to increases in NO_x and ROG emissions. In San Diego County, it is believed these increases will be offset by the reductions in emissions that stem from conservation measures that are either contained directly in the RAQS or are instituted as conservation based mitigation measures to offset increased electric use from the RAQS.

Greenhouse gases allow incoming solar radiation to pass through the earth's atmosphere but trap outgoing infrared radiation like the panels of a greenhouse. Some experts believe increasing levels of greenhouse gases threaten to warm the earth by as much as 4 to 9 degrees fahrenheit over the next 50 to 100 years (AOR, 1989). Many measures in the RAQS will result in reformulation of compounds to various low-ROG substances. One potential substitute is 1,1,1-trichloroethane, a greenhouse gas. While potential releases of these compounds are possible, their volumes are small compared to total global contributions of greenhouse gases and are not considered significant. Nevertheless, these small, local releases could contribute in a small way to the cumulative global greenhouse effect.

2.5.2 Water Resources

If urea injection is used in the less stringent alternatives to reduce emissions of NO_x, impacts to water resources could occur. Two major factors combine to make the impact cumulative. First, the southwestern United States is in the fifth year of a drought. Water resources are being drawn down and supplies are being rationed. Second, the population of San Diego County in particular, and Southern California in general, is expected to continue to increase. This increased development would be expected to produce a continued increase in water demand. Given the current climate of uncertainty about water supplies, it would be reasonable to expect a short-term significant impact on water supply; the impact would be expected to be insignificant when water supplies return to their expected pre-drought levels.

2.5.3 Energy and Utilities

There may be increased overall energy demands due to the implementation of the rules in the RAQS. These demands could be significant when considered in light of the projected employment and population growth of the region. Many control technologies either require energy for implementation or cause a reduction in efficiency of energy use. Opposing such a trend would be an improvement in energy efficiency in motors and implementation of conservation measures. Thus, the potential exists for a cumulative impact to energy from the

RAQS, but a prediction of its magnitude would be speculative. This is too speculative to be considered a significant adverse impact.

2.5.4 Hazardous Waste

Many measures in the 1991 RAQS will result in increased quantities of hazardous materials which could significantly impact Class I landfills in the region. With mitigation measures, these direct impacts are not considered significant. However, when considered with the projected regional growth in population and employment, the potential exists for significant cumulative impacts to hazardous waste disposal. Because the magnitude of these predicted cumulative impacts is speculative, this is not considered significant.

2.6 Significant Irreversible Impacts

Potentially significant environmental impacts are reduced to a level that is less than significant from mitigation (see Table 2.2-1). The remaining potentially significant issue areas, are short-term in nature and not irreversible.

2.7 Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance of Long-Term Productivity

The long-term effect of the RAQS is to improve air quality, resulting in improved public health and welfare. The overall long-term effect is beneficial to society by improving the long-term quality of the air. To achieve this effect, there will be short-term adverse impacts from implementation of the 1991 RAQS. Implementation of the 1991 RAQS is not expected to have adverse effects on long-term productivity in the area.

2.8 Growth-Inducing Impacts

The objective of the RAQS is an improvement in air quality. Insofar as better air could lead to increased growth, the plan could produce higher growth. However, such impacts are speculative and assumed small. Therefore, no significant growth-inducing impacts from implementation of the RAQS are anticipated.

3.0 PROJECT DESCRIPTION

3.1 Project Proponent

San Diego County
Air Pollution Control District (APCD)
9150 Chesapeake Drive
San Diego, California 92123-1095

3.2 Project Location

The proposed San Diego 1991 Regional Air Quality Strategy (RAQS) contains a series of measures proposed for implementation that will improve air quality in San Diego County. A complete discussion of the RAQS can be found in the *1991 San Diego County Regional Air Quality Strategy*. If approved, the proposed RAQS will affect sources of air emissions located throughout San Diego County, California. A map of San Diego County is included as Figure 3.2-1.

3.3 Project Background

The federal Clean Air Act (CAA) Amendments of 1977 required all states to attain the National Ambient Air Quality Standards by December 31, 1987. These amendments required states to submit plans that "demonstrated" attainment of the applicable standards by the statutory deadline.

The California Clean Air Act of 1988 (CCAA) added Chapter 10, District Plans to Attain State Ambient Air Quality Standards, to Part 3 of Division 26 of the California Health and Safety Code (HSC). This chapter of the HSC requires, among other things, that districts develop plans to achieve the state ambient air quality standards as expeditiously as practical. These plans must include regulations that require control technologies for reducing emissions from existing sources.

As part of the CCAA planning process, the Air Resources Board (ARB) formally designated San Diego County as a nonattainment area for the state standards for ozone and particulate matter less than 10 microns in diameter (PM_{10}) in June 1989. The western portion of San Diego County (west of the Laguna Mountain Range) is also a nonattainment area for carbon monoxide (CO) and nitrogen dioxide (NO_2).

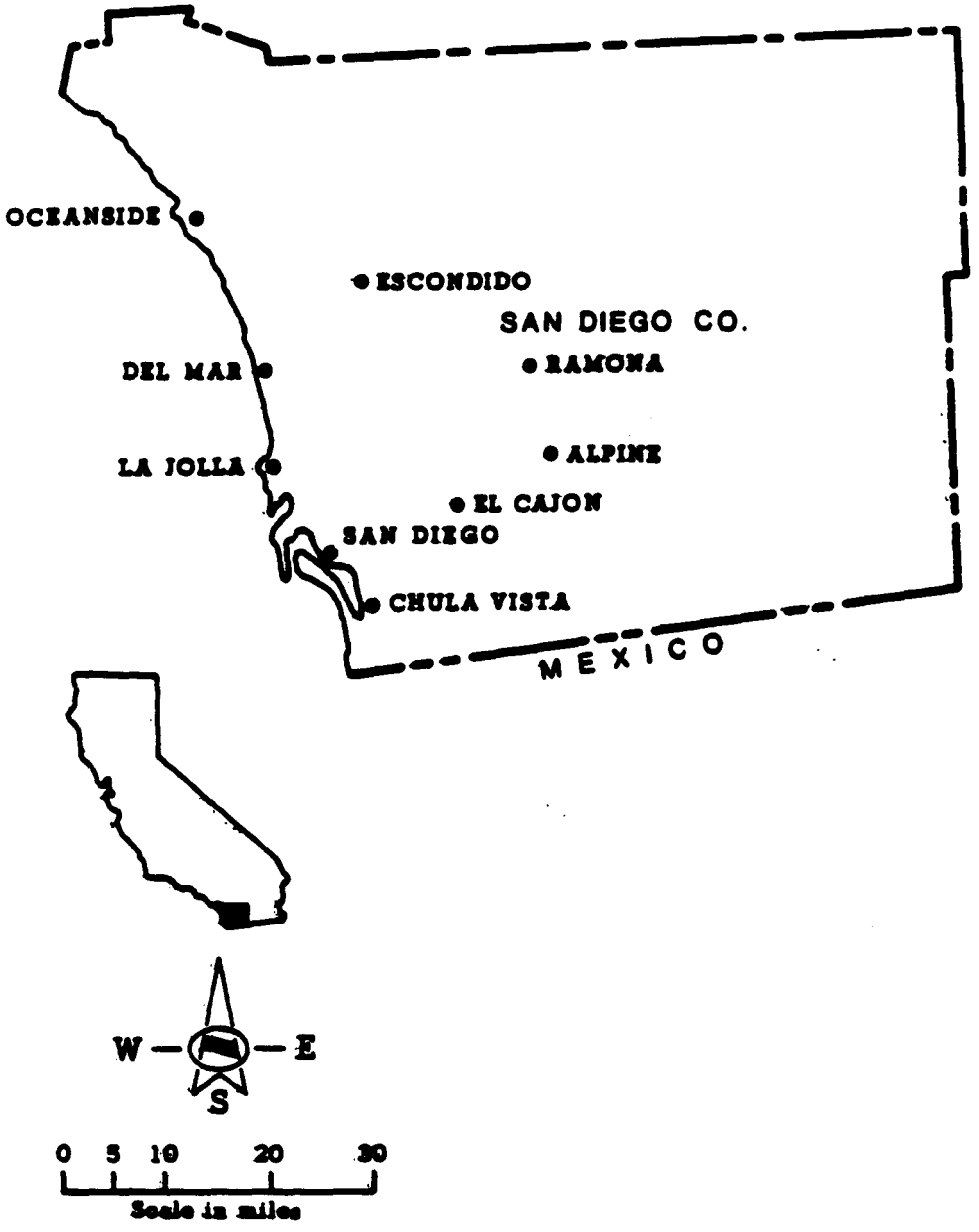


Figure 3.2-1. San Diego Air Basin

Ozone (smog) is a pollutant of great concern in San Diego County. Ozone is the product of a complex chain of chemical reactions which occur in the atmosphere in the presence of sunlight. The primary compounds in these chemical reactions are reactive organic gases (ROG) and oxides of nitrogen (NO_x). Thus, ROG and NO_x are said to be precursors to the formation of ozone, and the reduction of emissions from these precursors will reduce ozone concentrations.

In 1990, San Diego County exceeded the federal ozone standard on 39 days and the state standard on 139 days. This is an improvement from 10 years previously when the federal standard was exceeded on 87 days and the state standard on 167 days in 1980 (SDAPCD, 1990). Pollution transported from the Los Angeles basin is a contributor to these violations. The CCAA requires the South Coast Air Quality Management District to mitigate the impact of its emissions from Los Angeles County to San Diego County.

The CCAA requires that a revised plan to control smog, carbon monoxide, and nitrogen dioxide be submitted to the ARB this year to provide for attainment of the air quality standards as expeditiously as practicable. Actions to address state particulate standards are deferred until an ARB report on the feasibility of attaining these standards is submitted to the Legislature, and specific requirements are established by the state.

An area's air pollution is considered severe if the state board finds and determines that the district cannot attain and maintain the applicable state standard until after December 31, 1997. San Diego has not yet been formally designated as a severe nonattainment area. Appropriate designation will not occur until after the initial plans are submitted to the ARB in 1991. However, attainment of the ozone standard in San Diego County by December 1997 is unlikely, and the ARB has required that the San Diego APCD prepare the 1991 RAQS to meet all the requirements for a severe area.

The CCAA issues several mandates for severe nonattainment areas. Among these are the following requirements:

- Attainment of the state air quality standards by the earliest practicable date.
- Annual emission reductions of 5 percent per year beginning in 1988 for all air pollutants for which state standards are not met.
- A permitting program designed to achieve no net increase in emissions of nonattainment pollutants or their precursors from all new or modified permitted stationary sources.

- The application of best available retrofit control technology (BARCT) for existing emission sources.

- Provisions to develop area and indirect source control programs.

- Adoption and implementation of transportation control measures to substantially reduce trip growth and vehicle miles travelled growth, achieve a 1.5 average vehicle occupancy for weekday commute trips by 1999, and have no net increase in vehicle emissions after 1997.

- Adoption of measures to achieve the use of a significant number of low-emission motor vehicles by operators of motor vehicle fleets.

- Submission of an attainment plan in 1991 and triennial updates thereafter.

According to CCAA, if the 1991 RAQS is unable to meet the above-mentioned 5 percent requirement, then all feasible measures must be implemented. Preliminary analysis by the APCD indicates that the 5 percent annual reduction target will not be met in San Diego County, and all feasible measures will be required.

3.4 Project Objectives

As stated above, San Diego County exceeds the state and federal standards for ozone and the state standard for PM_{10}. The western part of the county exceeds standards for CO and NO_2. The proposed San Diego 1991 RAQS was prepared pursuant to the California Clean Air Act (CCAA) and as such is a regional plan which contains a series of measures proposed for implementation that will improve air quality in San Diego County.

The goal of the 1991 RAQS is to develop a definitive plan for attaining and maintaining the state standard for ozone and CO in San Diego County at the earliest practicable date by concurrently reducing ROG, NO_x, and CO emissions from a broad range of sources. Since the CCAA requires all nonattainment areas to prepare attainment plans for the state standard by July 1, 1991, the 1991 RAQS is prepared to satisfy this CCAA requirement. Because the CCAA ozone standard is more stringent than the federal standards, compliance with the CCAA standard will result in compliance with the federal ozone standard.

The emission reductions anticipated by the 1991 RAQS do not meet the 5 percent annual emission reduction required by the CCAA. From 1987 to the year 2000, ROG emissions are projected to be reduced by this plan by 35 percent (3.3 percent per year); NO_x emissions are

expected to decline by 23 percent (2.0 percent per year), and CO emissions are projected to decline by 42 percent (4.1 percent per year). Figure 3.4-1 summarizes ROG, NO_x and CO emission trends through the year 2010 for the proposed 1991 RAQS. Because this strategy does not attain the 5 percent per year reductions, all feasible measures to reduce emissions of pollutants are incorporated in the 1991 RAQS.

3.5 Project Characteristics

The 1991 RAQS contains control measures designed to improve air quality by concurrently reducing emissions of pollutants. As such, it is a complex document containing many sources of data, assumptions, and methodologies. Most of the control measures require local implementation, although some are statewide measures adopted by ARB to meet CCAA mandates. This strategy is comprised of specific control measures that are organized into two basic categories: 1) stationary sources, which include both point and area source control measures, and 2) transportation control measures, designed to reduce emissions from transportation related sources.

Control measures in the RAQS appear in the form of emission limits, procedural rules, and other compliance measures. In some cases, these measures do not specify a specific control technology or "compliance method." However, in formulating the control measures and in analyzing the practicality of the measures and feasibility of emissions limits, the APCD considered relevant technologies and compliance methods.

Most environmental impacts are associated with the technologies or compliance methods that will be adopted by operators of emission sources in response to control measures specified in the 1991 RAQS. In order to better define the environmental impacts of measures that have yet to be adopted and implemented, discussions of these include the assumed control technologies or methods that will be adopted to comply with the measure.

The control measures are the basis of the project description for the purpose of this EIR. Accordingly, control measures proposed in the 1991 RAQS are discussed in some detail in the following sections. All measures proposed in the 1991 RAQS are discussed.

Before control measures are discussed in detail, tabular summaries of the proposed measures are presented. Stationary source control measures are presented in Tables 3.5-1 through 3.5-5. Control measures are listed in these tables along with estimates of total emissions of the target population associated with the control measure plus projected reductions in emissions following implementation of the control measure. Individual industrial control measures concern point sources of emissions. Examples include coatings (e.g.

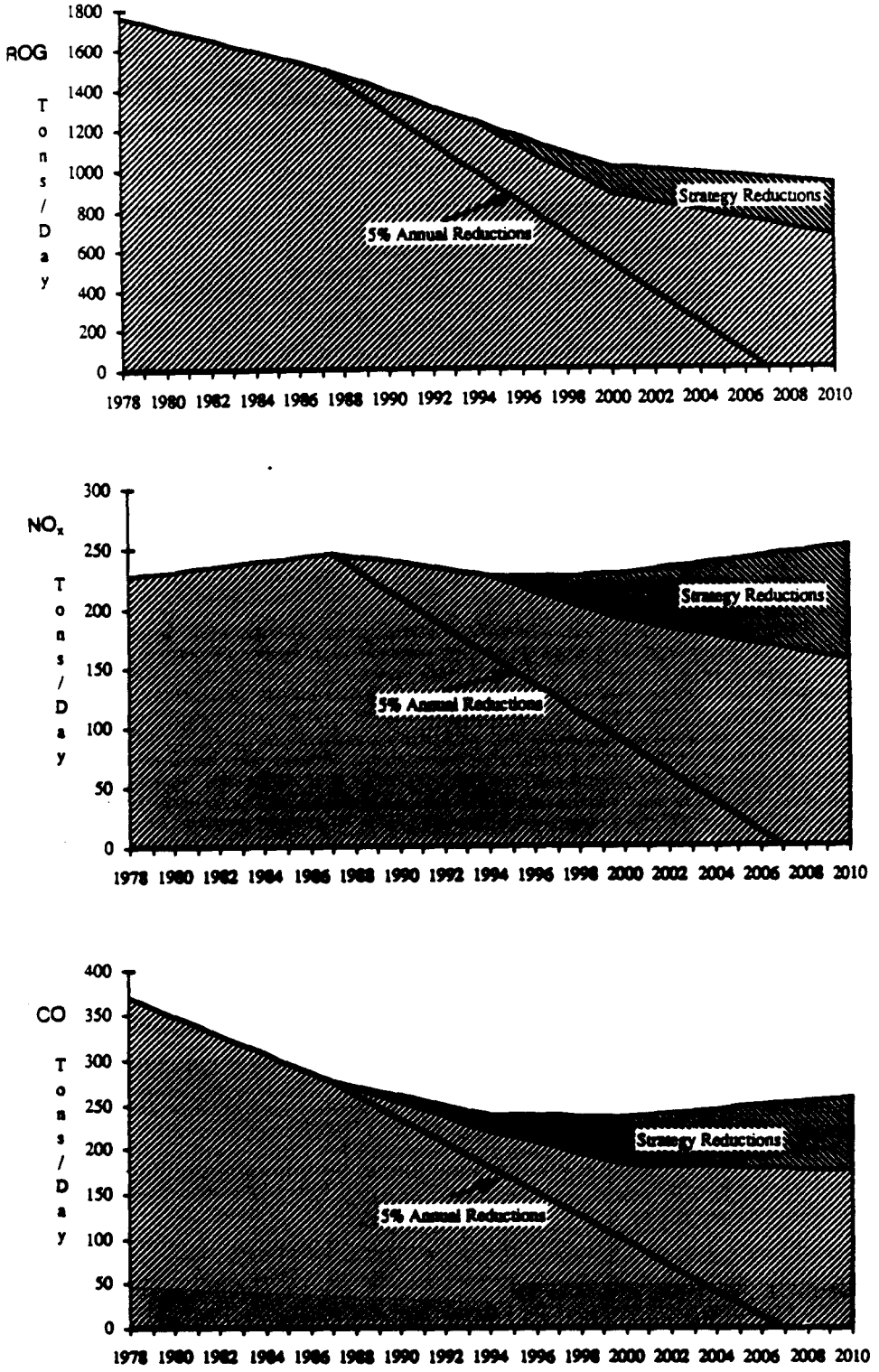


Figure 3.4-1. Strategy Emission Trends

TABLE 3.5-1

1991 RAQS Stationary Source Control Measures to Reduce Reactive Organic Gas Emissions Industrial Controls

Number	Control Measure	Adoption Date	Emission Reduction (tons/day)
RI-1	Bulk Gasoline Storage Tank Degassing	1996	1.90
RI-2	Automobile Refinishing	1993	1.31
RI-3	Solvent Cleaning and Degreasing Operations	1994	1.06
RI-4	Polyester Resin Operations - Fiberglass Manufacturing	Adopted	0.83
RI-5	Substitute Cleanup Solvents	Unscheduled	0.73
RI-6	Metal Parts and Products Coatings	Adopted	0.56
RI-7	Marine Vessel Coating Operations	Adopted	0.50
RI-8	Underground Tank Decommissioning and Soil Decontamination	1993	0.55
RI-9	Paint and Ink Manufacturing	1992	0.48
RI-10	Can and Coil Coatings	1994	0.32
RI-11	Wood Products Coatings	Adopted, 1994	0.87
RI-12	Adhesives	1993	0.22
RI-13	Commercial Bakeries	1995	0.22
RI-14	Foam Blowing and Plastics Expanding	1995	0.20
RI-15	Kelp Processing and Bio-Polymer Manufacturing	Adopted	0.17
RI-16	Plastic Parts, Rubber, Composites and Glass Operations	1994	0.17
RI-17	Petroleum Dry Cleaning	1996	0.04
RI-18	Polyester and Epoxy Resin Operations - Further Fiberglass Control	1994	0.06
RI-19	Semiconductor Manufacturing and Electronic Packaging Operations	1995	0.07
RI-21	Ethylene Oxide Sterilizers	Adopted	0.018
RI-22	Groundwater Decontamination	1997	< 0.01

TABLE 3.5-2

1991 RAQS Stationary Source Control Measures to Reduce Oxides of Nitrogen Emissions Industrial Controls

Number	Control Measure	Adoption Date	Emission Reduction (tons/day)
NI-1	Selective Catalytic Reduction for Large Utility Boilers	1992	7.32
NI-2	Further Controls on Turbines	1994	0.64
NI-3	Selective Catalytic Reduction for Lean Burn Engines	1995	0.61
NI-4	Small Internal Combustion Engines (200-500 hp)	1996	1.59
NI-5	Small Internal Combustion Engines (50-200 hp)	1996	0.78
NI-6	Controls for Industrial and Commercial Boilers	1993	0.16
NI-7	Selective Catalytic Reduction for Large Non-utility Boilers	1993	0.05

TABLE 3.5-3

1991 RAQS Stationary Source Control Measures to Reduce Reactive Organic Gas Emissions Areawide Controls

Number	Control Measure	Adoption Date	Emission Reduction (tons/day)
RA-1	Consumer Products	Adopted	6.30
RA-2	Small Utility and Lawn/Garden Equipment	Adopted	2.67
RA-3	Commercial Charbroiling	1996	0.52
RA-4	Architectural Coatings	Unscheduled	0.37
RA-5	Barbecue Grill Charcoal Ignition	Adopted	0.04
RA-6	Deodorants and Antiperspirants	Adopted	0.34
RA-7	Marine Gasoline Refueling	1997	0.02
–	New Source Review	1992	*

* Not available

TABLE 3.5-4

1991 RAQS Stationary Source Control Measures to Reduce Oxides of Nitrogen Emissions Areawide Controls

Number	Control Measure	Adoption Date	Emission Reduction (tons/day)
NA-1	Low-NO_x Residential Water Heaters	1995	2.50
NA-2	Low NO_x Central Furnace Heaters	1997	1.01
NA-3	Low-NO_x Commercial Water Heaters	1995	0.12

TABLE 3.5-5

1991 RAQS Stationary Source Control Measures to Reduce Oxides of Nitrogen Emissions Energy Conservation Controls

Number	Control Measure	Adoption Date	Emission Reduction (tons/day)
EC-1	Residential Solar Hot Water Heaters - New Homes	1995	0.38 to 0.54
EC-2	Swimming Pool Solar Water Heaters - New	Unscheduled	<0.01
EC-3	Hot Tub/Spa Solar Water Heaters - New	Unscheduled	<0.01
EC-4	Commercial Solar Hot Water Heaters - New Development	1995	0.01
EC-5	Residential Solar Hot Water Heaters - Retrofit Existing Homes	1995	1.68 to 2.43
EC-6	Swimming Pool Solar Water Heaters - Retrofit	Unscheduled	0.01 to 0.03
EC-7	Hot Tub/Spa Solar Water Heaters - Retrofit	Unscheduled	0.01 to 0.02

paints), cleaning solvents, coatings, kelp processing, and semiconductor manufacturing. Table 3.5-1 and 3.5-2 present the industrial control measures for ROG and NO_x emissions, respectively. Areawide sources are small sources scattered across the county whose cumulative effect on air quality can be significant. Examples include space heating and air conditioning, household products, and charcoal lighter fluid. Table 3.5-3 summarizes the areawide control measures for ROG emissions, and Table 3.5-4 presents the areawide control measures for NO_x emissions. Energy conservation control measures to reduce NO_x emissions are summarized in Table 3.5-5. Finally, transportation control measures (TCM) are being proposed, which, in coordination with California's new motor vehicle emission standards, will help achieve reductions in ROG, NO_x and CO. These measures are summarized in Table 3.5-6. For each control measure in the 1991 RAQS, Table 3.5-7 summarizes the assumed technologies and compliance methods that could result in possible environmental impacts.

3.6 Stationary Source Control Measures

Stationary source control measures are summarized in this section. In order to better define the environmental impacts of each measure, these summaries include the assumed control technologies or methods that will be adopted in compliance with each measure.

3.6.1 Industrial ROG Emission Controls

This section summarizes stationary source, industrial control measures designed to reduce ROG emissions (see Table 3.5-1). Before particular measures are discussed, a brief overview of ROG control technologies is presented. The most common add-on emission control techniques for reducing emissions of ROG are: thermal incineration, catalytic incineration, carbon adsorption, absorption, and condensation. The use of one or a combination of these control techniques may be a viable alternative, depending on the application. The most appropriate application for these control techniques is dependent on many process variables. The following is a brief description of each of the control techniques mentioned above:

- Thermal Incineration (TI): This control technique is a combustion process that oxidizes the organic vapor emissions to carbon dioxide and water. TI units are sometimes referred to as direct flume or direct-flame afterburners. The contaminated vapors are typically collected in a vapor recovery system and delivered to a preheater where they are heated by indirect contact with hot incinerator exhaust gases. The vapors are then passed through the combustion zone where the combustion process is completed. TI typically attains control efficiencies as high as 95 percent with ROG inlet concentrations as low as 20 parts per million (ppm).

TABLE 3.5-6

1992 RAQS Transportation Control Measures to Reduce Emissions of Carbon Monoxide, Oxides of Nitrogen, and Reactive Organic Compounds

Number	Control Measure	Adoption Date	Emission Reductions (tons/day)		
			ROG	NO_X	CO
TC-1	Transportation Demand Management Program • Employment Based Trip Reduction • Education Related Trip Reduction • Heavy Duty Truck Trip Reduction	 1992 1993 1994	6.9	6.4	88.6
TC-2	Alternative Transportation Mode Capacity Expansion • Expanded Transit • Park and Ride Facilities • High Occupancy Vehicle Facilities • Bicycle and Pedestrian Facilities • Vanpools	[a]	[b]	[b]	[b]
TC-3	Traffic Management Program • Transportation Control Improvements • Ramp Metering • Incident Management	[a]	0.6	0.6	12.8
TC-4	Land Use • Job-Housing Balance • Mixed Use Development • Transit Corridor Development	[a]	[b]	[b]	[b]
–	Indirect Source Review	1992	N/A	N/A	N/A
–	Clean Fuels	1992	N/A	N/A	N/A

(a) Adoption schedule to be developed after evaluation with transportation criteria.

(b) These measures support the trip reduction program, rather than supplementing its reductions.

N/A Not Available

TABLE 3.5-7

Control Measures and Their Responses

Number	Control Measure	Likely Technology or Compliance Method*										
		CM	FT	CF	EL	VR	RR	GR	EC	MO	CP	PR
RI-1	Bulk Gasoline Storage Tank Degassing					X		X				
RI-2	Automobile Refinishing						X			X		
RI-3	Solvent Cleaning and Degreasing Operations					X						
RI-4	Polyester Resin Operations - Fiberglass Manufacturing						X			X		
RI-5	Substitute Cleanup Solvents						X			X		
RI-6	Metal Parts and Products Coatings						X			X		
RI-7	Marine Vessel Coating Operations						X					
RI-8	Gasoline Tank Decommissioning and Soil Decontamination					X						
RI-9	Paint and Ink Manufacturing					X	X			X		
RI-10	Can and Coil Coatings					X	X					
RI-11	Wood Products Coatings					X	X					
RI-12	Adhesives					X	X			X		
RI-13	Commercial Bakeries					X						
RI-14	Foam Blowing and Plastics Expanding					X	X					
RI-15	Kelp Processing and Bio-Polymer Manufacturing					X				X		
RI-16	Plastic Parts, Rubber, Composites, and Glass Operations					X	X			X		
RI-17	Petroleum Dry Cleaning					X						
RI-18	Polyester and Epoxy Resin Operations - Further Fiberglass Manufacturing					X	X					
RI-19	Semiconductor Manufacturing and Electronic Packaging Operations					X	X			X		

TABLE 3.5-7 (Cont.)

Control Measures and Their Responses

Number	Control Measure	Likely Technology or Compliance Method*										
		CM	FT	CF	EL	VR	RR	GR	EC	MO	CP	PR
RI-21	Ethylene Oxide Sterilizers					X				X		
RI-22	Groundwater Decontamination					X				X		
NI-1	Selective Catalytic Reduction for Large Utility Boilers		X									
NI-2	Further Controls on Turbines	X	X	X								
NI-3	Revised Exemption Threshold for Small Engines		X									
NI-4	Small Internal Combustion Engines (200-500 hp)	x	x									
NI-5	Small Internal Combustion Engines (50-200 hp)	X	X									
NI-6	Controls for Industrial and Commercial Boilers	X	X									
NI-7	Selective Catalytic Reduction for Large Non-Utility Boilers		X									
RA-1	Consumer Products						X				X	
RA-2	Small Utility and Lawn/Garden Equipment	X	X	X	X							
RA-3	Commercial Charbroiling					X						
RA-4	Architectural Coatings						X					
RA-5	Barbecue Grill Charcoal Ignition						X					
RA-6	Deodorants and Antiperspirants						X					
RA-7	Marine Gasoline Refueling					X						
–	New Source Review											X
NA-1	Low-NO_x Residential Water Heaters	X										
NA-2	Low NO_x Central Furnace Heaters	X										
NA-3	Low-NO_x Commercial Water Heaters	X	X		X							
EC-1	Residential Solar Hot Water Heaters - New Homes								X			

TABLE 3.5-7 (Cont.)

Control Measures and Their Responses

Number	Control Measure	Likely Technology or Compliance Method*										
		CM	FT	CF	EL	VR	RR	GR	EC	MO	CP	PR
EC-2	Swimming Pool Solar Water Heaters - New								X			
EC-3	Hot Tub/Spa Solar Water Heaters - New								X			
EC-4	Commercial Solar Hot Water Heaters - New Development								X			
EC-5	Residential Solar Hot Water Heaters - Retrofit Existing Homes								X			
EC-6	Swimming Pool Solar Water Heaters - Retrofit								X			
EC-7	Hot Tub/Spa Solar Water Heaters - Retrofit								X			
TC-1	Trip Reduction and Parking Management Program										X	X
TC-2	Alternative Transportation Mode Capacity Expansion									X	X	X
TC-3	Traffic Management Program									X		X
TC-4	Land Use											
–	Indirect Source Control Program											X

* Abbreviations are defined as follows:

- CM Combustion Modifications (e.g., low NO_x burners, staged air combustion)
- FT Flue Gas Treatment (e.g., selective catalytic reduction)
- CF Clean Fuels (methanol, compressed natural gas, liquified propane gas)
- EL Electrification
- VR Vapor Recovery and control systems (carbon absorption, thermal/catalytic incinerators, refrigeration units)
- RR Reduce ROG content in coatings, cleaners and solvents or switch to aqueous (surfactants) solutions without ROG
- GR Gas Recovery systems
- EC Equipment Change or retrofit for conservation
- MO Modification of Operations
- CP Change Practices of individuals
- PR Procedural Rule changes

- Catalytic Incineration (CI): This technology is similar to TI in that heat is used to convert the organic contaminants to carbon dioxide and water. However, a CI unit uses a catalyst to lower the oxidation activation energy. This allows combustion to occur at temperatures around 600° F. The lower operating temperatures result in decreased fuel consumption when compared to thermal incineration. CI units are typically 90 percent effective on contaminated streams with ROG concentrations greater than 100 ppm.

- Carbon Adsorption (CA): Adsorption is a process by which organic compounds are retained on the surface of granular solids. The solid adsorbent particles are highly porous and have very large surface volume ratios. Gas molecules penetrate the pores of the adsorbent and contact the large surface area available for adsorption. Activated carbon is the most common adsorbent for removal of ROG. Control efficiencies of over 90 percent can be obtained with inlet ROG concentrations greater than 1,000 ppm.

- Absorption (wet scrubbing): Absorption is the mass transfer of selected components from a gas stream into a nonvolatile liquid. The choice of absorbent depends on the solubility of the gaseous organic compounds and the cost of the absorbent. Packed towers, spray chambers, and venturi scrubbers can be used for the absorption equipment. Absorption efficiencies are dependent on the solubility of the ROG vapors. Control efficiencies of 90 percent for inlet concentrations as low as 300 ppm are attainable.

- Condensation: Condensation is a separation technique (usually using refrigeration) in which a contaminated gas stream is brought to saturation and contaminants are condensed to liquid. In many cases the recovered contaminants are recycled and reused. Removal efficiencies as high as 95 percent for ROG inlet concentrations as low as 5,000 ppm can be obtained with this control technique.

RI-1, Bulk Gasoline Storage Tank Degassing. Restrict uncontrolled degassing and emission control during cleaning and decommissioning of above ground gasoline storage tanks.

Assumed Technologies and Methods: This measure requires control of at least 90 percent of ROG emissions. Vapor recovery systems which vent to a carbon adsorption unit or thermal incinerator are likely methods of control. A description of carbon adsorption units and thermal incinerators is contained at the beginning of Section 3.6.1.

RI-2, Automobile Refinishing. Require the use of low ROG coatings and solvents, high transfer efficiency application equipment, improved procedures for storage and handling of cleanup solvents, use of enclosed systems for equipment cleaning, improved maintenance and operating procedures, and proper record keeping.

Assumed Technologies and Methods: Surface coatings (e.g., paints, plastic coatings) result in ROG emissions. These emissions stem from the organic solvent portion of the coating and occur during application and drying of the coating. Low-ROG primers, paints, solvents and cleanup materials are required. More stringent low-ROG targets are set for the future. These are technologically forcing, since low-ROG coatings that meet these requirements do not exist at this time. Low-ROG and water-based coatings and solvents are available to meet current standards. This measure also requires coating application processes or equipment with high transfer efficiency (at least 65 percent) which also will reduce ROG emissions. Electrostatic and high-volume low-pressure equipment exist to meet this requirement.

RI-3, Solvent Cleaning and Degreasing Operations. Revise Rules 67.6 and 11 to require emission controls and permits for currently exempt degreasers, remote reservoir cleaners, and strip tanks; to increase freeboard ratio and require freeboard chillers for vapor degreasers; and to require additional controls, lip exhausts, and carbon adsorbers for vapor degreasers emitting 10 tons/year or more.

Assumed Technologies and Methods: In cold cleaning operations, low-ROG and water based cleaners exist to meet the standard. In vapor cleaning operations, the solvent is heated to its boiling point, creating larger ROG emissions than in cold cleaning. For these operations, a higher freeboard ratio will be required which will reduce emissions caused by diffusion or room drafts. For large emitters, the measure requires solvent vapors to be captured by a lip exhaust and vented to a carbon adsorption unit. Instead of carbon adsorption, thermal or catalytic incinerators might be used as the control method.

RI-4, Polyester Resin Operations - Fiberglass Manufacturing. Revise Rule 67.12, Polyester Resin Operations, which requires material and process changes to reduce styrene emissions, use of low ROG solvents or reclamation systems for cleaning solvents, higher efficiency application equipment, special procedures for storage of cleanup solvents and solvent-laden materials, and record keeping for polyester resin operations.

Assumed Technologies and Methods: Suppressed and low monomer resins exist that will reduce styrene emissions, and are currently used in certain fiberglass fabrication

operations. This measure also requires improved transfer efficiency equipment such as airless and air-assisted airless spray guns.

RI-5, Substitute Cleanup Solvents. Require the use of lower ROG content cleaning solvents and improved solvent handling procedures for cleaning of equipment and materials used in surface coating operations.

Assumed Technologies and Methods: Solvents are used to clean and maintain coating application equipment, paint spray booths, and other equipment used in the coating process. Among other things, this measure requires use of low-ROG or water based cleanup solvents.

RI-6, Metal Parts and Products Coating. Enforce control of emissions from surface coating of metal parts and products by use of low ROG solvents, high efficiency application equipment, special procedures for storage and use of cleanup solvents; require improved record keeping and tightening of exemption requirements.

Assumed Technologies and Methods: This measure will require the use of low-ROG or water based coatings and solvents and the adoption of improved transfer efficiency equipment.

RI-7, Marine Vessel Coating Operations. Require lower solvent content coatings and cleanup materials and closed applicator cleaning systems for coating operations associated with construction and repair of marine vessels.

Assumed Technologies and Methods: This measure will be met by adoption of reformulated coatings and cleanup materials using water-based or low-ROG solvents.

RI-8, Gasoline Tank Decommissioning and Soil Decontamination. This control measure reduces ROG emissions which occur as a result of excavation and/or treatment of soil contaminated by leaking underground storage tanks and pipelines. It also delineates special procedures for underground storage tank (UST) removal and handling of excavated soil and installation of emission controls in soil decontamination projects.

Assumed Technologies and Methods: Onsite treatment or remediation of contaminated soil will be required to have emission controls with more than 90 percent efficiency. Carbon adsorption units, thermal incinerators or catalytic incinerators will meet this requirement. In addition, this measure requires 90 percent control of ROG emissions during tank removal and decommissioning. This will require use of a refrigerated

condenser, carbon adsorption unit or thermal/catalytic incinerator as an emission control mechanism.

RI-9, Paint and Ink Manufacturing. Require use of add-on control equipment for large companies, use of low ROG cleaning materials or solvent reclamation, and use enclosed systems for cleaning tools and equipment; require proper record keeping.

Assumed Technologies and Methods: This measure requires the adoption of low-ROG or water-based coatings and solvents, and, for large operations, the installation of add-on vapor recovery systems such as carbon adsorbers, thermal incinerators or refrigerated condensers.

RI-10, Can and Coil Coating. Revise Rule 67.4 to require use of zero VOC (ROG) compounds for can end sealing and coating operations, and use of zero ROG coatings or add-on control devices for coil coating operations.

Assumed Technologies and Methods: Can end sealing compounds which contain zero ROG are a proven technology. Zero ROG content primers for coil coatings are in the development stage. As an alternative, firms can use add-on vapor recovery systems that vent emissions to control equipment such as carbon adsorbers, thermal/catalytic incinerators, or refrigerated condensers.

RI-11, Wood Products Coatings. Revise Rule 67.11 to require use of low ROG coatings or add-on control equipment and elimination of low usage exemption.

Assumed Technologies and Methods: This measure will require the adoption of low-ROG or water based coatings and cleaning equipment. More stringent low-ROG targets are set for the future. As an alternative to low-ROG coatings, firms can use add-on vapor recovery systems that vent to emission control equipment such as carbon adsorbers, thermal/catalytic incinerators, or refrigerated condensers.

RI-12, Adhesives. Require the use of lower ROG content adhesive formulations or add-on control equipment; use of adhesive application equipment with higher transfer efficiency; use of low ROG content solvents and enclosed systems for equipment and surface cleanup operations; and improved record keeping of ROG containing materials.

Assumed Technologies and Methods: This measure requires adoption of low-ROG or water based solvents and the adoption of high transfer efficiency application methods. As an alternative to low-ROG coatings, firms can use add-on vapor recovery systems that

vent to control equipment that is at least 90 percent efficient, such as carbon adsorbers, thermal/catalytic incinerators, or refrigerated condensers.

RI-13, Commercial Bakeries. Require 90 percent reduction of ROG emissions from commercial bakeries producing more than 1,000,000 pounds of bread per year.

Assumed Technologies and Methods: Exhaust streams can be controlled by various add-on control equipment. The most likely method is catalytic or thermal incineration.

RI-14, Foam Blowing and Plastics Expanding. Require the use of alternate blowing agents or the addition of control equipment such as a carbon adsorption unit or an incinerator.

Assumed Technologies and Methods: This measure requires the adoption of low-ROG and low-chlorofluorocarbon (CFC) blowing agents. As an alternative, firms can use add-on vapor recovery systems that vent to emission control equipment that is at least 95 percent efficient, such as carbon adsorbers, thermal incinerators, or refrigerated condensers.

RI-15, Kelp Processing and Bio-Polymer Manufacturing. Revise Rule 67.10, Kelp Processing and Bio-polymer Manufacturing Operations, to increase required efficiency of control from 90 to 95 percent.

Assumed Technologies and Methods: Absorption equipment already installed under Rule 67.10 (to meet a 90 percent control level) has demonstrated a capability to meet a 95 percent control level. Increased water throughput and associated water treatment are major operational changes.

RI-16, Plastic Parts, Rubber, Composites, and Glass Coating Operations. Require use of low ROG coating and cleanup solvents for plastic, rubber, and composite coatings; process changes or add-on control for glass coating, high transfer efficiency application equipment, enclosed systems for equipment cleaning; improved maintenance and operating procedures; and proper record keeping.

Assumed Technologies and Methods: This measure requires adoption of low-ROG or water based coatings, solvents and cleanup materials and the adoption of high transfer efficiency application methods. As an alternative to low-ROG coatings, firms can use add-on vapor recovery systems, such as carbon adsorbers, thermal incinerators, or refrigerated condensers.

RI-17, Petroleum Dry Cleaning. Revise Rule 67.2, Dry Cleaning Equipment Using Petroleum-Based Solvent, by lowering the petroleum solvent usage exemption limit and increasing the ROG emission control level for large petroleum-based solvent dry cleaning facilities.

Assumed Technologies and Methods: Compliance with this control measure will require adoption of solvent recovery dryers, carbon adsorbers, and refrigeration units. All of these are currently being used in one form or another in California.

RI-18, Polyester and Epoxy Resin Operations - Further Fiberglass Control. Revise Rule 67.12, Polyester Resin Operations, to eliminate the low usage exemption; to extend the application of cleanup solvent control requirements to also cover epoxy resin operations; and to require add-on controls for large polyester resin operations.

Assumed Technologies and Methods: This measure requires adoption of polyester resins material with low-ROG content. Low-ROG cleaning materials must be used or 80 percent of the high-ROG solvent must be recycled. Spraying equipment with high transfer efficiency is also required. For large operations, the measure requires the installation of add-on vapor recovery systems such as carbon adsorbers, thermal incinerators, or refrigerated condensers.

RI-19, Semiconductor Manufacturing and Electronic Packaging Operations. Require use of add-on control devices for slip casting; use of lower ROG content or lower vapor pressure materials for tool and equipment cleaning; improved housekeeping practices for handling of organic solvents; proper record keeping.

Assumed Technologies and Methods: The measure requires the adoption of low-ROG cleaning materials which are widely available and used in the coating industry. For ceramic chip manufacturing, the measure requires the installation of add-on vapor recovery systems that vent to emission control equipment such as thermal/catalytic incinerators or carbon adsorbers.

RI-21, Ethylene Oxide Sterilizers. Require the use of emission control equipment, basic equipment modifications, record keeping requirements, source testing, reporting provisions and/or alternative sterilization techniques to reduce air emissions of ethylene oxide (ETO) in San Diego County.

Assumed Technologies and Methods: This measure requires certain modifications to equipment to reduce emissions of ethylene oxide (EtO). For all but the smallest firms,

the measure requires add-on control equipment to reduce emissions by 95 percent to 99.9 percent (depending on usage levels). Two emission control technologies that are feasible are acid-catalyzed scrubbers (producing ethylene glycol as a by product) or catalytic incineration.

RI-22, Groundwater Decontamination. Require use of water phase carbon adsorption or add-on control equipment of air stripping operations in groundwater decontamination projects; initiate special reporting, monitoring and record keeping requirements.

Assumed Technologies and Methods: The dominant process for removal of ROG from contaminated groundwater is air stripping which accelerates volatilization of ROG using countercurrent streams of air. All ROG emitted from air stripping operations must be reduced by at least 90 percent using add-on vapor recovery units such as carbon adsorption or thermal incinerators.

3.6.2 Industrial NO_x Control Measures

This section summarizes the stationary source industrial control measures designed to reduce NO_x emissions (see Table 3.5-2). Before particular measures are discussed, a brief overview of NO_x control techniques is provided.

NO_x formation can be attributed to two factors: fuel bound nitrogen and thermal NO_x formation. NO_x formation from fuel bound nitrogen results from the oxidation of the nitrogen in fuels. Thermal NO_x formation results from the high temperature fixation of combustion air nitrogen and oxygen. In any combustion process, NO_x and CO emissions are inversely related. Attempts to decrease NO_x emissions by modifications to the combustion process may result in increases in CO emissions. Strategies to control NO_x emissions can be divided into three categories: combustion modifications, flue gas treatment, and alternative fuels. Any combination of these may be used to reduce NO_x emissions.

Combustion modifications are pre-formative controls and are used to reduce NO_x formation (fuel bound) by controlling the combustion variables. Technologies include low NO_x burners, low excess air techniques, staged air combustion, staged fuel combustion, and flue gas recirculation.

Flue gas treatment systems are post-formative measures which reduce both fuel and thermal NO_x after it has been formed, usually by chemical methods. In general, exhaust gases are exposed to reducing agents which decompose the NO_x to elemental nitrogen and water.

Three available flue gas treatments are selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), urea injection, and non-selective catalytic reduction (NSCR).

The most likely choice of an alternative fuel is methanol. Alternative fuels, such as natural gas or methanol, have no fuel bound nitrogen, so no NO_x is formed. Since the combustion temperature of methanol is lower than natural gas or fuel oil, the concentration of thermally formed NO_x is also lower than when using these other fuels.

NI-1, Selective Catalytic Reduction for Large Utility Boilers. Obtain NO_x reductions from existing electrical generating utility boilers by requiring selective catalytic reduction (SCR).

> Assumed Technologies and Methods: SCR systems reduce NO_x in the gases exhausted by boilers by combining ammonia and oxygen with NO_x in the presence of a catalyst to produce molecular nitrogen and water vapor, the by-products of this reaction. For optimum results, this reaction must occur in the narrow temperature range between 303°C and 400°C. Generally, in order to use SCR, a facility will require some structural modifications, some equipment modifications, installation of a piping injection system with automatic control, monitoring equipment for recording emission levels in the stack gas, and the installation of one or more ammonia storage tanks. When operating properly, SCR can achieve a NO_x reduction of 90 percent or greater. Increased ammonia emissions are associated with this control technology.

NI-2, Further Controls on Turbines. Revises Rule 68 requiring higher efficiency water or steam injection, and selective catalytic reduction (SCR) for large turbines operated more than 6,000 hours per year.

> Assumed Technologies and Methods: Water or steam injection consists of the introduction of water into the turbine combustion chamber, cooling the combustion flame, which causes a reduction in NO_x emissions. SCR was discussed in NI-1, directly above. This measure is not expected to apply to standby or peaking units. Each of the 16 standby utility turbines in San Diego County did not operate over 1,000 hours in 1987.

NI-3, Revised Exemption Threshold for Small Engines (Selective Catalytic Reduction For Lean Burn Engines). Use selective catalytic reduction (SCR) as add-on control technology for NO_x emissions from lean burn reciprocating engines operating on natural gas, digester gas, or landfill gas.

Assumed Technologies and Methods: Approximately 92 percent of the 25 lean burn engines in the area will be affected by this measure. Please see NI-1, above, for a discussion of SCR.

NI-4, Small Internal Combustion Engines (200-500 hp). Requires combustion modifications or flue gas treatment from existing, nonpermitted internal combustion engines which have maximum power output ratings of 200 to 500 brake horsepower. Lower the Permit to Operate exemption limit in Rule 11 in order to bring these engines into the permit system.

Assumed Technologies and Methods: For natural gas-fired engines, nonselective catalytic reduction (NSCR) is required. This flue gas treatment is also best available control technology (BACT) for rich-burn engines. NSCR utilizes a catalyst bed and simultaneously reduces hydrocarbons CO and NO_x emissions. Essentially, this is the same device as the catalytic converter used for automobile engines.

For diesel-fired engines, the BACT methods required by this measure are selective catalytic reduction (SCR) or ignition retard, both of which are combustion modifications. As yet, SCR has not been demonstrated for diesel engines on a commercial basis. In ignition retard, the fuel is injected into the cylinder shortly before the piston reaches top dead center. Ignition retard reduces NO_x emissions by lowering the peak cylinder temperatures and pressures.

NI-5, Small Internal Combustion Engines (50-200 hp). Require combustion modifications or flue gas treatment from existing, nonpermitted internal combustion engines which have maximum power output ratings of 50 to 200 brake horsepower. Lower the Permit to Operate exemption limit in Rule 11 in order to bring these engines into the permit system.

Assumed Technologies and Methods: Please see the discussion in NI-4, directly above, concerning internal combustion engines from 200 to 500 hp.

NI-6, Controls for Industrial and Commercial Boilers. Require low excess air (LEA), low NO_x burners (LNB), flue gas recirculation (FGR), selective catalytic reduction (SCR), or selective noncatalytic reduction (SNCR) to obtain NO_x reductions from permitted commercial and industrial boilers which have heat input ratings of less than 100 million BTU/hr.

Assumed Technologies and Methods: This measure requires various combustion modifications (e.g., low excess air, low NO_x burners, staged air/fuel combustion and flue gas recirculation) and flue gas treatments (e.g., selective catalytic reduction and selective noncatalytic reduction) which have been discussed above.

NI-7, Selective Catalytic Reduction for Large Non-utility Boilers. Obtain NO_x reductions from existing large steam production, non-utility boilers by requiring selective catalytic reduction (SCR).

Assumed Technologies and Methods: Please see NI-1, above, for a discussion concerning SCR for utility boilers.

3.6.3 Areawide ROG Control Measures

Stationary source, areawide control measures designed to reduce ROG emissions (see Table 3.5-3) are summarized below:

RA-1, Consumer Products. Require reformulated products to be used in households or institutional and commercial establishments with less photochemically reactive formulations. (The ARB has adopted regulations to reduce ROG emissions from sixteen consumer products ranging from air fresheners to shaving creams to automotive windshield washer fluids).

Assumed Technologies and Methods: Some substitute manufacturing processes have been found (e.g., pump sprays replacing aerosol sprays), many of which will require future technological development and consumer acceptance.

RA-2, Small Utility and Lawn/Garden Equipment. Reduce exhaust emission standards for 1994 and subsequent model lawn and garden and utility engines. Replace engines intended for use in pre-1994 equipment with engines complying with the emission standards for 1994 beginning in 1999.

Assumed Technologies and Methods: For two-stroke engines, better maintenance and installation or more efficient carburetors may be necessary. For four-stroke engines, it will be necessary to install non-selective catalytic converters similar to the catalytic converters in automobiles.

RA-3, Commercial Charbroiling. Control emissions from commercial charbroiling operations. (Source category is composed of restaurants and eating establishments.)

Assumed Technologies and Methods: This measure will require installation of electrostatic precipitators (ESP) on grill exhaust stacks to control PM_{10} emissions. The incoming exhaust stream in an ESP system travels through an electrical field which separates particles. Collected fine particles are then washed down to collection hoppers

in a detergent and water mixture. In addition, this measure requires installation of a ROG control device (e.g., carbon adsorption units, thermal/catalytic incinerators, or absorption units).

RA-4, Architectural Coatings. Modify Rule 67.0, Architectural Coatings Rule, to require lower solvent content for previously exempt categories and require future reductions from currently controlled categories.

Assumed Technologies and Methods: Architectural and other surface coatings (e.g., paints, plastic coatings) result in ROG emissions. These emissions stem from the organic solvent portion of the coating. These coatings emit ROG as they are applied and while they dry. Low-ROG or water-based coatings currently are available that meet the limits set in the proposed control measure for the near term. Over time, more stringent limits on ROG emissions from coatings is required, and technological advancement will be required in order to meet these limits.

RA-5, Barbecue Grill Charcoal Ignition. Prohibit the sale of any material and/or method used to ignite barbecue charcoal unless the ROG emissions resulting from the ignition are less than or equal to 0.02 pound of ROG per start.

Assumed Technologies and Methods: Adoption of this control measure will likely result in greater use by the public of barbecues that use alternative fuels for ignition and/or operation (e.g., electricity, natural gas and propane).

RA-6, Deodorants and Antiperspirants. Require reformulation or substitution of underarm deodorants and antiperspirant products to reduce the quantity of organic solvent or aerosol propellant. (The ARB proposes to adopt State of California regulations limiting the ROG content of these products.)

Assumed Technologies and Methods: Non-ROG based technologies exist as substitutes for aerosol propellants (e.g., pump sprays). If these are not accepted by consumers, the market share in California will increase for low-emitting "roll-ons" and sticks.

RA-7, Marine Gasoline Refueling. Require use of a vacuum assist vapor recovery system to capture and process vapors displaced from vessel fuel tanks during gasoline dispensing.

Assumed Technologies and Methods: This control measure requires the application of existing technology. Vacuum-assisted vapor recovery systems that are currently in use at automobile gasoline stations are expected to work on most pleasure craft.

New Source Review (NSR). The purpose of this control measure is to reduce ROG and NO_x emissions in the county by lowering the District's current NSR threshold to a level as yet to be determined. The California Clean Air Act requires that severe nonattainment areas have a permit program to achieve no net increase in emissions from all permitted new or modified stationary sources. If the act is amended to exempt sources less than five tons per year from "no net increase" requirements and San Diego is eligible for this exemption, then NSR will be implemented with this exemption.

Assumed Technologies and Methods: This is a procedural measure, and subsequent emission offsets stemming from this rule will be site and project specific.

3.6.4 Areawide NO_x Control Measures

Stationary source, areawide control measures designed to reduce NO_x emissions (see Table 3.5-4) are summarized below:

NA-1, Low-NO_x Residential Water Heaters. Require that natural gas-fired water heating systems installed in all new residential multi- and single-family homes and replaced in existing homes meet a NO_x emission limit of 40 nanograms per joule.

Assumed Technologies and Methods: Low-NO_x water heaters meeting the above standard are currently available at modest price differentials from standard units.

NA-2, Low NO_x Central Furnace Heaters. Requires natural gas-fired low-NO_x central furnace heaters to be installed in all new residential multi- and single-family homes. Replacement units in existing units must meet a low-NO_x emission limit.

Assumed Technologies and Methods: Low-NO_x central furnaces meeting the above requirements are available at modest price differentials from standard units.

NA-3, Low NO_x Commercial Water Heaters. Require that natural gas-fired water heating systems installed in all new buildings and replaced in existing buildings meet a NO_x emission limit of 40 nanograms per joule.

Assumed Technologies and Methods: Similar to residential water heaters (NA-1, above), low emission water heaters meeting the above standard are currently available at modest price differentials from standard units.

3.6.5 Energy Conservation Measures

Stationary source energy conservation control measures designed to reduce NO_x emissions (see Table 3.5-5) are summarized below:

EC-1, Residential Solar Hot Water Heaters - New Homes. Require installation of solar equipment on natural gas-fired and electric water heating systems in all new residential multi- and single-family homes.

Assumed Technologies and Methods: Nonconcentrating solar collectors, such as flat plate solar panels, are capable of providing significant energy for residential water heating. The solar collectors, through a heat exchanger, heat water in excess of 140°F for storage in an insulated hot water tank maintained at a level sufficient to heat water for the home. This system can be enhanced to act as the hot water system for hot tubs/spas and swimming pools (see EC-2 and EC-3). Increased electricity consumption will be required for pumps, but substantial natural gas consumption will be saved.

EC-2, Swimming Pool Solar Water Heaters - New. Require installation of flat-plate solar collectors on all new heated swimming pools.

Assumed Technologies and Methods: Flat plate solar panels are capable of providing sufficient water heating capabilities. Please see discussion under EC-1, above.

EC-3, Hot Tub/Spas Solar Water Heaters - New. Require installation of solar equipment on all new residential hot tubs and spas.

Assumed Technologies and Methods: Solar energy could provide 52 percent of the energy needed to heat water for hot tubs/spas. A flat plate solar panel system, described in measure EC-1, above, is a likely system choice.

EC-4, Commercial Solar Hot Water Heaters - New Development. Require installation of solar equipment on natural gas-fired and electric water heating systems in all new commercial buildings.

Assumed Technologies and Methods: Nonconcentrating solar collectors, such as flat plate solar panels, are capable of providing significant energy for commercial water heating. Please see discussion in measure EC-1, above.

EC-5, Residential Solar Hot Water Heaters - Retrofit Existing Homes. Require solar equipment on natural gas-fired and electric water heating systems upon resale of multi- and single-family homes.

Assumed Technologies and Methods: Please see discussion of this measure for new homes (EC-1), above.

EC-6, Swimming Pool Solar Water Heaters - Retrofit. Require installation of flat-plate solar equipment to replace existing natural gas-fired pool heaters upon home resale.

Assumed Technologies and Methods: Please see discussion of this measure for new homes (EC-2), above.

EC-7, Hot Tub/Spas Solar Water Heaters - Retrofit. Require installation of solar equipment to replace existing residential natural gas-fired hot tub and spa heaters upon home resale.

Assumed Technologies and Methods: Please see discussion of this measure for new homes (EC-3), above.

3.7 Transportation Control Measures

This section summarizes transportation control measures designed to reduce CO, ROG and NO_x emissions (Table 3.5-6). As with stationary control measures, these summaries include the assumed control technologies or methods that will be adopted in compliance with each measure.

TC-1, Transportation Demand Management Program. This program will implement measures to reduce vehicle trips and miles traveled by increasing average vehicle occupancies. Components of the program are:

1. Employment Based Trip Reductions
2. Education Related Trip Reductions
3. Heavy Duty Truck Trip Reductions

Assumed Technologies and Methods: Many of these programs will require lifestyle changes resulting in high vehicle occupancy rates, staggered work schedules, and acceptance of alternative transportation mechanisms to the single occupant vehicle.

TC-2, Alternative Transportation Mode Capacity Expansion Program. This program supports the trip reduction program (TC-1) through the provision of alternatives to single-occupant motor vehicles. The program includes the following:

1. Expanded Transit
2. Park and Ride Facilities
3. High Occupancy Vehicle (HOV) Facilities
4. Bicycle and Pedestrian Facilities Program
5. Vanpools

Assumed Technologies and Methods: As with measure TC-1, above, many of these programs will require lifestyle changes and acceptance of alternative transportation mechanisms. These measures could mean increased construction activity in the county.

TC-3, Traffic Systems Management Program. This program provides for traffic flow improvements through the following proposed measures:

1. Transportation Control Improvements
2. Ramp Metering
3. Incident Management

Assumed Technologies and Methods: This measure will result in less congestion. No other effects on the public seem probable.

TC-4, Land Use. This program supports the trip reduction program (TC-1) by altering land usage to make pedestrian and transit travel more convenient. Components of the program are:

1. Job-Housing Balance
2. Mixed Use Development
3. Transit Corridor Development

Assumed Technologies and Methods: This measure will result in less congestion. No other adverse environmental effects seem probable.

3.8 Indirect Source Review

The purpose of this control measure is to reduce ROG and NO_x emissions by requiring that new indirect sources mitigate their air quality impacts. Indirect sources are land uses and facilities that do not by themselves produce significant amounts of pollutants, but which generate or attract motor vehicle traffic whose emissions adversely affect air quality. Examples of indirect sources are residential developments, office complexes, and shopping centers. To respond to the California Clean Air Act, the District will begin development of the indirect source review program in consultation with its contractor in early 1992. The cities and the County in this region will prepare air quality programs or elements for their respective general plans, incorporating features of the indirect source review program. These additions to local general plans are important because they represent the integration of air quality considerations into development policies and requirements. The general plan programs/elements will identify policies and design requirements for new development that will improve accessibility for pedestrians, transit, and bicycles. These policies and design criteria should make it at least as easy to travel by walking or other modes as by car.

Assumed Technologies and Methods: Many of these effects will be site and project specific. One thing seems clear; these programs are likely to result in increased construction in the area.

3.9 Clean Fuels

The California Clean Air Act requires a program to achieve the use of a significant number of low emission motor vehicles in fleets. The ARB has not provided guidance regarding certain aspects of the requirement. In addition, the APCD is currently participating in a multi-client study of an integrated alternative transportation and fuel technologies assessment. Based on the results of this study, the APCD will recommend a proposed program in mid 1992. The proposal will be subject to public review before final adoption. Because this program has not been developed, an environmental assessment is not possible. Accordingly, a clean fuels program is not included in this environmental assessment.

Subsequent to California Clean Air Act adoption, the Air Resources Board adopted the low emission vehicle (LEV) program, requiring low emission vehicles in general commerce, and not limited to fleets. Concurrent with the LEV program, ARB adopted the Clean Fuels Program, requiring that major gasoline companies supply clean fuels for low emission vehicles. The District is requesting extending the early requirements for clean fuels to San Diego by including its provision in the strategy.

The District will be reviewing the results of the multiclient study and proposing an appropriate fleet program in late 1992.

3.10 Project Alternatives

Two alternatives to the project are considered. The first is the no-project alternative. This alternative assumes that no new or revised measure in the 1991 RAQS is approved, but that all existing regulations continue to be enforced. This alternative allows for a comparison of impacts of the proposed RAQS with the existing conditions.

The second alternative considered is the "less stringent" alternative. The following three areas differentiate this alternative from the project:

Elimination of Selective Catalytic Reduction (SCR): As discussed earlier, SCR requires the storage of quantities of ammonia, a highly volatile compound. This alternative assumes that, because of the hazards to public safety from ammonia storage, all relevant control measures are changed so as to avoid SCR as an adopted technology. Instead, technologies are adopted that are safer but, albeit, less efficient in reducing NO_x emissions.

Assumed Technologies and Methods: Likely alternative technologies to replace SCR are: urea injection (UI), combustion modifications (low-NO_x burners (LNB), flue gas recirculation (FGR), LNB and FGR combined, or use of methanol as an alternative fuel.

UI reduces NO_x emissions by injecting urea around and between the super heater and reheater piping at the top of a boiler. In the chemical reaction that takes place at a temperature between 871°C and 1038°C, urea breaks down into ammonia and carbon monoxide which then reduces NO_x into nitrogen and water. Either moderate or substantial boiler modifications may be required to accommodate UI, depending on individual applications. Also, piping, injection, and monitoring equipment needs to be installed in addition to urea storage equipment. UI can achieve as much as a 70 percent reduction in NO_x.

There are several possible combustion modifications. LNBs provide controlled air and fuel mixing and control the proportion of air to fuel necessary for optimum combustion by controlling the direction and quantity of fuel and air streams at the burner throat. Control efficiencies range from 30 to 60 percent. In FGR applications, combustion products from the exhaust stack, which contain NO_x, are mixed with the incoming combustion air prior to combustion of the fuel. The recirculated combustion products act as a heat sink to lower the peak flame temperature which results in reductions in

thermal NO_x formation but negligible reductions of fuel NO_x formation. This technology can achieve between 30 to 35 percent efficiency in removing NO_x. A combination of LNB and FGR can result in a 60 percent control efficiency. A combination of FGR, LNB and UI can achieve efficiencies in excess of 85 percent.

Adopt an Employee Trip Reduction Plan Less Stringent Than the San Diego Association of Governments (SANDAG) TCM Plan: Formulate a less stringent employee trip reduction plan which will be easier for local employers to meet. This will result in a smaller number of riders per vehicle that will, in turn, result in lower reductions in CO, ROG and NO_x emissions.

Assumed Technologies and Methods: More vehicle trips as compared to the project and, therefore, more congestion can be expected for this alternative as compared to the project.

Drop Energy Conservation Measures for Existing Homes: Because costs to retrofit homes and equipment to comply with several conservation control measures could be high, these measures are eliminated in this alternative.

Assumed Technologies and Methods: This would reduce costs to the public to retrofit their home heating and water heating systems.

4.0 ENVIRONMENTAL SETTING

4.1 Earth

4.1.1 Geographical Setting

San Diego County is bounded on the north by Orange and Riverside Counties, on the east by Imperial County, on the west by the Pacific Ocean, and on the south by the Mexican State of Baja California. A map of the area is shown in Figure 4.1-1. The county is divided by the Laguna Mountain Range which runs approximately parallel to the coast about 45 miles inland and separates the coastal area from the desert portion of the county. The Laguna Mountains reach peaks of over 6,000 feet with Cuyamaca Peak rising to 6515 feet, the highest point in the county. The coastal region is made up of coastal terraces that rise from the ocean into wide mesas which then, moving farther east, change into the Laguna Foothills. Farther east, the topography gradually rises to the rugged mountains. On the east side, the mountains drop off rapidly to the Anza-Borrego Desert which is characterized by several broken mountain ranges with the desert valleys in between. To the north of the county are the Santa Ana Mountains which run along the coast of Orange County turning east to join with the Laguna Mountains near the San Diego-Orange County border.

The county is comprised of three distinctive geographic provinces. These provinces from west to east are the Coastal Plain, Interior Upland of Ranges and Valleys (Peninsular Range Province), and the Salton (Imperial) Basin. Each province has a particular association of climate, topography, flora and fauna, and geologic setting. Within each province there are geologic features which are not only different from those found in the other provinces but are unique to their own province.

4.1.2 Seismic Activity

For seismic considerations, the San Diego region extends approximately 60 miles beyond the County boundaries. San Diego County lies within a zone of high earthquake activity. The continental shelf off the coast is broken by numerous faults. The evidence for these faults is based on bathymetry, and a limited number of recorded epicenters. It appears that the extreme western portion of the coastal plain is actually a part of this faulted continental borderland that lies within a regional system of northwest trending faults exhibiting a complex pattern of vertical and lateral separation.

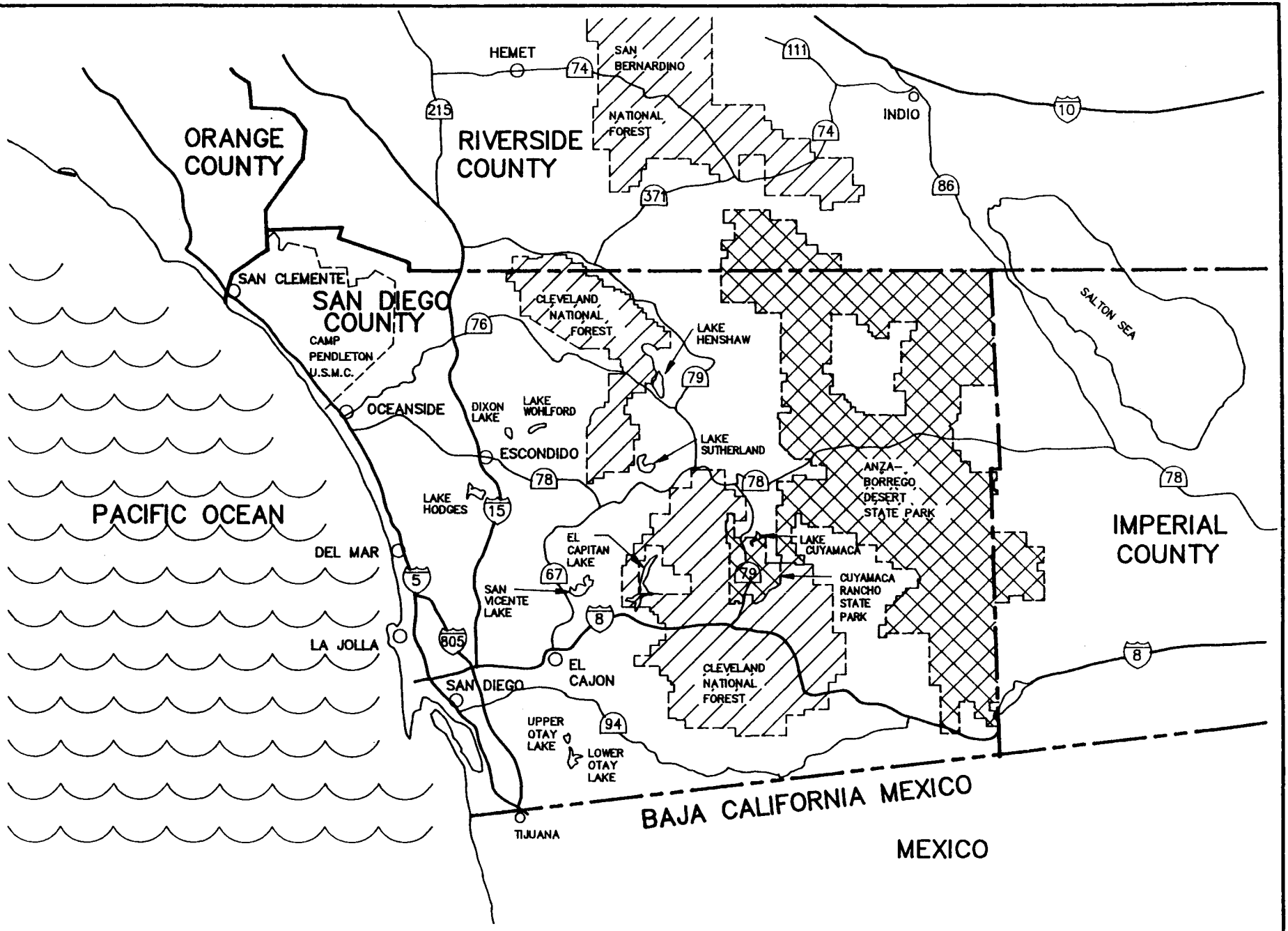


Figure 4.1–1. San Diego County

There seems to be a more localized group of related faults extending from San Ysidro, through San Diego and Mission Bays, and Rose Canyon. Although evidence that these faults have been recently active is not readily apparent, the possibility of movement is being studied by the California Division of Mines and Geology.

It has been suggested that the faults in Rose Canyon and the bay areas continue north and off-shore to connect the Newport-Inglewood Fault which was responsible for the 1933 Long Beach earthquake. This system may also be related to the active San Miguel Fault in Baja California (San Diego County, 1975).

Discussion of Individual Faults

- The Elsinore Fault is the largest, known active fault in San Diego County. It is approximately 135 miles long. The area of most probable activity is between Lake Elsinore and Vallecito Valley, a distance of about sixty miles.

- The San Jacinto Fault is the most active, large fault within San Diego County. It extends for 125 miles from the Imperial Valley to San Bernardino.

- The San Andreas Fault is outside the County but presents a hazard to the San Diego region. It extends for 650 miles from Baja California to the coast north of San Francisco. In Southern California, the San Andreas extends from San Bernardino through the Whitewater Pass and along the east side of the Coachella and Imperial Valleys. Major damaging earthquakes are likely to originate on the southern segment of the San Andreas. The closest inhabited portion of San Diego County is 30 miles away and the coastal area is 85 miles.

- The Rose Canyon Fault extends from La Jolla Cove, south through Rose Canyon, and along the east side of Mission Bay. Recent investigation indicates that there is considerable faulting in San Diego Bay associated with the Rose Canyon Fault which is apparently also continuous offshore to the north.

- The Sweetwater and La Nacion Faults are 4 to 6 miles inland from and parallel to the Rose Canyon Fault and San Diego Bay. Presumably, they are related to the fault system which created the depression now occupied by San Diego Bay and Mission Bay. The Sweetwater and La Nacion Faults do not appear to have been active in recent time.

- Offshore faulting is extensive along the coast of Southern California and Baja California. The bathymetric (sea floor topography) map shows numerous basins and ridges with steep slopes. This topography and some epicenter data indicates that the offshore area is extensively faulted. The San Clemente Fault, 40 miles off La Jolla is the largest offshore fault.

4.2 Air Quality

4.2.1 Meteorology/Climate

The climate of the San Diego Air Basin, as with all of Southern California, is largely dominated by the strength and position of the semi-permanent high pressure system over the Pacific Ocean. The high pressure ridge over the West Coast creates a repetitive pattern of frequent early morning cloudiness, hazy afternoon sunshine, daytime onshore breezes and little temperature change throughout the year. Limited rainfall occurs in winter when the oceanic high pressure center is at its weakest and at its farthest point south and as the fringes of mid-latitude storms occasionally move through the area. Summers are often completely dry with an average of 10 inches of rain falling each year from November to early April. Unfortunately, the same atmospheric conditions that create a desirable living climate combine to limit the ability of the atmosphere to disperse the air pollution generated by the large population attracted to San Diego County.

Onshore winds across the coastline diminish quickly when they reach the foothill communities east of the City of San Diego, and the sinking air within the offshore high pressure system forms a massive temperature inversion that traps all air pollutants near the ground. The resulting horizontal and vertical stagnation, in conjunction with ample sunshine, cause a number of pollutants to undergo photochemical reactions and form smog. Because coastal areas are ventilated by fresh breezes during the daytime, they generally do not experience the same frequency of air pollution found in some areas east of the City of San Diego. Unhealthful air quality within the San Diego Air Basin's coastal communities may occur at times in summer during limited localized stagnation, but occurs mainly in conjunction with the occasional intrusion of polluted air from the Los Angeles Basin into the county, especially North County. Elevated pollution levels may also occur in winter during calm, stable conditions near freeways, shopping centers, or other major traffic sources, but such clean air violations are highly localized in space and time. Except for this occasional interbasin transport and possible localized air pollution "hot spots," coastal community air quality is generally quite good.

In summer, moderate breezes of 8 to 12 miles per hour blow inshore by day, and may continue all night (as a light inshore breeze) since the land remains warmer than the ocean. In winter, the inshore flow is weaker, and reverses in the evening as the land becomes cooler than the ocean. Daytime winds across San Diego County are mainly off the ocean from the west-northwest, while nocturnal winds are mainly from the east-northeast. The daytime inshore and nocturnal offshore flow is further focused by local topography which steers winds along the valley axis. The net effect of the regional wind pattern is that daytime air pollutant emissions typically are carried rapidly away from the source and well dispersed.

Both the onshore flow of marine air and the nocturnal drainage winds across the basin are accompanied by two characteristic temperature inversion conditions that further control the rate of air pollution dispersal throughout the region. The daytime cool inshore flow is capped by a deep layer of warm, sinking air. Along the coastline, the marine air layer beneath the inversion cap is deep enough to accommodate any locally generated emissions. However, as the layer moves inland, pollution sources add pollutants from below without any dilution from above. When this progressively polluted layer approaches foothill communities east of coastal developments, it becomes shallower and exposes residents in those areas to the concentrated reacted byproducts of coastal area sources. The slow drainage or stagnation of cool air at night creates localized cold pools while the air above the surface remains warm. Such radiation inversions occur throughout the County, but are strongest within low, channelized river valleys. They may trap vehicular exhaust pollutant such as nitrogen oxides (NOx) near their source until thee inversions are destroyed by surface warming the next morning.

4.2.2 Air Quality Standards

Ambient air quality is given in terms of state and federal standards adopted to protect public health with a margin of safety. In addition to ambient standards, California has adopted episode criteria for oxidants, carbon monoxide, sulfur dioxide, nitrogen dioxide, and particulate matter. The episode levels represent short-term exposures at which public health is threatened. Levels greater than those specified in the California Ambient Air Quality Standard (CAAQS) are called "exceedances."

Table 4.2-1 lists the California and Federal Ambient Air Quality Standards for criteria pollutants. San Diego County currently exceeds the state and federal ambient 1-hour air quality standards for ozone (0.09 and 0.12 parts per million, respectively). A violation of the federal ozone standard occurs if the maximum hourly concentration exceeds the health-based standard of 0.12 parts per million (ppm) at any monitoring station on more than 3 days

TABLE 4.2-1

California and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a,e]	National Standards	
			Primary [b,c,d]	Secondary [b,c,e]
Ozone	1-hour	0.09 ppm (180 $\mu g/m^3$)	235 $\mu g/m^3$ (0.12 ppm)	Same
Carbon Monoxide	8-hour	9 ppm (10 mg/m^3)	10 mg/m^3 (9 ppm)	Same
	1-hour	20 ppm (23 mg/m^3)	40 mg/m^3 (35 ppm)	Same
Nitrogen Dioxide	Annual Average	—	100 $\mu g/m^3$ (0.05 ppm)	Same
	1-hour	0.25 ppm (470 $\mu g/m^3$)	—	—
Sulfur Dioxide	Annual Average	—	80 $\mu g/m^3$ (0.03 ppm)	—
	24-hour	0.05 ppm (131 $\mu g/m^3$)	365 $\mu g/m^3$ (0.14 ppm)	—
	3-hour	—	—	1,300 $\mu g/m^3$ (0.5 ppm)
	1-hour	0.25 ppm (655 $\mu g/m^3$)	—	—
Suspended Particulate Matter [f]	Annual Geometric Mean	—	75 $\mu g/m^3$	60 $\mu g/m^3$
	24-hour	—	260 $\mu g/m^3$	150 $\mu g/m^3$
PM-10	Annual	30 $\mu g/m^3$	50 $\mu g/m^3$	Same
	24-hour	50 $\mu g/m^3$	150 $\mu g/m^3$	Same
Sulfates	24-hour	25 $\mu g/m^3$	—	—
Lead	30-day	1.5 $\mu g/m^3$	—	—
	Quarterly	—	1.5 $\mu g/m^3$	Same
Hydrogen Sulfide	1-hour	0.03 ppm (42 $\mu g/m^3$)	—	—
Vinyl Chloride	24-hour	0.010 ppm (26 $\mu g/m^3$)	—	—
Visibility [g]	1 obeservation	Insufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70 percent.		

a California standards are values that must not be exceeded. The carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide, and particulate matter (PM_{10}) standards are not to be exceeded.

b National standards, other than ozone and those based on annual averages or annual geometric means, are not to be exceeded more than once per year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

d National Primary Standards: The levels of air quality necessary with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after the state's implementation plan is approved by the EPA.

e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

f PM_{10} is replacing total suspended particulates (TSP) as the particulate matter indicator.

g Visibility is a State standard.

in any consecutive 3-year period. In other words, an average of only one exceedance of the federal ozone standard per year is allowed. Nonattainment of state ozone standards occurs if there is an exceedance of the CAAQS (0.09 ppm) in the most recent 3 years. Table 4.2-2 shows the number of days exceeding the state and federal ozone standards for the years 1985 through 1989. As a result of this continuing violation of the federal ambient air quality standard for ozone, the San Diego County has been classified as a non-attainment area for ozone by the U.S. Environmental Protection Agency (EPA). The ARB has classified all of San Diego County as nonattainment for the state ozone standard.

The County also exceeds the state and federal annual air quality standards for particulates less than 10 microns in diameter (PM_{10}) and, as a result, is classified as a non-attainment area by both the EPA and ARB. Table 4.2-3 shows the number of days exceeding the annual standards for years 1985 through 1989.

The coastal areas of the County also exceed the federal and state air quality standards for nitrogen dioxide (NO_2) and carbon monoxide (CO). Table 4.2-4 shows the number of days exceeding the 1-hour average standards for NO_2 and Table 4.2-5 shows the number of days exceeding the 8-hour average standards.

4.2.3 Baseline Sources and Conditions

4.2.3.1 Ozone

Ozone, the major constituent of smog, is formed through a complex series of chemical reactions and transformations in the presence of sunlight. Reactive organic gases (ROG) and NO_x are the principal constituents in these reactions. Motor vehicles, electric generating stations, and organic solvents are the major sources of ROG and NO_x in San Diego County.

According to the APCD, ozone is the air pollutant of greatest concern in San Diego County.

4.2.3.2 Particulate Matter (PM_{10})

Particulate matter consists of particles in the atmosphere resulting from many kinds of industrial and agricultural operations, motor vehicle tires, combustion, and atmospheric photochemical reactions. Natural activities also put particulates into the atmosphere; wind-raised dust and ocean spray are two such sources of particulates. A large portion of the particulate suspended in the atmosphere is fine than 10 microns (PM_{10}). These small particulates cause the greatest health risk.

TABLE 4.2-2

Ozone
Number of Days Exceeding Federal and State Standards
San Diego County
1985-1989

STATION	NUMBER OF DAYS EXCEEDING FEDERAL ONE HOUR STANDARD CONCENTRATION > 12 pphm					NUMBER OF DAYS EXCEEDING STATE ONE HOUR STANDARD CONCENTRATION >9 pphm					MAXIMUM ONE HOUR CONCENTRATION (pphm)					DATE OF MAXIMUM CONCENTRATION				
	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85
El Cajon	5	8	2	3	9	38	43	24	55	54	21	19	14	14	18	3/31	8/25	10/1	4/21	8/30
Chula Vista	7	4	2	2	4	21	17	15	20	28	16	22	16	14	20	9/14	9/3	11/8	8/19	10/5
Escondido	9	7	6	2	12	40	39	27	12	43	19	18	17	13	17	3/31	10/9	9/30	5/18	7/8
Alpine	38	34	25	27	33	137	137	105	92	128	20	19	17	16	22	3/31	8/25	9/2	9/4	8/29
Downtown S D	9	2	1	2	5	22	9	8	12	23	18	18	14	16	16	9/14	9/3	11/8	8/19	7/2
Oceanside	8	7	7	10	15	21	22	19	31	36	19	25	18	19	18	9/14	3/26	10/3	3/27	4/13
Kearny Mesa	9	7	5	7	14	31	24	22	27	48	23	22	17	15	22	3/31	9/3	9/1	5/17	4/13
Del Mar	16	9	11	13	12	36	30	27	43	48	25	18	29	19	18	9/14	3/26	10/3	4/20	6/6
Basinwide	55	45	40	46	50	158	160	128	131	148	25	25	29	19	22	9/14	3/26	10/3	3/27	4/13

TABLE 4.2-3

Particulate Matter (PM10)
San Diego County
1985-1989

STATION	ANNUAL ARITHMETIC MEAN FEDERAL STANDARD 50µg/m3					ANNUAL GEOMETRIC MEAN STATE STANDARD 30 µg/m3					MAXIMUM 24-HR SAMPLE (µg/m3) FEDERAL STANDARD 150 STATE STANDARD 50					DATE OF MAXIMUM				
	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85
El Cajon	45	40	38	40	*	41	37	35	38	*	90	80	94	74	*	12/18	12/5	12/11	10/29	*
Chula Vista	37	32	31	34	*	34	30	28	32	*	69	58	68	104	*	12/21	12/5	1/27	12/4	*
Oceanside	38	36	33	34	35	35	32	30	32	34	89	81	69	74	53	2/21	1/10	10/3	12/4	12/27

* Sampling started in 1986

TABLE 4.2-4

Nitrogen Dioxide
Number of Days and Hours Exceeding State Standard
San Diego County
1985-1989

STATION	NUMBER OF DAYS EXCEEDING STATE 1 HOUR AVG STANDARD CONCENTRATION > 25 pphm					NUMBER OF HOURS EXCEEDING STATE 1 HOUR STANDARD CONCENTRATION > 25 pphm					MAXIMUM ONE HOUR CONCENTRATION (pphm)					DATE OF MAXIMUM CONCENTRATION				
	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85
El Cajon	0	0	0	0	0	0	0	0	0	0	18	16	15	22	17	1/18	12/2	1/27	1/13	12/20
Chula Vista	0	0	0	0	0	0	0	0	0	0	16	21	15	14	16	11/15	2/9	12/10	1/18	12/23
Escondido	0	0	0	0	0	0	0	0	0	0	19	19	16	13	14	11/8	2/9	1/22	1/10	1/17
Downtown S D	0	1	0	0	0	0	1	0	0	0	22	28	22	18	21	11/15	1/26	10/3	3/21	2/15
Oceanside	0	0	1	0	0	0	0	3	0	0	23	19	26	21	19	11/15	2/9	1/26	1/18	12/28
Kearny Mesa	0	0	0	0	0	0	0	0	0	0	18	17	19	14	14	11/15	2/9	11/24	1/25	1/17
Alpine	0	0	0	0	0	0	0	0	0	0	11	12	17	10	12	12/15	12/13	1/27	12/3	12/20

TABLE 4.2-5

Carbon Monoxide
Number of Days Exceeding Federal and State Standards
San Diego County
1985-1989

STATION	NUMBER OF DAYS EXCEEDING FEDERAL 8 HOUR AVG STANDARD CONCENTRATION > 9 ppm					NUMBER OF DAYS EXCEEDING STATE 8 HOUR AVG STANDARD CONCENTRATION > 9.0 ppm					MAXIMUM EIGHT HOUR AVG CONCENTRATION (ppm)					DATE OF MAXIMUM EIGHT HOUR AVG CONCENTRATION				
	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85	89	88	87	86	85
El Cajon	0	0	0	0	0	0	0	0	0	0	6.3	6.3	6.6	7.4	7.0	1/10	1/4	12/11	12/4	12/24
Chula Vista	0	0	0	0	0	0	0	0	0	0	4.4	3.6	3.4	5.1	3.9	1/20	12/5	2/5	12/4	12/3
Escondido	4	0	0	0	1	5	1	1	1	1	10.0	9.3	9.3	9.4	9.8	12/22	12/1	12/10	1/11	12/18
Downtown S.D.	0	0	0	0	0	0	1	0	0	1	9.0	9.3	9.4	9.0	9.4	11/15	11/29	12/10	1/11	11/1
Oceanside	0	0	0	0	0	0	0	0	0	0	4.1	4.5	4.3	4.4	4.4	1/18	2/9	12/3	1/11	12/24
Kearny Mesa	0	0	0	0	0	0	0	0	0	0	4.8	3.4	4.0	4.8	3.3	11/15	11/29	12/11	12/4	12/21
Curbside	2	2	0	1	2	2	2	1	1	2	10.5	9.8	9.3	10.4	13.0	1/20	11/29	12/10	1/10	12/20

4.2.3.3 Oxides of Nitrogen (NO_x)

Of the number of NO_x compounds, only two play an important role in air pollution: nitric oxide (NO), a colorless, odorless gas; and nitrogen dioxide (NO_2), a reddish-brown irritating gas. NO_x plays a critical role in the photochemical reaction that produces ozone. High temperature combustion causes nitrogen and oxygen to combine and form NO and NO_2. Further reaction produces additional NO_x. Combustion in motor vehicle engines, generating stations, refineries, and other industrial operations is the primary source of NO_x in San Diego County. Overall, motor vehicles account for the largest source of emissions, approximately 60 percent of NO_x and hydrocarbon emissions in San Diego County (SDAPCD, 1989).

4.2.3.4 Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon-containing substances. CO concentrations are generally higher in the winter months during morning hours, when vertical mixing of the atmosphere is limited. Motor vehicles are the primary source of CO in San Diego County. Combustion processes from various industrial sources also produce significant amounts of CO.

4.2.3.5 Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, pungent, irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. In humid conditions, some of the SO_2 may be changed to sulfur trioxide and sulfuric acid mist, with some of the latter eventually reacting with other materials to produce sulfate particulates. Electric utility generating stations and motor vehicles account for the majority of the SO_2 emissions in the County.

4.2.3.6 Hydrocarbons/Reactive Organic Gases (ROG)

Any of the vast family of compounds consisting of hydrogen and carbon in various combinations are known as hydrocarbons, including fossil fuels. Many hydrocarbon compounds are photochemically reactive and play an important role in ozone formation. These hydrocarbons are often referred to as reactive organic gases (ROGs) and are roughly equivalent to nonmethane hydrocarbons. Motor vehicles, organic solvents, petroleum recovery operations, pesticides and herbicides, and organic solvents are all major sources of hydrocarbons in San Diego County.

4.2.4 Transport From The South Coast Air Basin

Exceedances of the ozone standard are not all attributable to pollution generated in San Diego. Many are the result of pollution generated in the South Coast Air Basin (SCAB) and transported to San Diego by meteorological influences. Pollutants blown to San Diego County from the Los Angeles Basin accounted for approximately 75 percent of the days exceeding the federal standard for ozone in 1990 (San Diego Air Pollution Control District, 1990.)

4.3 Water Resources

The combination of reduced local water resources and a marked population increase has made the County of San Diego almost entirely dependent upon imported water. Only 28 percent of the County land area, but 96 percent of the population, is served by imported water.

According to the San Diego County Water Authority (SDCWA), water requirements for the County are expected to increase from approximately 350,000 acre-feet in 1974 to 420,000 acre-feet in the year 2000.

4.3.1 Groundwater/Surface Water

Until 1947, when the first San Diego aqueduct was constructed, domestic, industrial, and agricultural water supplies were totally dependent on local groundwater and surface water. Currently, about 50,000 acre-feet of local water supplements the imported water. In addition, all of the desert and mountain areas, and much of the foothill regions, have no water supply other than locally derived water. In those areas groundwater is the major water resource, as most surface water is too variable to be a reliable water source and rights to this water are held by local water agencies.

Water-bearing rock that will yield groundwater in usable quantity to wells and springs is referred to as an aquifer. In San Diego County there are three principal aquifer types:

- Clay, sand and gravel deposits which fill many river valleys, mountain meadows and desert areas;
- Fractured and weathered crystalline rocks in the mountains and foothills; and
- Consolidated sedimentary rocks (Tertiary age) of the coastal plain and desert regions.

The water table is generally less than 50 feet below the ground surface and approximately follows the surface topography. Groundwater movement through the aquifer is slow, generally ranging from a few inches to tens of feet per year. Under natural conditions, long-term discharge (springs, seeps, stream flow) will equal long-term recharge.

Groundwater mining occurs when withdrawals are made from an aquifer at rates which exceed net recharge. The problem becomes serious when this practice continues over a period of time. Groundwater mining may result in water table declines, increased pumping cost, salt water intrusion, land subsidence, and loss of storage capacity in the aquifer. Mining may occur in aquifer systems having ample recharge, as well as those having negligible recharge.

Recent studies and case histories indicate that the total groundwater resources in the eastern portions of the County are less than previously estimated. The increased use of water and drought have lowered water tables and, in some instances, have reduced the discharge of wells and springs.

4.3.2 Imported Water

The SDCWA purchases about 350,000 acre-feet annually of imported water. Water is conveyed by four parallel aqueducts and stored in reservoirs in the foothills of the coastal plain. Distribution systems for this imported water are presently located only in the western portions of San Diego County. Water is transported through four pipelines to the western third of the County. It is distributed to 96 percent of the County's population by the SDCWA through its 22-member agencies. There are no known active plans for introducing imported water to the eastern portion of the County, although there are no governmental policies to restrict the construction of an aqueduct in this area.

Agricultural water use amounts to 22 percent of the total 350,000 acre-feet of water produced by the SDCWA agencies in 1973. In the past several years, this percentage has steadily decreased, although the number of acre-feet has been increasing. This trend is expected to continue as population grows.

San Diego County's imported water is supplied from the Colorado River.

However, the amount of Colorado River water available to San Diego County will decrease in the future. As a result of the United States Supreme Court decision (Arizona vs. California), California will be subject to the loss of nearly half of its current supply of Colorado River

water. As a result of this loss, Southern California's contract for Northern California water has been significantly increased by the state.

The overall quality of Colorado River water has been deteriorating over the last several years. The traditional problems of high concentrations of total dissolved solids and hardness have been compounded by other problems:

- Increased recreational use of the watershed upstream of the diversion point of Parker Dam has increased salinity.
- Periodic cleaning of the main aqueduct by the Metropolitan Water District increases the turbidity of water transmitted to San Diego.
- Agricultural irrigation in the Upper Colorado River Basin has increased the salinity of the river.
- From the early 1950's, the construction of new reservoirs in the Upper Colorado River Basin, additional water diverted into the watershed, and irrigation return flows have gradually increased salinity levels of the River.

Water from Northern California is of generally better quality than Colorado River water. With respect to hardness and total dissolved solids; however, it will be poorer from a physical and sanitary standpoint. The State Department of Public Health is requiring complete treatment of water from Northern California before it may be used for domestic purposes. The state also has required since 1989, complete treatment of Colorado River water.

4.4 Biological Resources

San Diego County has a variety of biological habitats, each unique by virtue of its composition and geographic distribution. Table 4.4-1 summarizes the habitat acreage in San Diego County for 1963, as defined by the County General Plan, Conservation Element, and the California Fish and Game Plan.

A number of San Diego County areas have been identified as vegetation and wildlife habitats of national and statewide importance. In addition, habitats within the County support a number of species of wildlife considered by the California Department of Fish and Game, the United States Wildlife Service, and other conservation experts to be endangered, rare or threatened.

TABLE 4.4-1

Habitat Acreage in San Diego County

Habitats	1963 Acreage	Percentage of County Total
Chaparral	1,121,580	41.2
Low Desert	645,780	13.7
Coast Sagebrush	364,365	13.4
Grassland	165,388	6.1
Urban-Industrial	122,275	4.5
Woodland-Grass	85,625	3.1
Agriculture	58,147	2.1
Pine-Fir-Chaparral	55,290	2.0
Juniper-Pinyon	35,165	1.3
Lakes, Bays, Reservoirs	32,795	1.2
Woodland-Chaparral	15,570	0.6
Barren	10,950	0.4
Inland Sagebrush	5,190	0.2
Riparian (Streamside)	5,000	0.2
Marsh	1,000	Trace
Seasonal Marsh	1,000	Trace

The California Native Plant Society (CNPS) has identified 79 species of plants considered endangered or potentially endangered within San Diego County. The CNPS has identified a total of 169 endangered species in the state of California (Conservation Element 1990).

4.5 Noise

Noise is often used to mean "sound that is unwanted by the listener" because it is unpleasant. Its effects on humans can range from annoyance and interference with various activities to hearing loss and stress-related health problems. Annoyance and feelings of dissatisfaction are typical subjective responses which may occur with very low and relatively infrequent noise levels. In addition, infrequent noise can prevent or interrupt sleep, interfere with speech, and contribute to fatigue and reduced work performance. Noise can also create psychological stress which may be manifest physiologically by increased blood pressure, muscle tension, and cardiovascular problems, and by emotional problems and antisocial

behavior. Irritation from noise is caused by the actual intensity of the sound itself and the persistence of that loudness. Noise intensity is commonly measured in decibels (dB).

Sources of environmental noise within San Diego County include:

- Roadway traffic
- Passenger and freight online railroad operations and ground rapid transit systems
- General aviation and military operation, and all other round facilities and maintenance functions related to airport operation
- Industrial and manufacturing plants
- Other ground or stationary noise sources identified by local agencies as contributing to the community noise environment

Specific regulations have been adopted that control the excessive generation of noise. The U.S. Department of Housing and Urban Development (HUD) has an upper level (65 dB) for acceptable exterior residential noise for those projects funded by HUD. This level is not to be exceeded for more than 8 hours per day. In addition, the Federal Highway Administration (FHWA) has set design goals for federally funded highway projects. The American Public Transit Association has proposed guidelines for maximum noise exposure to transit facilities similar to the FHWA and EPA criteria.

The San Diego County General Plan includes a Noise Element mandated by Section 65302 of the State Government Code. This element describes noise conditions and include planning guidelines for determining land use compatibility with community noise levels. Ordinances to control noise generators in these jurisdictions have been established. In addition, the State Vehicle Code (Sections 27200-27207) sets limits for noise emissions from motor vehicles and provides for reductions in noise emission limits for vehicles manufactured after specified dates.

4.6 Light and Glare

Glare in San Diego County is, for the most part, a result of the human-built environment as it reflects natural and man-made light sources. Man-made light and glare are primarily visible at night in the County, but glare is also perceived during daylight hours as reflections from

structures and vehicles. The continuous urban nature of the communities in the County results in the combination of individual sources of light and glare that creates a continuous, unbroken perception of light from great distances.

4.7 Land Use

San Diego County comprises approximately 4,261 square miles of land. Within this area the County Assessor has established eight basic land use designations: residential, commercial, industrial, institutional, recreational, vacant urban, rural (non-irrigated), and irrigated farm. Table 4.7-1 contains the percentage distribution of acreage by land use category for parcels one-half acre or more, comparing 1982 and 1990. The continuing urbanization of the County is evident in the increased share of acreage devoted to urban uses. Combined acreage in residential, commercial and industrial uses increased from 5.2 percent of the total in 1982 to 6.8 percent in 1990 (San Diego Department of Planning and Land Use, 1990).

TABLE 4.7-1

Percentage of Acreage by Land Use Category
(for parcels of ½ acre or more)
San Diego County

Land Use	1982	1990
Residential	4.6	5.9
Commercial	0.3	0.5
Industrial	0.3	0.4
Institutional	55.6	56.6
Recreational	0.4	0.4
Vacant Urban	4.2	4.8
Rural (Non-Irrigated)	30.4	27.6
Irrigated Farm	4.2	3.8
TOTAL	100.0	100.0

4.8 Natural Resources

The geology and/or climate of an area over time may create natural resources used by man. The principal natural resources located in San Diego County and identified in the County General Plan Conservation Element are mineral resources. Some of these, such as sand, gravel, and dimension stone, are essential to the construction industry and the region's economy. Other minerals occur in such limited amounts that they are of minor value.

Geologic factors determine the type, location, size, and concentration of all mineral resources. There is a direct association between specific types of mineral deposits and the host rock which contains those deposits. For example, in San Diego County, gold and tungsten occur mainly in metamorphic rocks, while concrete quality sand is found in the floodplains of the major river valleys.

In San Diego County there are four general rock forms:

- Most of the mountainous terrain in the eastern portion of the County is underlain with Cretaceous Are granitic rocks, including diorites, gabbros and quartz diorites.

- Mesozoic Age metamorphic rocks, such as schist, gneiss, and marble crop out in the western foothills as elongated bands within the granitic rocks and in the desert east of the mountains.

- The coastal or western portion of the County is covered with essentially Tertiary Age flat-lying, consolidated sedimentary rocks. Sandstone, conglomerate and mudstone are the principal rock types. Tertiary Age consolidated sedimentary rocks, which have undergone extensive folding and faulting, crop out in portions of the desert basin in the eastern portion of the County.

- Strips and patches of recent alluvium, including sand, gravel, silt, and clay are found in the river and stream valleys, around the lagoons, in the intermountain valleys, and in the desert basins.

The County has an exceptionally wide variety of mineral deposits. The Conservation Element indicated approximately 425 mines, claims, and claim groups have been located. Of these, 203 are metals, and 222 are nonmetals. These minerals and the number of deposits recorded in the Conservation Element are identified in Table 4.8-1.

TABLE 4.8-1

Conservation Element - Minerals

Metals	No. of Deposits	Non-Metals	No. of Deposits
Copper	7	Clay	21
Gold	130	Feldspar	23
Iron	4	Gems	29
Lead	2	Graphite	3
Manganese	19	Gypsum	2
Molybdenum	6	Limestone and Dolomite	15
Tungsten	26	Magnesium	1
Uranium and Thorium	5	Obicular gabbro	15
Miscellaneous	4	Prophyllite	5
(incl. beryllium, nickel, and tin)		Quartz and Quartzite	17
		Salt	5
		Sand and Gravel	50
		Specialty sands	3
		Wallastonite	2
		Miscellaneous	17
		(incl. abrasives, boron, calcite, lithium, etc.)	
TOTAL:	203	TOTAL:	222

The principal metallic commodities that have been mined in the County are gold, tungsten and copper; however, total production of these has been small. Approximately six million dollars worth of gold was produced from 1870 to 1875 and from the late 1880's to 1900. Tungsten was mined during World War I. Presently, there is little serious mining of metals in San Diego County. Most metalliferous deposits not previously mined are either too small or of too low grade to be economically mined at this time.

There is extensive extraction of nonmetals in the County. The following commodities are being commercially extracted:

- Gabbro "Black Granite" near Escondido and Lakeside;
- Silica sand near Oceanside:

- Salt from south San Diego Bay; and
- Sand, gravel and rock at numerous locations.

Gem minerals were actively mined between 1900 and 1912 within the County. Recently many of these mines have been reopened and produce some of the most interesting and important gem deposits in the nation. Gems are found in pegmatite dikes in the Pala, Mesa Grande, Ramona, Rincon, Chihuahua Valley, and Jacumba districts. Production consists of Tourmaline, Spodumene, Beryl, Topaz, Garnet, and Quartz. Some material is cut as gems, but most is sold as specimens for collectors.

Fifty thousand to one hundred thousand tons of salt are produced annually from salt ponds at the south end of San Diego Bay. In addition to their industrial value, the salt ponds provide open space and habitat for shore birds.

4.9 Population and Housing

Population growth is the major determinant of housing need. The San Diego Association of Governments (SANDAG) Series VII forecasts provide a projection of population growth through the year 2010. These projections, which were developed using SANDAG's Regional Model System and policy information for all of the region's jurisdictions, provide a reasonable estimate of the growth potential of each of the unincorporated communities in San Diego County. According to these projections, the population of the unincorporated portions of the County will grow by 81 percent or 278,551 people, between 1986 and 2010. Population growth for the incorporated cities is projected to grow by 39 percent for the same period.

The number of households for the County of San Diego is projected to grow at a rate even faster than population. SANDAG projects that between 1986 and 2010 there is a projected increase of 113,471 new households in the unincorporated areas, for a gain of 108 percent over the 24-year period. The number of new households for the same period in the incorporated areas of the County are projected to increase 49 percent. Table 4.9-1 illustrates these projections.

Changing demographics and falling family sizes are the reason that households are projected to increase more than population The maturing of the baby boom generation is putting a large number of people in age groups with a high propensity to be householders. In addition, changes in social trends and increased affluence have resulted in many individuals establishing 1-person households. Also, the expected continuation of low fertility will result in a reduction in the average number of children per household.

TABLE 4.9-1

Household Growth
San Diego County
1980-2000

Areas	1980	1990	1995	2000	Change 1980-2000	
					Numeric	percent
Unincorporated Areas	105,253	147,164	171,229	218,724	113,471	107.8
Incorporated Areas	665,829	817,600	876,950	994,049	328,220	49.3
Total San Diego Region	771,082	964,764	1,058,179	1,212,773	441,691	57.3

SOURCE: SANDAG Series VII Forecasts

4.10 Employment

The San Diego region has experienced very rapid employment growth over the past one and one half decades. The County General Plan Housing Element indicates that between 1975 and 1982 employment growth averaged nearly 27,000 per year, a 38 percent gain over the 7-year period. During the same period, employment state-wide grew by less than 25 percent.

San Diego's economy has experienced significant diversification in the past 15 years. In the late 1960's, San Diego's economy was dominated by the military and the aerospace industry. During the 1970's and early 1980's, San Diego experienced growth in "high-tech" industries (electronics manufacturing, oceanography, research and development) as well as tourism, trade and services. The Housing Element reports that San Diego has been identified as one of the nations nine emerging high tech employment centers. Factors which make San Diego attractive to high technology firms are environment and quality of life, major universities, an adequate labor pool, and a preference by company executives to live in San Diego. On the negative side, the high cost of housing has been cited as a reason for companies choosing locations other than San Diego for expansion.

The rapid employment growth in San Diego has resulted in the immigration of workers to fill the new jobs. These workers and their families have stimulated the demand for housing and have contributed to San Diego's high housing costs. SANDAG estimates that net "employment-related" migration in San Diego has averaged 37,000 per year over the past decade.

A significant amount of employment growth in San Diego County is projected to occur in the unincorporated areas. Average employment growth between 1980 and 1990 in the unincorporated area is projected to be 61.8 percent compared to a County-wide employment growth projection of 20.4 percent. The largest gains are projected for North County, Fallbrook, San Dieguito and Otay. Otay is an area in South San Diego County, just north of the Mexican border.

4.11 Transportation/Circulation

Transportation facilities located within the County include freeways and highways, streets and roads, public transit, bikeways and aviation facilities. While San Diego County's system offers commuters a range of choices, the automobile is by far the most popular and most frequently chosen method of transportation in the County. The 1990 Draft Regional Transportation Plan prepared by SANDAG reports that during the 10-year period from 1978 to 1988, when population increased by 22 percent, licensed drivers in the region increased by 40 percent (to 1,612,000 drivers), auto registrations increased by 64 percent (to 1,348,000 registrations) and weekday vehicle miles of travel increased by 63 percent. During this same period, increases in freeway facilities (11 percent) and local street and road mileage (16 percent) did not keep up with the increasing demand.

Transit service also plays an important role in the transportation system within the County. Public transit provides a relatively inexpensive and efficient method of transportation, and is the predominant form of transportation for many people, especially students, low income persons and the elderly. The remaining modes of transportation, such as air, rail, bicycle and walking, represent a small but important amount of total trips within the County.

SANDAG is designated by both the state and federal governments as the agency responsible for regional transportation planning. In this role, SANDAG prepares a Regional Transportation Plan (RTP) for the San Diego region. The RTP is updated approximately every two years and includes goals and objectives for all forms of transportation facilities in the County. The road network in the County Circulation Element is coordinated with the freeway and highway system presented in the RTP. By working cooperatively and using common

information and projections, the County and SANDAG coordinate their plans to provide a regional transportation system that is efficient, safe and convenient.

The County of San Diego is responsible for ensuring the planning, development and maintenance of transportation facilities located in the unincorporated area. In addition, the County works closely with other agencies, including SANDAG, the Metropolitan Transit Development Board (MTDB), the North San Diego County Transit Development Board, and the California Department of Transportation (CALTRANS) to aid in the planning of transportation facilities and services throughout the region.

4.11.1 Roads

Travel by bicycle, car or public transit utilizes roads and bridges. With the increasing population and automobile usage in San Diego County, the amount of traffic on the roads has increased. Expanding the County road and bridge network is a continual process. In 1990, there were approximately 1,864 miles of County-maintained roadways in the unincorporated area, including both Circulation Element and non-Circulation Element roads. Additional roads in the unincorporated area that are not constructed or maintained by the County include freeways, highways and private roads. Road within the incorporated cities are constructed and maintained by the individual municipalities.

4.11.2 Bicycle Facilities

The mild year-round climate in the San Diego region makes the area ideal for the use of bicycles for transportation. Currently, there are over 230,000 bicycle trips made daily within the San Diego region on more than 450 miles of designated bikeways and other roadways. Increased costs for motorized travel congested roads and highways and a greater emphasis on physical fitness have all contributed to greater bicycle ridership. Because of the growing demand for transportation by bicycle, increased attention is being focused on this mode of travel. (San Diego County General Plan, Public Facility Element, March 1991)

Bicycle use, however, has not increased at the rate projected in the 1985 SANDAG Regional Transportation Plan. SANDAG projected a 10 percent increase between 1985 and 1987, while actual ridership during this period increased by only 5 percent. Major reasons for the slower increase in ridership include inadequate funding for bikeway projects, which has resulted in a 50 percent completion rate of planned bikeway projects, and a lack of incentives to encourage bicycle ridership.

4.11.3 Transit Facilities

The San Diego County Transit System provides public transportation services to the unincorporated area and to 14 of the region's 18 cities. Public transit planning is done on a regional basis by the Metropolitan Transit Development Board, the North County Transit District and SANDAG, with input from the County. The County Department of Public Works completes short-range transit plans and transportation improvement programs for the systems it operates.

The County Transit System utilizes six types of transit services in its effort to provide a functional and responsive transit system. These are Suburban Fixed Route, Commuter Express Bus, Rural Lifeline service, Airporter service, Elderly and Disabled Dial-A-Ride service and General Public Dial-A-Ride services. Through these programs, the County Transit System serves almost two million passengers annually. Table 4.11-1 describes the different types of transit service and lists ridership levels for 89-90 fiscal year. All transit services offered by the County Transit System are provided by private contractors. In 1990, there were 10 contracted transit service providers. Seven contractors used their own vehicles, while the remaining three operate County-owned vehicles. In all cases, County Transit Service contractors provide vehicle maintenance and storage facilities.

4.11.4 Aviation Facilities

Aviation facilities in San Diego County include 40 airports and 39 heliports. Of these facilities, eight of the airports and three of the heliports (located at County airports) are owned by the County. One of the airports, Fallbrook, is leased and operated by a private group. Lindbergh Field, San Diego's major airport serving approximately 11 million passengers per year, is owned and operated by the San Diego Unified Port District.

4.12 Public Services

4.12.1 Law Enforcement

The County Sheriff's Department provides law enforcement services to the County's unincorporated area and by contract to the cities of Del Mar, Encinitas, Imperial Beach, Lemon Grove, Poway, San Marcos, Santee, Solana Beach, and Vista. Other cities provide their own law enforcement support. General services include general patrol, traffic enforcement, criminal investigation, crime prevention, juvenile services, communications dispatch and various management support services.

TABLE 4.11-1

San Diego County Transit Service
89-90 Fiscal Year

Service Type	Description of Service	No. of Fixed Routes	Estimated Annual Passengers
Suburban Fixed Route Service	Fixed bus routes serving the cities and communities of La Mesa, Lemon Grove, El Cajon, Santee, Spring Valley, Rancho San Diego, Lakeside, and Alpine. All of the routes offer connections to the San Diego Trolley and to San Diego Transit routes.	8	1,397,000
Commuter Express Bus	Fixed bus routes providing round-trip service from Poway to downtown San Diego, Escondido to downtown San Diego, and Oceanside to downtown San Diego. Connections to other transit services are also available along these routes.	3	170,000
Poway Transit Services	There are three different services provided in the Poway area. The first service consists of fixed bus routes serving Poway with connections to San Diego Transit routes. Second is the Poway Dial-A-Ride,which provides demand-responsive service to the general public. Third is the Poway Airporter, which is a demand-responsive service operating between Poway and the San Diego International Airport-Lindbergh Field.	3 N/A N/A	254,700
Rural Bus Service	Fixed bus routes providing service from the rural eastern areas of the County to the cities of El Cajon and La Mesa with connections to San Diego Transit, the San Diego Trolley, and other County Transit System routes.	7	16,800
Elderly and Disabled Dial-A-Ride	Demand-responsive dial-a-ride providing service to elderly and disabled clientele in the cities and communities of El Cajon, La Mesa, Lemon Grove, Spring Valley, Lakeside, and Alpine.	N/A	46,000
Spring Valley Dial-A-Ride	Demand-responsive dial-a-ride for the general public serving the community of Spring Valley.	N/A	41,000

As San Diego County's Chief Law Enforcement Officer, the Sheriff also provides regional law enforcement services for the entire county. These services include: investigation of homicide, arson and fraud, narcotics, child abuse and vice cases; criminal laboratory; crime analysis; automated fingerprint identification; criminal recordkeeping and intelligence; aerial support to law enforcement agencies; emergency planning; and law enforcement training The Sheriff also operates six County detention facilities.

4.12.2 Fire Protection

The multiple agencies providing fire protection in San Diego County can be classified by their primary fire protection responsibilities. Although state and federal agencies and fire protection districts have specific responsibilities for wildland or structural fires, all agencies will, to the extent their resources permit, respond to many types of emergency calls in their respective areas regardless of responsibility. Due to mutual aid and automatic aid response agreements, these agencies frequently work together in fire suppression and emergency service responses. The County General Plan Public Facility Element reports that in 1990 County Services were provided by seven fire agencies. Independent and subsidiary districts totalled 23 fire agencies. Federal and state agencies providing fire protection includes the California Department of Forestry and Fire Protection and the United States Forest Services.

4.12.3 Hazardous Materials Incident Response

Hazardous materials incidents make up a small percentage of total emergency responses. Response to these incidents requires highly trained personnel with expensive, specialized equipment. Under the Hazardous Materials Incident Response Team (HIRT) a combined response with highly trained teams can be provided Countywide. HIRT is provided under a joint powers agreement between the County and all of the region's cities. In addition to providing County-wide hazardous materials incident responses, the program offers hazardous materials emergency training courses to any interested fire agencies throughout the County.

4.12.4 Emergency Medical Services

The Department of Health Services is designated as the County's local emergency medical services agency. The primary functions of the Emergency Medical Service (EMS) division of the County Department of Health Services are regulating, administering, planning, and monitoring the provision of emergency medical service. Two County Service Areas (CSA), CSA 17 (San Dieguito) and CSA 69 (Heartland Paramedic), were established to provide funding for emergency ambulance service, and are administered by the County. Within both

of these districts, advanced life support (paramedic) ambulance service is provided. The service provided from CSA 17 is presently contracted out to a private ambulance company, while service from CSA 69 is provided by the City of Santee an the Lakeside Fire Protection District. The County also sets standards for emergency medical training and certification of personnel, which have a direct impact on the fire agencies providing the service.

4.12.5 Health Care

Health facilities and programs for residents of the entire San Diego region, including both the unincorporated areas and cities, are provided by the County Department of Health Services. Some of these programs are staffed by the County and offered in facilities that are either owned or leased by the County. Other programs are located in facilities that are provided through contracts with private and non-profit agencies. Due to the number of cross-referrals between County programs, health services are often located with or near to other County activities or school facilities.

4.12.6 Schools

The unincorporated area of the County is served by 36 school districts, including unified, elementary and high school districts. Unified school districts offer classes from kindergarten to twelfth grade (abbreviated as K-12).

The schools serving the unincorporated area of San Diego County are under the jurisdiction of 23 elementary school districts 6 high school districts and 7 unified school districts. Another four elementary school districts and three unified school districts (including the San Diego Unified School District which administers almost half the schools of the region) serve only incorporated territory.

Students living in the unincorporated parts of the County attend 225 elementary schools; 47 junior high, middle and intermediate schools; 1 junior/senior high school; 36 senior high schools; and 19 atypical, court and camp schools.

The County Office of Education, is entirely independent of the County government, is a publicly supported local agency with a mandate to operate certain educational programs and provide services to the 43 school districts in the County.

The County is also divided into five community college districts.

4.12.7 Libraries

The San Diego County Library was established in 1912 by resolution of the Board of Supervisors. For taxing purposes, the County Library is a library district, and has its own property tax share. The County Library services approximately 843,000 residents and covers over 3,818 square miles, including the unincorporated area and 11 incorporated cities. The cities served include: Del Mar, El Cajon, Encinitas, Imperial Beach, La Mesa, Lemon Grove, Poway, San Marcos, Santee, Solana Beach an Vista. In 1990, there were approximately 300,000 library card holders in the County Library's service area.

4.12.8 Sewage Treatment Facilities

Community sewer service within the County is provided by municipalities and independent and dependent sewage agencies. Independent sewer districts have independent boards of directors, and provide sewer service to their customers under specific regulations as allowed by their legal authority. Independent sewer districts include sanitary districts, community service districts, and county water districts. The dependent sewage agencies are administered by the County Board of Supervisors acting as the Board of Directors. Each agency provides collection and transmission of sewage. Treatment and reuse of disposal of the wastewater is provided through one of five mechanisms. These include the use of: (1) the San Diego Metropolitan Sewerage System (Metro) for treatment and ocean disposal; (2) Joint Powers Agreements for treatment and ocean disposal; (3) individual treatment and re-use or inland disposal; (4) individual treatment by a district with use of the Oceanside Outfall for disposal; and, (5) treatment and disposal by another agency.

Generally, those agencies near the City of San Diego are members of the Metro system and use this system for treatment and effluent disposal. A number of agencies also use a combination of Metro and inland treatment and disposal. Agencies near the County's coastal areas are generally providing effluent disposal through an ocean outfall. Inland agencies provide treatment and disposal through percolation of effluent into the soil, and reuse through irrigation of native vegetation, agricultural crops and landscaped areas where appropriate, and/or through ocean outfall.

4.12.9 Solid Waste

Currently, the San Diego region is served by nine sanitary landfill sites, five of which are the property of the County and administered by the County Department of Public Works (Borrego Springs, Ramona, Otay, San Marcos and Sycamore). Two sites are under the jurisdiction of

the City of San Diego and three are the property of the United States Marine Corps at Camp Pendleton. The City of San Diego operates its landfills with its own work force. The County and Marine Corps contract with a private company to perform the daily landfill operations.

Residents of the unincorporated area of the County can bring household garbage and refuse to any of ten rural transfer stations located at Barrett Junction, Boulevard, Campo, Julian, Ocotillo Wells, Vallecito, Palomar Mountain, Ranchita, Sunshine Summit, and Viejas. Alternatively, residents can contract with private hauls to pick up their refuse, as businesses are required to do.

With the increased emphasis on reducing the amount of waste disposed of in landfills, over 25 recycling centers have been created.

Virtually all solid waste generated in the region is stored and disposed in facilities under the jurisdiction of either the County or the City of San Diego. The two jurisdictions have attempted to adopt uniform disposal fees so that wastes are taken to the nearest or most accessible site. The United States Marine Corps disposes of its own waste, with the exception of demolition materials generated from construction projects on Camp Pendleton, which are usually disposed of in County landfills (waste from other military bases is disposed of at City and County facilities).

The County has been designated the solid waste planning and management agency for the region. The San Diego County Integrated Waste Management Task Force, consisting of representatives of the County an each of the region's cities, is responsible for updating and implementing the State-mandated Integrated Waste Management Plan. The County Department of Public Works is serving as staff to the Integrated Waste Management Task Force. In addition, the County is responsible for overall solid waste planning and regulatory control in the unincorporated areas of the County.

The primary permits for solid waste facilities located anywhere in the region are issued by the Regional Water Quality Control Board and the County Department of Health Services (the latter has been designated the Local Enforcement Agency by the State). The County Department of Health Services is responsible for regular inspection of solid waste facilities; it is also the local review agency for the disposal of health-related solid waste storage and disposal throughout the region.

4.13 Energy/Utilities

San Diego County relies primarily on an interrelated energy system. Electricity and natural gas are the primary forms of energy used in industry and households. Petroleum fuels are the primary energy source for most modes of transportation.

4.13.1 Electrical Power

Electricity in San Diego County is supplied by the San Diego Gas and Electric Company (SDG&E). According to SDG&E, approximately 26.1 percent of San Diego's current electric sales of 14,350 gigawatt hours (gWh) comes from fossil fuel. Of the 3,745 gWh generated from fossil fuel plants, 3,463 comes from natural gas with the remainder from oil. Electricity generated from nuclear power totals 3,213 gWh or 22.4 percent of the total. The major portion of San Diego's electrical energy, 51.5 percent, is purchased from other utilities.

SDG&E built a transmission line to Arizona during the early 1980's, which allowed energy reserves from Arizona and New Mexico utilities to be transmitted to San Diego. The imported electricity is produced from less expensive coal-burning plants. San Diego also has the option of importing power generated by hydroelectric plants in the Pacific Northwest.

SDG&E currently has 2,530.2 megawatts (MW) of capacity comprised of 517.2 MW from nuclear units, 1,611 MW from fossil steam units and 402 MW from combustion turbine units. In the next ten years, SDG&E anticipates they will need approximately 1,200 MW of new capacity. This large increase in capacity is partially due to area population and economic growth and partially due to the need to find replacements for power contracts that will end during the next decade (Mitchell, 1991).

The SDG&E utilizes fossil fuel steam units that include the Encina, South Bay, and Silvergate power plants. The Silvergate unit is currently in storage. The locations of these plants are as follows:

- Encina
  4600 Carlsbad Blvd.
  Carlsbad, California
- South Bay
  990 Bay Blvd.
- Silvergate
  1348 Sampson St.
  San Diego, California

Table 4.13-1 describes the generating capabilities in kilowatts (kW) and the operating status of each plant.

TABLE 4.13-1

SDG&E Fossil Steam Units
Net kW Capability

Plant		Oil Fuel Summer and Winter	Status
Encina	No. 1	105,000	Operational
	No. 2	104,000	
	No. 3	110,000	
	No. 4	287,000	
	No. 5	315,000	
	Plant Total	921,000	
South Bay	No. 1	147,000	Operational
	No. 2	150,000	
	No. 3	171,000	
	No. 4	222,000	
	Plant Total	690,000	
Silvergate	No. 1	40,000	In Storage
	No. 2	62,000	
	No. 3	64,000	
	No. 4	64,000	
	Plant Total	230,000	

Source: SDG&E Official Rating of Generating Units, Operations Services, March 1, 1991.

4.13.2 Natural Gas

San Diego Gas and Electric supplies natural gas to all of San Diego County through a fixed transmission and distribution system. SDG&E currently takes its deliveries of natural gas supplies from or through Southern California Gas Company's (SCGC) transmission system. Delivery of the gas to SDG&E's gas service territory is made through SCGC's Dana Point-to-San Diego transmission pipeline and through the Moreno-to-Rainbow transmission pipeline system.

The Dana Point-to-San Diego pipeline, which is owned by SCGC, is a 12-inch diameter pipeline that runs from Dana Point to La Jolla. This pipeline has a maximum allowable operating pressure (MAOP) of 400 pounds per square inch (psi). On typical days it supplies between 5 and 15 percent of SDG&E's daily gas requirements.

SCGC also owns and operates approximately 35 miles of interconnected 16-inch diameter and 24-inch diameter pipeline between SDG&E's compressor stations at Moreno and Rainbow. In addition the southern 5.5 mile segment of this system has been paralleled and interconnected with a 30-inch diameter section of pipe. These pipelines have a MAOP of 792 psi. On typical days these pipelines provide 85 to 95 percent of SDG&E's gas requirements.

SDG&E has traditionally planned its gas transmission system to be able to serve core (residential) gas customers only on the peak winter day. The current plan for providing this level of service includes mainly pipeline additions once the compressor unit (Unit 10) currently under construction at the Moreno Compressor Station is complete. Planned pipeline additions include the Inner Loop Pipeline and the Moreno-Rainbow Pipeline.

Forecasted design peak day core load will increase from 404 MMcf in 1991 to 450 MMcf (million cubic feet) in 2000, an 11 percent increase. Yearly total power plant gas, (a non-core category) is forecasted to more than double by the year 2000. This increase is primarily due to additions of gas-fired generation, decreasing committed firm purchase contracts and decreasing Southwest economy purchases.

4.13.3 Telephone Service

Local telephone service supplied to San Diego County by Pacific Bell. Service by distance carriers, such as Sprint and MCI, is also available.

4.14 Aesthetics

The approximate 4,000 square miles of land in San Diego County encompass three different regions: the deserts of the east; the central mountains, part of the California Coastal Range; and the valleys, mesas, and plateau bounding the Pacific Ocean on the western edge of the County. Each of these regions has distinctive topography, climate, vegetation, wildlife, land use, and lifestyle. Scenic resources throughout the County are varied and plentiful. Among the major scenic resources are the deserts; snow-capped peaks; rugged mountain; coastal foothills, valleys and canyons; pine forests; citrus and avocado orchards; Pacific Ocean and adjacent beaches, bays and cliffs; early California missions; interesting architecture; and a multitude of breathtaking vistas.

San Diego County's rich and colorful historical heritage dates from the golden era of Spain. Numerous historical sites have been identified by State and local groups throughout the County. The State has officially designated 62 historical landmarks in San Diego County.

San Diego County's rudimentary Scenic Highway Program has led to the designation of two routes in the unincorporated area as Official Scenic Highways. State Route 125 between State Route 94 and U.S. Interstate 8 is an urban highway through rolling topography characterized by medium density hillside residences. State Route 78 within the Anza-Borrego Desert Park is a rural highway.

4.15 Recreation

The County Department of Parks and Recreation, along with individual cities, have the responsibility for planning, developing, operating and maintaining parks and recreation facilities to meet the recreational needs of residents within the County.

The County participates in joint powers agreements and other agreements that establish partnerships with other public and private agencies to develop, operate and maintain recreation facilities on land typically owned by those agencies. Public agencies participating in these agreements include school districts, water districts and community service districts. Private agencies participating in this agreements are usually non-profit organizations. In addition, many parks are provided in the unincorporated area by special districts, school districts and private non-profit organizations without any County involvement.

County parks are divided into two major categories: local parks and regional parks. Local parks are intended to serve the recreational needs of neighborhoods and communities, while

regional parks serve the population of the entire San Diego region. In 1990, there were 579.3 acres of local park land in the unincorporated area of the County, including County parks and parks provided through joint powers agreement between the County and other public and private agencies.

Regional parks within the County serve residents and visitors of the entire County. In 1990, there were 16,330 acres of regional park land provided by the County. This total includes primarily developed regional parks and regional parks that contain some recreation development, but are primarily undeveloped. The majority of dedicated regional park land acreage is undeveloped. Primarily undeveloped regional parks make up over 95 percent of the regional park acreage total. Generally, 80 percent or more of the land in these parks is reserved for preservation, natural resource management and natural open space, and only 20 percent or less is used for recreation development. The use of active recreation areas within regional parks is very high.

4.16 Paleontological and Cultural Sites

In San Diego County most archaeological sites can be separated into three distinct time periods: prehistoric, protohistoric, and historic. All prehistoric archaeology deals with aboriginal culture and systems which existed prior to Spanish colonization in 1769. There was no written language in San Diego County before that time. The social and oral systems were far more complex in order to compensate for the lack of written laws. Archaeologists attempt to delineate and describe these otherwise unrecorded aspects of California heritage. Protohistoric archaeology deals with the remains of aboriginal cultural systems which continued to exist after historic contact, but did not assimilate the technology associated with writing systems. Historical documentation by outside sources (i.e., Spanish) is considered ethnographic anthropological reporting. Historical archaeology deals with uncovering facts that no known historical documentation has provided.

San Diego County contains the physical remains of three general horizons for the prehistoric archaeological period, and three general divisions of the historic period, as listed in Table 4.16-1.

TABLE 4.16-1

Archaeological Periods

Culture	Occupation Period
Paleo Indian (San Dieguito)	12,500-8,500 years before the present
La Jollan	7,500-1,000 years before the present
Kumeyaay	1,000 years ago to 1769
Spanish	1769-1834
Mexican	1834-1850
American	1850-Present

The County General Plan Conservation Element indicates that it is estimated that only five percent of the existing archaeological and historical resources have been identified in San Diego County as of 1973 and that the County has lost 36 percent of its projected total archaeological sites within the past 100 years primarily from urban development and vandalism. A number of San Diego County archaeological and historical sites have been identified as being of national, statewide, and local significance.

4.17 Risk of Upset

Risk of upset typically refers to the release of materials, particularly hazardous materials. If released, and depending upon the physical characteristics of the materials, they could pose potential impacts to the surrounding environment.

According to Mike Handman, Coordinator of the San Diego County Hazmat Incident Response Team (HIRT), San Diego County's emergency response team is well equipped and trained to handle hazardous materials releases. The unit responds to over 600 hazardous material incidents annually and maintains $2.5 million worth of response equipment. The Emergency Response Unit serves the entire County with six separate operating units.

4.18 Public Health

San Diego County currently exceeds the state and federal ambient one hour air quality standards for ozone. Ozone is an irritant to lungs and, since it is an oxidant, can be destructive to a wide diversity of living and non-living things.

The County also exceeds the state and federal annual air quality standards for particulates less than 10 microns in diameter (PM 10). Particulate matter consists of particles in the atmosphere resulting from many kinds of industrial and agricultural operations, motor vehicle tires, combustion, and atmospheric chemical reactions. Natural activities also generate particulates. Particulates less than 10 microns can cause the greatest health risk through inhalation.

According to San Diego County's Hazardous Waste Management Plan, approximately 93,100 tons of hazardous waste was generated in the County in 1986. However, despite the presence of hazardous materials and waste in the County, most residents have little to no regular exposure to these substances.

4.19 Hazardous Waste

As discussed above (Section 4.18, Public Health), 93,100 tons of hazardous waste was generated in San Diego County in 1986. This waste was then sent off site for treatment or disposal. Of the total volume, 44 percent is generated within the City of San Diego and another 23 percent is generated by the Navy at Naval facilities. Waste generated at private shipyards of work on Navy vessels is considered by the Navy to be the responsibility of the contractor. San Diego County's 9 Treatment, Storage, and Disposal Facilities (TSDF) currently provide industry with a total treatment capacity of 122,700 tons per year (County of San Diego "Hazardous Waste Management Plan 1989-2000", May 1989).

Table 4.19-1 identifies the Class I landfill facilities within California that currently accept hazardous wastes. A Class I landfill refers to the geologic features of the landfill that provide optimum conditions for isolating the disposed wastes from the groundwater. Class I landfills accept hazardous and toxic waste in accordance with the Federal and State regulations. The disposal of hazardous wastes into designated Class I landfills has become increasingly more difficult. These difficulties relate to a number of issues that include: recent legislation banning the land disposal of many wastes; the increased costs of disposal; decreasing number of permitted facilities, and potential future liabilities. Because of these issues, the disposal of hazardous wastes in landfills can present significant environmental concerns.

TABLE 4.19-1

Existing and Future Class I Landfill Capacity in California

Facility	County	Existing Permitted Capacity (tons)	Future Planned Capacity (tons)
Casmalia Resources	Santa Barbara	0	1,500,000[a]
Chemical Waste Management	Kings	4,800,000[b]	6,750,000[c]
GSX Services	Imperial	1,620,000	3,800,000[d]
GSX Services	Kern	2,400,000[e]	3,100,000[f]
TOTAL		**8,820,000**	**15,150,000**

[a] The facility is currently not accepting wastes. New facilities are pending permit approval. The approval for the planned capacity is expected by 1992. An additional 3,100,000 tons of capacity will be constructed when the listed future capacity is within 1 year of being full (Lachenmaier; personal communication).

[b] Approximately 75 percent of the existing capacity was used as of November 1989 (DHS 1989).

[c] Additional capacity is currently being constructed and is expected to be approved and operational in 1 to 2 years (Grisolia; personal communication).

[d] The planned capacity is pending permit approval and is expected to be available in approximately 5 years (Shaw; personal communication).

[e] The existing capacity is permitted for contaminated soils, oils, and petroleum wastes only (non-RCRA wastes), which does not include metals sludge.

[f] The planned capacity has already been permitted and includes metals sludge and other RCRA wastes (Almberg, personal communication). Approximately 1,260,000 tons of the permitted capacity will be constructed by August 1990 (DHS 1989). The remaining capacity is to be constructed over the next 20 years.

Source: Supplement to the Draft Environmental Impact Report on the proposed merger of Southern California Edison and San Diego Gas and Electric Companies, August 1990.

Historically, the majority of hazardous wastes generated in San Diego County have been disposed of directly in off-site hazardous waste land disposal facilities in San Diego or adjacent counties that accept hazardous waste. Until November 30, 1984, much of the hazardous waste generated in San Diego County was transported to the BKK landfill in West Covina. However, stricter state and federal regulations resulted in the closure of BKK to hazardous waste disposal. No replacement land disposal facility is currently planned in Southern California. San Diego's hazardous waste is transported to the nearest land disposal sites at Casmalia located in northern Santa Barbara County and Kettleman Hills in Kings County, or out of state.

5.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The reduction of ROG, NO_x, and CO emissions is the goal of the 1991 RAQS. The projected emission reductions stemming from the implementation of this RAQS are summarized in Section 3, Project Description. Section 5 will emphasize the potential environmental impacts that can be associated with the adoption of technologies or compliance methods developed in response to the control measures proposed in the 1991 RAQS. These assumed technologies and compliance methods are discussed in Section 3 and summarized in Table 3.5-7. Section 5 discusses the potential environmental consequences that would result from implementing these likely technologies and compliance methods.

This is a program EIR that assesses the potential environmental impacts associated with the implementation of a regional plan. In a program EIR, specific site data and other quantitative information typically found in a project EIR are not available. Because of this, analysis in a program EIR is necessarily more general and qualitative, as recognized under California Environmental Quality Act (CEQA) Guidelines. The following subsections will discuss the potential adverse environmental impacts of the 1991 RAQS in a general, program EIR approach.

5.1 Earth

5.1.1 Impacts

No adverse environmental impacts are identified for this issue area.

5.1.2 Mitigation Measures

No mitigation measures are identified for this issue area.

5.2 Air Quality

5.2.1 Impacts

5.2.1.1 Localized Ozone Effects

Over 90 percent of the emitted oxides of nitrogen (NO_x), (NO + NO_2), is estimated to be nitric oxide (NO). Nitric oxide is a scavenger of ozone, reacting to form nitrogen dioxide (NO_2).

Thus, a reduction of NO_x can lead to localized increases in ozone. The potential for ozone-scavenging was recognized in a recent air quality modeling study performed under the direction of EPA as part of the Federal Implementation Plan for Ventura County (Radian 1989). While this study concluded that NO_x controls were effective in reducing ozone concentrations within the county, it also found that ozone increases can be associated with NO_x reductions under certain conditions. For example, NO_x reductions from sources concentrated in a specific location may result in a decrease in ozone levels over some portions of a region and an increase in others. This increase is associated with ozone-scavenging, where NO emissions reduce ambient ozone concentrations in the short term (e.g., NO + ozone = NO_2 + O_2), but later assist in the formation of ozone. The formation occurs once most of the NO is converted to NO_2; the NO_2 serves as the source of oxygen atoms that then react with oxygen (O_2) to form ozone (O_3). While there is a potential for a near-source increase in ozone concentrations, the measures in the 1991 RAQS are assumed to be beneficial from an overall regional perspective due to the overall reduction of both ROG and NO_x. Thus, the impact of a reduction in localized ozone scavenging is not expected to be significant.

5.2.1.2 Ammonia Slip

One concern with using a selective catalytic reduction (SCR) system for controlling NO_x emission from boilers and internal combustion (IC) engines is ammonia slip. To ensure maximum NO_x reduction efficiency, sufficient ammonia must be injected into the flue gas to react with all of the NO_x. Ammonia that does not react with the NO_x passes or "slips" through the reactor vessel and is released into the atmosphere from the stack. Ammonia slip begins to increase at NH_3:NO_x molar ratios above 0.8 for high space velocities and 0.9 for low space velocities (Chichanowicz and Offens 1987, EPRI 1986, cited in SCAQMD 1988). According to one source cited by SCAQMD (1988), it is practically impossible to limit ammonia slip to less than 10 parts per million (ppm) and still maintain the desired NO_x reduction level (SCAQMD 1988). Other sources in that document, however, indicate that under normal operation conditions, ammonia slip is approximately 5 to 10 ppm (SCAQMD and ARB 1981). The Industrial Gas Cleaning Institute indicates that it is common practice for ammonia slip to be held to less than 10 ppm (IGCI 1989). The limit placed on ammonia slip for the initial NO_x concentration is the key design parameter in sizing the catalyst rather than the NO_x reduction requirements. Ammonia slip depends on space velocity, NH_3:NO_x molar ratio, temperature, and inlet NO_x concentrations (Chichanowicz and Offens 1987, cited in SCAQMD 1988).

The 8-hour threshold limit value (TLV) established by the American Council of Governmental Industrial Hygienists (ACGIH) for occupational exposures to ammonia is 25 ppm. (The TLV is a recommended, but not an enforced standard.) A common practice for determining

exposure limits for the general population for such substances is to divide the occupational exposure limits by a safety factor of 100. Thus, the conservative population exposure limit would be 0.25 ppm.

While ammonia slip at the flue stack ranges from 5 to 10 ppm, these concentrations are likely to be diluted at ground level. Ammonia will be incorporated into the hot flue gases that will rise well above the ground. In addition, ammonia vapor is less dense than air at the same temperature and pressure (ammonia vapor density is 0.59, air density 1.0 when both are measured at 21°C and 760 mm Hg). As a result of these two factors, ammonia emissions are buoyant and would be expected to rise rapidly to higher altitudes in the atmosphere with little possibility of lingering at ground level (Benchley and Athey 1981, cited in SCAQMD 1988).

These conclusions are substantiated in the findings of a worst-case dispersion analysis that was applied to the Ventura County Ormond Beach facility and are detailed in the 1991 EIR for the Ventura County APCD's Rule 59: Electrical Power Generating Equipment - Oxides of Nitrogen Emissions from Utility Boilers. The dispersion analysis, conducted for Southern California Edison's Ormond Beach Generating Station, predicted a reasonable worst-case maximum ammonia concentration of 0.039 ppm at approximately 1.4 miles from the facility (Ventura County, 1991). This concentration is nearly an order of magnitude below the conservative general population exposure limit of 0.25 ppm.

5.2.1.3 Accidental Release of Ammonia

A major concern with using an SCR system for controlling NO_x emission is the accidental release of ammonia. The major application of SCR will result from the control measure requiring substantial reductions in NO_x from electric powered generating equipment (measure NI-1). The two generating plants in the county expected to be affected by this rule are the Encina and South Bay facilities. A third plant, the Silvergate facility, will not be counted under this measure because it is in storage and is not expected to be converted to production status. A full discussion of this issue can be found in Section 5.12 (Public Services), Section 5.17 (Risk of Upset), and Section 5.18 (Human Health).

5.2.1.4 Accidental Release of Vapor Recovery Media

Vapor recovery systems are "add-on" controls designed to reduce ROG emissions. In vapor recovery systems employing carbon adsorption canisters, contaminants are adsorbed onto carbon in concentrated amounts. Improper handling or storing of carbon canisters can result in the accidental release of concentrated compounds, many of which have low vapor

pressures. This release will result in the volatilization of the compound into the air where it could prove to be harmful to humans or biological resources. However, volatilization is not considered significant because the re-release of these potentially hazardous and toxic compounds into the air will be less than the amount originally trapped by the vapor recovery system. In addition, compliance with existing regulations and proper handling techniques will keep impacts to insignificant levels.

5.2.1.5 Substitution to Low-ROG Substances

In order to reduce ROG emissions, many measures in the RAQS will result in the reformulation of various substances (coatings, solvents, cleaning compounds, and other materials). In some cases, the compounds will be reformulated in a low-ROG form while in others, aqueous solutions (e.g., surfactants) will be substituted. The potential exists that these reformulated substances will contain exempt compounds that are harmful to the air or to human and biological resources.

One such example is the substitute solvent 1,1,1-trichloroethane. Data available on this compound suggest it may be harmful to human health. This solvent is listed under the California Assembly Bill (AB) 2588 (Air Toxics "Hot Spots" Information and Assessment Act) and is listed as a hazardous air pollutant under the 1990 Federal Clean Air Act Amendments. It is however, suspected to contribute to global warming and stratospheric ozone depletion. These impacts, while possible, are speculative and are not considered significant.

5.2.2 Mitigation Measures

5.2.2.1 Localized Ozone Effects

No mitigation measures are identified to directly mitigate localized ozone scavenging. However, this local impact is more than offset by APCD implementing the RAQS, which will significantly reduce region-wide emissions of ROG and NO_x.

5.2.2.2 Ammonia Slip

Ammonia slip can be maintained at low concentrations with the installation of appropriate monitors and controllers within the flue gas system. Control systems that optimize ammonia flow to minimize ammonia slip have been developed and will be required along with regular maintenance of the system if SCR is used as a control technology.

5.2.2.3 Accidental Release of Ammonia

Mitigation measures to minimize the risk of accidental release of ammonia are discussed in Section 5.12 (Public Services), Section 5.17 (Risk of Upset), and Section 5.18 (Human Health). With these measures in effect, the impact of accidental ammonia release is not considered significant.

5.2.2.4 Accidental Release of Vapor Recovery Media

The San Diego County APCD will coordinate and cooperate with responsible agencies to ensure compliance with existing regulations regarding handling and transport of hazardous materials. As part of the permit conditions, the APCD can require continuous regeneration of carbon in carbon adsorption systems. Because steam regeneration has the potential for discharge of contaminants to water resources, the APCD could require these systems to use thermal rather than steam regeneration of carbon.

5.2.2.5 Substitution to Low-ROG Substances

In order to reduce the risk of unwitting dumping or release of hazardous and toxic materials, the APCD will coordinate with responsible agencies to promote programs to increase public awareness of these potential impacts and to insure standard handling procedures are followed.

5.3 Water Resources

5.3.1 Impacts

5.3.1.1 Accidental Release of Ammonia

A major concern with using an SCR system for controlling NO_x emissions is the release of ammonia. The major application of SCR will result from the control measure requiring substantial reductions in NO_x from electric powered generating equipment (measure NI-1). The two facilities in the county expected to be affected by this rule are the Encina and South Bay plants. A full discussion of this issue can be found in Section 5.12 (Public Services), Section 5.17 (Risk of Upset), and Section 5.18 (Human Health).

SCR utilizes large amounts of ammonia that will need to be stored onsite. While anhydrous ammonia is stored as a pressurized liquid, it is a gas at ambient temperatures and pressures (i.e., 20°C and 1 atmosphere). As a result, if a leak were to occur, ammonia would be

expected to change to a vapor state quickly. Ammonia vapor is heavier than air and has a high affinity for water. An ammonia gas cloud that reaches a surface water body would be expected to dissolve quickly into the water. If sufficient gas is absorbed, the water would become considerably more alkaline. In addition, ammonia is rapidly consumed by living organisms. It is expected that even a catastrophic release that reaches a fresh water resource will be moderated and dissipated within a short time (days), leaving no significant long-term impact on either the surface or groundwater resources. Ammonia reaching seawater would have no significant effect, since seawater has an excellent buffering capacity. No significant impacts on water resources are expected.

5.3.1.2 Accidental Release of Vapor Recovery Media

This topic was discussed in Section 5.2 (Air Quality). In vapor recovery systems employing carbon adsorption canisters, contaminants are adsorbed onto carbon in concentrated amounts. Improper handling and storage of carbon canisters can result in accidental release of the concentrated compounds into the groundwater or sewer system. This represents a possibly adverse impact to water resources. However, compliance with existing regulations will keep impacts to insignificant levels.

Another threat to water resources involves vapor recovery systems that employ steam to regenerate carbon. Used primarily to recover solvents, these systems eliminate the disposal of carbon canisters, but produce contaminated water as a waste stream. This waste represents a possible adverse impact if the contaminated water is discharged to surrounding bodies of water. The impact is not considered significant because sources must comply with existing regulations concerning wastewater treatment and hazardous materials disposal.

5.3.1.3 Substitution to Low-ROG Substances

As discussed in Section 5.2 (Air Quality), many measures in the RAQS will result in the reformulation of various substances which might contain compounds harmful to the environment. Of special concern to water resources are reformulations that result in water based (aqueous) solvents and cleaners. These products can contain potentially harmful compounds, such as methylene chloride. In addition, wet scrubbing systems, by their very function, result in a wastewater stream containing potentially harmful compounds. Because the general public might tend to view water-based products as less harmful than other solvents and cleaners, the potential exists for improper handling and disposal of these materials when they contain hazardous or toxic compounds. However, this is not considered significant, because of compliance with existing regulations.

5.3.2 Mitigation Measures

5.3.2.1 Accidental Release of Ammonia

This impact is not expected to be significant. Specific measures to mitigate impacts to water resources are not required. Mitigation measures to prevent and contain spills or other accidental releases of ammonia have been discussed elsewhere (see Sections 5.12 and 5.18).

5.3.2.2 Accidental Release of Vapor Recovery Media

APCD will cooperate and coordinate with responsible agencies to ensure compliance with existing regulations regarding wastewater handling and the transport and handling of hazardous materials. APCD can promote and encourage continuous regeneration of carbon in carbon adsorption systems, and in these systems, promote adoption of thermal rather than steam regeneration of carbon.

5.3.2.3 Substitution to Low-ROG Substances

In order to reduce the risk of unwitting dumping or release of hazardous and toxic materials, the APCD will coordinate with responsible agencies to promote programs to increase public awareness of these potential impacts and to ensure compliance with proper handling procedures. In wet scrubbing operations, pre-treatment of wastewater will be required and discharge requirements will be enforced.

5.4 Biological Resources

5.4.1 Impacts

5.4.1.1 Effect of Construction on Biological Habitat

Various measures in the 1991 RAQS require the construction of new facilities (bikeways, park and ride lots, storage facilities, and a light rail system). The development and use of land for these purposes could reduce or eliminate plant and animal habitat. At this stage in the RAQS, the amount of land needed and exact locations are unknown; however, the additional amount of land expected to be required is small. Details will be available as each measure is proposed and reviewed. Although details are unavailable at this time, impacts from this are not considered significant due to the relatively small amount of land required and the ability to locate facilities away from sensitive resources.

5.4.1.2 Accidental Release of a Catalyst Used in SCR

Manufacturers of the catalyst material used in the SCR process report that the catalyst material contains small amounts of vanadium pentoxide. The properties of this material and its potential health impacts are more fully discussed in Section 5.18 (Human Health). According to one source, vanadium pentoxide can be lethal to fathead minnows with lethal doses ranging from 13 ppm to 55 ppm (DOG-USCG, 1984). However, release into the environment is considered unlikely because it is tightly bound to the catalyst substrate (SCAQMD, 1988). In addition, the SCAQMD surveyed various catalyst vendors and reported that in 199 catalyst installations and removals, no accidents occurred (SCAQMD, 1988). For these reasons, this is not considered a significant impact.

5.4.1.3 Ammonia Slip

The phenomenon of ammonia slip is discussed in Section 5.2 (Air Quality). Through atmospheric deposition, some ammonia may indirectly affect water resources. However, these concentrations are anticipated to be very low in a properly operating system. Therefore, this impact is not considered significant.

5.4.1.4 Accidental Release of Ammonia

A major concern with using an SCR system for controlling NO_x emission is the release of ammonia. The major application of SCR will result from the control measure requiring substantial reductions in NO_x from electric powered generating equipment (measure NI-1). The two facilities in the county expected to be affected by this rule are the Encina and South Ban generating stations. A full discussion of this issue can be found in Section 5.12 (Public Services), Section 5.17 (Risk of Upset), and Section 5.18 (Human Health).

In the event of a catastrophic release of ammonia, the potential exists for a toxic cloud of ammonia gas to drift into sensitive habitats. Although the chances for such an occurrence are small, if a catastrophic release occurs, it could cause a significant impact to biological resources. After mitigation measures are applied, the impact is not considered significant.

5.4.1.5 Accidental Release of Vapor Recovery Media

The nature and likelihood of a release into the environment is discussed in Section 5.2 (Air Quality) and Section 5.3 (Water Resources). Numerous compounds are involved in vapor recovery, and many of these, such as benzene, toluene, and trichloroethylene, are hazardous to plant and animal life. Biological resources can be adversely affected if vapor recovery

media such as carbon canisters are handled or disposed of improperly. However, this impact is not considered significant, because compliance with current regulations concerning the handling and disposal of hazardous materials reduces this risk to insignificance.

5.4.1.6 Substitution to Low-ROG Substances

The 1991 RAQS has many measures requiring reduction of ROG in various substances. In order to comply with these measures, substances such as solvents, coatings, and cleaning solutions will be reformulated. This issue was discussed in Section 5.2 (Air Quality) and Section 5.3 (Water Resources). The possibility exists that these reformulated substances will contain compounds that are harmful to plants and animals. Another possibility is that these reformulated substances will be water based (aqueous) products containing harmful toxics and hazardous compounds. The improper handling or disposal of these substances could pose a risk to biological resources. Compliance with current regulations concerning the handling and disposal of hazardous and toxic materials reduces this risk to insignificance.

5.4.2 Mitigation Measures

5.4.2.1 Effect of Construction on Biological Habitat

Several measures can be taken to mitigate this impact. All efforts will be made to site such facilities away from biologically sensitive areas. Monitoring of ongoing programs will be supported and continuous coordination and cooperation will be maintained with relevant agencies such as the California Fish and Game Department and other resource agencies. Current surveys of endangered species will be required, and measures will be formulated to ensure that there are sufficient open spaces and conservation areas. With implementation of these mitigation measures, this impact is not considered significant.

5.4.2.2 Accidental Release of a Catalyst Used in SCR

No mitigation measures are identified for this impact.

5.4.2.3 Ammonia Slip

Mitigation measures are discussed in Section 5.2 (Air Quality).

5.4.2.4 Accidental Release of Ammonia

The only potential impacts to living resources stem from accidental catastrophic release of ammonia. Mitigation measures concerning safety and an emergency response plan are discussed in Section 5.12 (Public Services). With these measures, the likelihood of a harmful release is very low, and this impact is not considered significant.

5.4.2.5 Accidental Release of Vapor Recovery Media

Mitigation measures are discussed in Section 5.2 (Air Quality) and 5.3 (Water Resources).

5.4.2.6 Substitution to Low-ROG Substances

No mitigation measures are identified for this impact.

5.5 Noise

5.5.1 Impacts

5.5.1.1 Reduced Congestion Could Cause Increased Vehicle Speeds

Many of the transportation control measures identified in the RAQS will result in reduced congestion on roadways. The reduced congestion could be accompanied by increases in average vehicle speed with resultant potential increases in noise levels along roadways, especially during peak commute times. This is not considered a significant impact because the increase in noise levels are expected to be minimal, and major increases are typically mitigated through actions taken concurrently with roadway improvements.

5.5.1.2 Emission Control Equipment

Many measures in the RAQS will result in applicants installing various types of emission control equipment (e.g., radiant burners, blowers and fans, compressors, and flares). Installation will take place at existing industrial sites where the additional noise is not expected to be significant. In certain circumstances, this equipment could increase noise to objectionable levels. However, compliance with noise ordinances that are in effect throughout the county will mitigate the impact of noise to insignificance.

5.5.2 Mitigation Measures

5.5.2.1 Reduced Congestion Could Cause Increased Vehicle Speeds

As roadway improvements are made, project analysis will determine the need for specific mitigation. No mitigation measures are identified for the impact of speeding traffic.

5.5.2.2 Emission Control Equipment

If an area is adversely affected by increased noise levels from emission control equipment, noise ordinances will require that noise abatement measures, such as mufflers and insulation, be utilized.

5.6 Light and Glare

5.6.1 Impacts

No adverse environmental impacts were identified in this issue area.

5.6.2 Mitigation Measures

No mitigation measures are identified for this issue area.

5.7 Land Use

5.7.1 Impacts

Several transportation control measures could have secondary adverse impacts on land use in the San Diego APCD. Trip reduction measures might create a demand for satellite offices or work centers that could lead to alternations in current patterns of land use. On the other hand, this might also have the beneficial effect of increasing population density around central work areas which might reduce population pressures on other undeveloped areas. Local General Plans and Zoning Codes should provide a public forum designed to reduce any environmental impacts on land use to insignificance.

Increased pedestrian and bicycling activities will reduce parking needs but might require additional land for pedestrian and bicycle routes and support facilities (e.g., showers and lockers). Additional land requirements are expected to be minimal because bicycle lanes can typically be incorporated into existing roadways with minimal demand for additional land, and

additional support facilities can be located at existing facilities. While locating bicycle routes along busy streets could exacerbate traffic congestion, this might be offset by the number of cars eliminated from roadways as a result of these measures. Again, General Plans and Zoning Codes can incorporate bicycle and pedestrian routes in their planning process to reduce impacts to insignificance and ensure consistency with local and regional land use planning.

5.7.2 Mitigation Measures

The APCD will advise and assist local agencies regarding the potential conflicts and impacts from new satellite work centers and bicycle and pedestrian routes and facilities so that these can be incorporated into the Circulation Element of local jurisdictions' General Plan.

5.8 Natural Resources

5.8.1 Impacts

No adverse environmental impacts were identified in this issue area, as the control measures, as a whole, will not likely require substantial use of resources.

5.8.2 Mitigation Measures

No mitigation measures are identified for this issue area.

5.9 Population/Housing

5.9.1 Impacts

Many transportation control measures could result in implementing alternative work schedules, telecommuting to work (using facsimile machines, computers, etc.), and providing alternative transportation modes for workers. These measures could affect the distribution and density of population growth in the San Diego APCD. They are not anticipated to affect overall growth in the area because urban areas in close proximity to San Diego (e.g., Los Angeles and Ventura County), which compete with San Diego for population growth, are currently adopting similar measures.

Some measures might tend to make people seek housing near transportation centers, which could result in housing shortages. On the other hand, the adoption of alternative transportation modes (buses, trains, etc) will result in people attempting to locate nearer high

employment areas, which will have beneficial impacts to the environment. The potential magnitude of population and housing relocation is not known at this time. It would depend on the number of affected workers, the availability and cost of housing, other personal preference factors, and specific details of the transportation control measures that have not as yet been made definite. Because results are currently speculative, this impact is not considered significant at this time. When individual projects are initiated, appropriate public and environmental review and documentation will be required, including identification of impacts and mitigation measures.

5.9.2 Mitigation Measures

No significant mitigation measures are identified for the impacts of transportation control measures on housing and population.

5.10 Employment

5.10.1 Impacts

No adverse environmental impacts are identified in this issue area.

5.10.2 Mitigation Measures

No mitigation measures are identified for this issue area.

5.11 Transportation/Circulation

5.11.1 Impacts

No adverse environmental impacts are identified in this issue area.

5.11.2 Mitigation Measures

No mitigation measures are identified for this issue area.

5.12 Public Services

5.12.1 Impacts

5.12.1.1 Effects on Wastewater Treatment Facilities

Many compliance methods or technologies use or produce hazardous materials. For example, the use of steam regeneration of carbon in vapor recovery systems produces a stream of contaminated water. Also, wet scrubber devices create wastewater streams which can contain compounds such as ethylene glycol, cadmium, dioxin, ethylene dichloride, and chloroform. The additional wastewater generated by implementation of the RAQS is expected to be negligible. However, if improperly handled or discharged, these hazardous substances in the wastewater stream might have adverse effects on wastewater treatment facilities. This impact has the potential to be significant, although discharge to sewer systems is regulated; compliance with sewer discharge permit requirements will minimize these impacts.

5.12.1.2 Accidental Release of Ammonia

A major concern with using SCR for controlling NO_x emissions is the accidental release of ammonia. Further discussion of this issue can be found in Section 5.17 (Risk of Upset).

The major application of SCR will result from the control measure requiring substantial reductions in NO_x from electric powered generating equipment (Measure NI-1). As discussed in Section 5.17 (Risk of Upset), only two facilities are expected to be affected by this rule - the Encina and South Bay generating plants, which are owned and operated by San Diego Gas and Electric Company (SDG&E). Another plant that qualifies under the control measure is the Silvergate plant, but this facility is in storage and is not expected to be operational in the future.

Large releases of ammonia could result in an explosion and subsequent fire if sufficient heat is applied to the pressurized ammonia storage tank. Such an incident is not likely to occur if the appropriate American National Standards Institute (ANSI) standards are applied in the design and construction of the ammonia system. If a major catastrophic release of anhydrous ammonia were to occur with the storage and use of ammonia, additional fire protection/emergency response capabilities from local and county response agencies might be necessary.

Adequate emergency facilities exist in the county. The San Diego County HAZMAT Incident Response Team (HIRT) serves the entire county with six separate operating units. According to Mike Handman, HIRT Coordinator, the team is specifically trained to handle ammonia releases.

Impacts to local and county fire protection/emergency response agencies are not expected to be significant with the implementation of the proposed NO_x reduction measure.

5.12.2 Mitigation Measures

5.12.2.1 Effects on Wastewater Treatment Facilities

The pretreatment of wastewater will be required when wet scrubbers are installed, and the enforcement of discharge requirements will minimize this impact. These measures reduce the effects of wastewater treatment facilities to less than significant.

5.12.2.2 Accidental Release of Ammonia

With proper storage and handling of hazardous materials, the impact to fire protection/emergency response will be small. While adequate emergency facilities exist, the potential for their use can be reduced by requiring on-site emergency equipment, training of personnel, and the establishment an emergency response plan. With proper adherence to standards and implementation of the emergence response plan, this impact is not considered significant.

5.13 Energy/Utilities

5.13.1 Impacts

5.13.1.1 Energy Requirements of Emission Controls

Many measures in the RAQS will require applicants to install various types of emission control equipment such as blowers and fans, compressors, refrigeration and compression units, and monitoring equipment. All of these require electricity to operate. The exact extent of this cannot be determined at this time, but it is not expected to be large relative to the SDG&E system. SDG&E is one of the few utilities in California that must build capacity in the near future, and any increase in electrical demand might make it difficult and costly both to meet this new load and to find emission offsets for this increased electrical production under New Source Review. (Mitchell, 1991) However, because the 1991 RAQS also proposes

energy conservation measures which will counter balance these potential small increases, these impacts are not considered significant.

5.13.1.2 Energy Requirements of SCR

One concern with using an SCR system for controlling NO_x emissions is the potential increase in the use of natural gas. The major application of SCR will result from the control measure requiring substantial reductions in NO_x from electric powered generating equipment (measure NI-1). The two facilities in the county expected to be affected by this rule are the Encina and South Bay generating plants.

Although natural gas is a nonrenewable resource, the increased use required by SCR is not expected to represent a significant impact on total county-wide use. Furthermore, the 1991 RAQS, in total, could result in a decline in natural gas usage because of the reductions in natural gas usage that are anticipated from energy conservation control measures that are proposed.

5.13.1.3 Induced Residential Switching from Gas to Electric Water Heating

Two proposed control measures will require residential households to install solar assist equipment on natural-gas-fired water heating in new homes (EC-1) and in existing homes when the house is sold (EC-5). In order to avoid a large capital expenditure on a solar system, residents (or builders of new homes) might choose to install electric water heating in the home. According to a spokesperson from San Diego Gas and Electric (SDG&E), if all residential natural gas customers (over 645,000) converted to electric water heating, this would cause an increase in electric capacity needs that would equal approximately 1/3 of their current total system capacity. SDG&E's "expects" approximately 50 percent of homes to convert to electric water heating, amounting to about 1/6 of SDG&E's current capacity needs (Kane, 1991).

The extent that residential homes might be converted to electric water heating will depend on the life cycle cost of a solar assist natural gas system, with high capital costs and low operating costs, compared to electric water heating, with relatively lower initial costs but high operating costs. Rough estimates of annualized costs (a measure of life-cycle costs) indicates that electric water is slightly higher in overall cost. However, the decision to switch to electric water heating involves weighing the pros and cons of qualitative attributes of the two systems.

For example, while solar assist water heating might seem to some people to be a risky or new technology with high initial costs, it does result in substantially lower operating costs and less dependence on the uncertainties of rising electric rates, which might make the solar assist home more attractive to prospective buyers.

While it is impossible to know at this time exactly what percent of homes might convert to electric water heaters, it is not unreasonable to assume a lower bound of 10 to 15 percent. Because SDG&E is capacity constrained and will need to expand in the near future to meet load growth, increasing their current capacity needs by as little as 10 percent in the long term could be significant.

5.13.2 Mitigation Measures

5.13.2.1 Energy Requirements of Emission Controls

The APCD will coordinate and cooperate with governments and utilities to promote electricity conservation programs. An active conservation program is believed capable of nullifying increases in demands for electricity that are caused by the 1991 RAQS. With this mitigation measure, this issue is not considered significant.

5.13.2.2 Energy Requirements of SCR

No mitigation measures are identified for this issue.

5.13.2.3 Induced Residential Switching from Gas to Electric Water Heating

Owing to the potential for significant impacts from home owners or builders switching from natural gas to electric water heaters, the San Diego APCD will amend these conservation control measures (EC-1 and EC-5) to also require homes with electric water heaters to install solar assist units. This eliminates the homeowner's incentive to switch to electric water heating and reduces this impact to insignificance.

5.14 Aesthetics

5.14.1 Impacts: Emission Control Equipment

Emission control equipment, especially add-on equipment such as SCR and certain vapor recovery systems, can be bulky and/or architecturally deficient relative to surrounding structures. Such equipment is typically installed at existing industrial sites where visual impacts would be insignificant.

5.14.2 Mitigation Measures: Emission Control Equipment

If equipment is to be installed at a facility with potential visual impacts, the permitting process will consider equipment screening devices, alternative equipment placement, and other design and placement strategies which can minimize visual impacts. The APCD will coordinate and cooperate with responsible agencies to ensure that these measures are instituted.

5.15 Recreation

5.15.1 Impacts: Accidental Release of Ammonia

A major concern with using an SCR system for controlling NO_x emission is the catastrophic release of ammonia. The major application of SCR will result from the control measure requiring substantial reductions in NO_x from electric powered generating equipment (measure NI-1). The two facilities in the county expected to be affected by this rule are the Encina and South Bay generating stations. Further discussion of this issue can be found in Section 5.12 (Public Services), Section 5.17 (Risk of Upset), and Section 5.18 (Human Health).

The potential for a significant impact to recreation due to the minor release of ammonia is expected to be very low. However, significant impacts could result from a major release of ammonia. In the event of such a release, there could be toxic effects to plants and animals at nearby recreational sites.

The likelihood of a major release of ammonia is extremely low. However, if a release occurs and specific environmental conditions are met, the environmental impact could be significant.

5.15.2 Mitigation Measures: Accidental Release of Ammonia

The potential for recreational resource impacts is related to the design of emission control equipment and the safety procedures governing their use. Without proper design and safety, a potential exists for significant impact to recreational resources. Mitigation measures concerning these issues were summarized in Section 5.12 (Public Services), and no additional mitigation measures are identified beyond these. With these mitigation measures, the likelihood of harmful release is very low, and this impact is not considered significant.

5.16 Cultural Resources

5.16.1 Impacts

No adverse environmental impacts were identified in this issue area, as it is not currently possible to determine the location and size of construction activities that will occur as a result of the implementation of the 1991 RAQS.

5.16.2 Mitigation Measures

No adverse environmental impacts were identified in this issue area. Before specific construction activities occur, cultural resource surveys may be required.

5.17 Risk of Upset

In order to eliminate possible confusion regarding the difference between risk of upset and human health, clarification is provided here. The impact on human health examines the potential impact on the health of workers and the public under normal operating procedures and incorporates the probability of an event. On the other hand, the risk of upset addresses impacts on the public in case of an accident. It ignores the probability and assumes the accident occurs.

5.17.1 Impacts: Accidental Release of Ammonia

A major concern with using SCR for controlling NO_x emissions is the accidental release of ammonia. The major application of SCR will result from the control measure's requiring substantial reductions in NO_x from electric powered generating equipment (Measure NI-1). Only two facilities in the county are expected to be affected by this rule: Encina and South Bay generating stations, both of which are owned and operated by San Diego Gas and

Electric Company (SDG&E). A third SDG&E plant (Silvergate) is in storage and is not expected to be operational.

The South Coast Air Quality Management District's *(SCAQMD) Revised Draft Environmental Impact Report for Rule 1135* indicates that, although the accidental release of ammonia can occur during production and storage, most accidents involving frequent and significant exposure to individuals occur during the transportation and use of ammonia. (Rule 1135 establishes annual emission limits for generating stations located within the South Coast Air Basin.)

The Rule 1135 DEIR indicates that hazardous materials were shipped nationwide 250,000 times per day in 1983. For the 10-year period between 1971 and 1980, there were 248 deaths nationwide resulting from accidents occurring during the transport of hazardous materials. Of these 248 deaths, 200 involved highway transport and 44 involved railway transport. Over 200 of these deaths were associated with the transport of gasoline, 26 deaths involved liquified petroleum gas, and 14 deaths involved ammonia transport. Deaths involving the transportation of ammonia represent less than 0.01 percent of the total number of hazardous material shipments per day. The Rule 1135 DEIR also reports that 240 ammonia releases were reported in 1987. One fatality involving the driver of an ammonia transport vehicle was reported. Injuries resulting from exposure to ammonia vapors reported in 1987 primarily involved workers in buildings where ammonia had been released.

The Rule 1135 DEIR also provides statewide and local ammonia use information. According to this document, the total ammonia market in California is estimated at 125,000 tons per year, with a majority used for agricultural purposes. Approximately 21,000 tons per year were used for industrial purposes within the boundaries of the South Coast Air Basin. This area comprises the counties of Los Angeles, Orange, Riverside, and nonrural San Bernardino County. According to the Rule 1135 DEIR, the National Response Center (NRC) received reports on 18 local releases from fixed (stationary) sources in the South Coast Air Basin in 1987. According to the NRC, these incidents resulted in no injuries or fatalities.

The SCR technology will require that anhydrous ammonia be stored on site. It has been estimated that the compound will be stored in several large-volume, pressurized containers at each plant. A potential for a risk of upset involving a major release of anhydrous ammonia is possible; however, such a release is extremely unlikely. The catastrophic release of a large volume of ammonia would result in a cloud of gas that could cover several acres. Ammonia concentrations would be diluted and mixed rapidly with air. The characteristics of the cloud would be strongly affected by atmospheric, geographic, geologic, and hydrologic features. However, impacts to public health could be significant. A discussion of these health impacts

is included in Section 5.18 (Human Health). Since a catastrophic spill could also affect water and living resources, the impact on such resources from this type of event is discussed in Sections 5.3 and 5.4, respectively. An accidental release of ammonia could impact the recreational resources surrounding the plants, and such impacts are discussed in Section 5.15 (Recreation). Finally, because fire departments will respond to a major ammonia release, a discussion of the potential impact to fire protection/emergency response capabilities is included in Section 5.12 (Public Services).

5.17.2 Mitigation Measures: Accidental Release of Ammonia

Mitigation measures center around proper adherence to standards, proper training of personnel onsite, and implementation of an emergency response plan. These measures were discussed in Section 5.12 (Public Services). No further mitigation measures are recommended. With implementation of these mitigation measures, the potential for a risk of upset involving the release of ammonia is minimized. However, in the unlikely event of a catastrophic spill, the impacts could be significant.

5.18 Human Health

5.18.1 Impacts

5.18.1.1 Accidental Release of a Catalyst Used in SCR

Manufacturers of the catalyst material used in the SCR process report that the catalyst material contains small amounts of vanadium pentoxide. Vanadium also is a widely distributed element occurring in many types of fuel. Ingested vanadium pentoxide is relatively nontoxic due to poor absorption in the gastrointestinal tract. The inhalation of soluble forms of vanadium pentoxide can produce such respiratory symptoms as tracheitis, bronchitis, emphysema, pulmonary edema, or bronchial pneumonia (SCAQMD 1988). A researcher cited in the SCAQMD Revised Draft EIR for Rule 1135 indicated that no studies of long-term exposure to vanadium pentoxide exposure have shown evidence of lung lesions.

Release of this compound can occur in two ways. First, the catalyst material erodes due to particulates in the flue gas passing over the catalyst. This erosion will result in subsequent inhalation or ingestion of the compound by both onsite personnel and the public. This erosion is a primary concern on coal-fired units because of the high levels of fly ash in the flue gas. However, catalyst erosion has not been demonstrated to be a problem on units fired with natural gas. As discussed in Section 5.17 (Risk of Upset), measures requiring SCR

apply to two electric generating stations. Because both of these stations are fired with natural gas, impact from release of the catalyst due to erosion is not considered significant.

The second method of release of this catalyst is during change-out. Manufacturers report that the SCR catalyst material typically has a life span of 2 to 4 years, while industry is reporting life spans of more than 10 years for gas-fired facilities. The catalyst will need to be replaced once its useful life has ended. There is the potential that, during the removal and installation of catalyst material, plant personnel may be exposed to the vanadium pentoxide component of the material. During change-out, the material could be dropped, thereby releasing particulates of vanadium pentoxide. However, release into the environment during change-out is considered unlikely because this compound is tightly bound to the catalyst substrate (SCAQMD, 1988). In addition, the SCAQMD surveyed various catalyst vendors and reported that no accidents occurred during 199 catalyst installations and removals (SCAQMD, 1988). For these reasons, accidental catalyst release is not considered a significant impact.

5.18.1.2 Ammonia Slip

Ammonia slip is a concern with using SCR systems for controlling NO_x emissions. This phenomenon was also discussed in Section 5.2 (Air Quality). To ensure maximum NO_x reduction efficiency, sufficient ammonia must be injected into the flue gas to react with all the NO_x. Ammonia that does not react with NO_x passes or "slips" through the reactor vessel and is released into the atmosphere. The SCAQMD and the ARB have determined that under normal operating conditions, ammonia concentrations during "slip" conditions range from 5 to 10 ppm.

The current recommended occupational standard for ammonia is 25 ppm (ACGIH, 1986), whereas the federal permissible exposure level (PEL) established by the Occupational Safety and Health Administration (OSHA) is 50 ppm. Thus, concentrations typically found in the flue gas would be considered acceptable. A common practice for determining exposure limits for the general population for such substances is to divide the occupational exposure limits by a safety factor of 100. Thus, the population exposure limit would be 0.25 ppm.

As discussed in Section 5.2 (Air Quality), flue gases are quite hot and rise rapidly into the atmosphere. In this process, the emitted gases are dispersed well away from ground level. Because of this dispersion pattern, it is doubtful that ammonia concentrations within the breathing zone of either the public or workers will exceed the odor detection threshold of between 1 and 5 ppm. The SCAQMD reports that maximum ground-level concentrations of ammonia would be less than 1 ppm at the point of maximum impact (SCAQMD 1988). As

discussed in Section 5.2 (Air Quality), these conclusions are reinforced by the findings of a worst-case dispersion analysis that was applied to the Ventura County Ormond Beach facility.

Based upon the expected concentration of ammonia generated during ammonia slip and the characteristics of dispersion and dilution, a significant impact to the public health is not expected from this form of release.

5.18.1.3 Accidental Release of Ammonia

A major concern with using an SCR system for controlling NO_x emission is the accidental release and subsequent exposure of plant personnel and the public to ammonia during routine operations. The major application of SCR will result from the control measure requiring substantial reductions in NO_x from electric powered generating equipment (measure NI-1). Only two facilities in the county are expected to be affected by this rule — Encina and South Bay generating stations — both of which are owned and operated by San Diego Gas and Electric Company (SDG&E). A third SDG&E plant (Silvergate) is in storage and is not expected to be operational.

Anhydrous ammonia is a colorless, strongly alkaline, and extremely soluble gas with a characteristic pungent odor. The health effect of primary concern with ammonia is the acute irritation of the lungs. It is listed under the federal Superfund Amendments and Reauthorization Act (SARA) of 1986 as an extremely hazardous substance because it is a strong irritant, and exposure to high concentrations between 5,000 and 10,000 parts per million (ppm) can result in death from bronchial spasms. Although the health impacts associated with exposure to anhydrous ammonia can potentially be life threatening, based upon industrial experience as reported by the National Response Center (NRC) and local fire prevention records to date, the potential for such a scenario to develop in an industrial setting is highly unlikely.

Accidental releases of ammonia can be distinguished in two forms: minor and major releases. Minor or small releases refer to leaks and spills associated with routine operational activities involving pipes, valves, pressure-relief devices, or shipping containers. Another characteristic of these releases is that onsite personnel can readily control the release and exposure to ammonia vapors. The Occupational Safety and Health Administration (OSHA) has established a permissible exposure limit (PEL) for ammonia of 50 ppm over an 8-hour time-weighted average. The American Conference of Governmental and Industrial Hygienists (ACGIH) reports irritating symptoms at a concentration between 20 and 25 ppm. The ACGIH has recommended an occupational standard of 25 ppm to protect against irritation to the eyes and respiratory tract. The OSHA PEL is the enforced standard, while the ACGIH limit is

a recommended, but unenforced limit. Existing regulations require plant personnel to be trained in the use of the appropriate personal protective equipment when working in and around ammonia vapors. As a result of this training, it is assumed that the impact on worker health will not be significant.

Ammonia is classified by the U.S. Department of Transportation as a nonflammable gas. Vapors can ignite at high temperatures in the presence of a flame or spark at concentrations in air of 16 to 25 percent of ammonia. A major release under such conditions could involve the rupture and/or explosion of an ammonia storage tank or tanks on the plant premises. A major release could also potentially occur during the transportation of the anhydrous ammonia to the plant sites. As discussed in Section 5.17 (Risk of Upset), the potential for such a major release exists. However, the potential can be significantly reduced by following recommended safety standards and practices.

Adherence to proper safety policies and practices that will be needed during the design, construction, and operation of emission control equipment will minimize the potential health impacts associated with implementation of the proposed rule.

All equipment used to store and dispense ammonia must be designed to meet the requirements identified under the American National Standards Institute code (ANSI 1981). The transportation of ammonia must meet the standards identified by the U.S. Department of Transportation. Personnel handling ammonia must strictly adhere to the requirements set forth under OSHA and the relevant recommendations set forth by ANSI.

OSHA and DOT require the use of proper clothing, including goggles and rubber or plastic gauntlet gloves impervious to ammonia, during the handling of the ammonia. ANSI also recommends the following safety and protective equipment for each ammonia installation: hooded ventilation, safety showers, respiratory devices, and rescue harnesses. All safety equipment should be located close to the ammonia storage and transport containers.

OSHA also requires training for all personnel who handle ammonia. Training includes information on the potential hazards and precautions associated with anhydrous ammonia. Personnel will also be trained in the use of personal protective equipment and the routine maintenance of ammonia-related equipment. ANSI recommends that, if leaks occur in a permanent storage installation, only personnel trained and designated to act in such emergencies remain onsite. With respect to the shipment of anhydrous ammonia, the DOT requires and ANSI suggests that conspicuously marked warning placards be posted to identify the presence of ammonia.

The likelihood of a catastrophic release of ammonia is low. However, if a release occurs and environmental conditions are right, the environmental impact will be significant both to onsite personnel and to the public. With enforcement of the appropriate mitigation measures (identified in Section 5.18.2) and considering the low probability of a major ammonia release, the impact is not considered significant.

5.18.1.4 Accidental Release of Vapor Recovery Media

The nature and likelihood of a release of toxic gases into the environment was discussed in Section 5.2 (Air Quality) and Section 5.3 (Water Resources). Numerous compounds are involved in vapor recovery, and many of these, such as benzene, toluene, and trichloroethylene, are hazardous to human health. A health risk exists if vapor recovery media, such as carbon canisters or the waste stream from the regeneration of carbon, are handled or disposed of improperly. However, this impact is not considered significant, because compliance with current regulations concerning the handling and disposal of hazardous materials would reduce this risk to insignificance.

5.18.1.5 Substitution to Low-ROG Substances

The 1991 RAQS has many measures requiring reduction of ROG in various substances. In order to comply with these measures, substances such as solvents, coatings, and cleaning solutions will be reformulated. This issue was discussed in Section 5.2 (Air Quality) and Section 5.3 (Water Resources). The possibility exists that these reformulated substances will contain exempt compounds that are harmful to humans. Another possibility is that these reformulated substances will be water based (aqueous) products containing harmful toxics and hazardous compounds. Improper handling or disposal of these substances could pose a health risk. Compliance with current regulations concerning the handling and disposal of hazardous and toxic materials reduces this risk to insignificance.

5.18.1.6 Reformulation of Barbecue Charcoal Lighter Fluid

The California Air Resources Board (ARB) has adopted new regulatory standards that require sales of certified charcoal lighter fluid meeting a specific formulation criterion. Volatile organic compound (VOC) emissions from charcoal ignition with charcoal lighter fluid must be less than or equal to 0.20 pound of VOC per ignition. The RAQS will adopt the ARB regulation for charcoal lighter fluid. No adverse environmental impacts are expected as a result of this reformulation of chemical lighter fluid.

5.18.2 Mitigation Measures

5.18.2.1 Accidental Release of a Catalyst Used in SCR

Mitigation measures are discussed in Section 5.2 (Air Quality) and Section 5.3 (Water Resources).

5.18.2.2 Ammonia Slip

Mitigation measures are discussed in Section 5.2 (Air Quality).

5.18.2.3 Accidental Release of Ammonia

The potential for impacts to human health is related to the design of emission control equipment, the safety procedures governing their use, and the implementation of an emergency response plan. Mitigation measures concerning these issues were summarized in Section 5.12 (Public Services), and no mitigation measures are identified beyond these. With proper design, safety criteria, and emergency response plan, the potential for significant impact is expected to be substantially reduced. As a result, this impact is not considered significant.

5.18.2.4 Accidental Release of Vapor Recovery Media

Mitigation measures are discussed in Section 5.2 (Air Quality) and Section 5.4 (Biological Resources).

5.18.2.5 Substitution to Low-ROG Substances

Mitigation measures are discussed in Section 5.2 (Air Quality) and Section 5.4 (Biological Resources).

5.18.2.6 Reformulation of Barbecue Charcoal Lighter Fluid

Adoption of the ARB regulation of limiting VOC emissions to less than or equal to 0.20 pound of VOC per ignition will not result in adverse impacts to the environment. Therefore, no mitigation measures are necessary or proposed.

5.19 Hazardous Waste

5.19.1 Impacts

5.19.1.1 Catalyst Used in SCR

As discussed in Section 5.18 (Human Health), vanadium pentoxide is contained in the catalyst material of SCR processes. SCR catalysts typically have a life span of 2 to 4 years. Once spent, the catalyst must be removed and disposed of. The major application of SCR will result from the control measure's requiring substantial reductions in NO_x from electric powered generating equipment (measure NI-1). The two facilities in the county expected to be affected by this rule are Encina and South Bay generating stations, both of which are owned and operated by San Diego Gas and Electric Company (SDG&E). A third SDG&E plant (Silvergate) is in storage and is not expected to be operational. Disposal alternatives include recycling the catalyst, returning it to the vendor, and disposing of it in a Class I landfill. Land disposal of spent catalyst is expected to be the least desirable alternative because of high disposal costs, potential future liabilities, and negative impacts to landfills (California Public Utilities Commission 1990). Because land disposal of the spent catalyst is not likely, this impact is not considered significant.

5.19.1.2 Additional Hazardous Wastes Generated From Emission Controls

Other control measures can generate hazardous wastes. (For example, carbon, from carbon adsorption systems, is a hazardous material.) These materials could impact landfills in the region.

5.19.2 Mitigation Measures

5.19.2.1 Catalyst Used in SCR

The APCD will coordinate with other agencies to ensure that the catalyst material from SCR is recycled or returned to the original vendor for processing and not disposed of in Class I landfills.

5.19.2.2 Additional Hazardous Wastes Generated From Emission Controls

Where feasible, APCD will encourage recycling. In carbon adsorption systems, APCD will promote continuous carbon regeneration with thermal rather than steam regeneration. Where feasible, APCD also will encourage thermal incineration as a means of disposing of hazardous materials.

6.0 ALTERNATIVES TO THE PROJECT

The California Environmental Quality Act (CEQA) requires an EIR to describe reasonable alternatives to the proposed project that could feasibly attain the project's basic objectives. The alternative discussion must also evaluate the comparative merits of each alternative and include an analysis of whether their implementation would result in lower environmental impacts than the proposed project. The proposed 1991 RAQS is the District's preferred alternative for compliance with the California Clean Air Act and for achieving the objective of improved air quality within San Diego County.

This section evaluates two additional alternatives: the no-project alternative and the less stringent control alternative. A discussion of these alternatives is provided below.

6.1 No-Project Alternative

The no-project alternative consists of not implementing the proposed 1991 RAQS. Existing rules and regulations in effect would continue in place and any future air quality regulation would be in accordance with the existing strategy. No additional air pollution control requirements would be imposed, although existing state and local regulations, especially with respect to motor vehicle emissions, would continue to control some emissions in the future. No new NO_x and ROG controls would be imposed by regulation except for those required under new source review (NSR). NSR is typically considered to be a form of emission prevention, rather than an emission reduction program.

Under this alternative, the District would fail to meet the requirements of the California Clean Air Act. This failure could result in the imposition of sanctions by the state Air Resources Board (ARB).

The potential individual environmental impacts associated with implementation of the no-project alternative are discussed below.

6.1.1 Air Quality

The control strategies included in the existing RAQS are minimal and are not sufficient to attain the federal ozone standard. Consequently, the most significant impact associated with the no-project alternative is the detrimental effect on public health and welfare resulting from the reduction in air quality. There would be higher emissions, overall, of both ROG and NO_x

and subsequent limited progress made toward reducing ozone levels. A secondary benefit of reduced NO_x emissions is the reduction of other air pollutants. NO_x is a contributor to elevated concentrations of particulate matter less than 10 microns (PM_{10}), poor visibility, and acid deposition. Implementation of the no-project alternative would cause an increase in these conditions as compared to the proposed project.

The implementation of the no-project alternative would eliminate the potential for increased emissions of pollutants associated with the additional control measures under the proposed project. These pollutants include potential PM_{10} generated from ammonia use, ammonia emissions generated during the phenomena of ammonia "slip," or ammonia emissions associated with accidental releases. However, the proposed project will result in lower levels of NO_x and ROG emissions. Therefore, with respect to air quality, the benefits described for the project would not occur and the goals of the project would not be accomplished.

6.1.2 Water Resources

Potential impacts with the proposed project include the contamination of groundwater from the discharge of ammonia and other toxic chemicals to water resources. However, incremental impacts associated with the RAQS as compared to the no-project alternative are relatively small. There are two reasons for this. First, the 1991 RAQS contains measures for implementation which are incremental to existing rules. Thus, the no-project alternative already contains rules which have similar impacts to those of the 1991 RAQS. Second, under the no-project alternative, new or modified sources will be subject to the same requirements as measures in the RAQS because of New Source Review (NSR). The intent of NSR is to ensure that all new projects generate no net emission increases for regulated pollutants. Therefore, using best available control technologies (BACT) under NSR, new projects would still be subject to controls even if they are not necessarily included under the no-project alternative.

6.1.3 Biological Resources

The potential impacts to biological resources with the implementation of the proposed project include the release of harmful chemicals to the environment. In addition, possible construction activities resulting from the RAQS could threaten areas with sensitive biological habitat. However, incremental impacts are relatively small. Reasons for this were discussed above in Section 6.1.2 (Water Resources).

6.1.4 Risk of Upset

With the increased use and storage of ammonia under the proposed project, the potential for catastrophic release is increased. But, ammonia would be used under current NSR requirements. Therefore, the no-project alternative is considered only a slight improvement over the proposed project.

6.1.5 Human Health

Under the no-project alternative, residents of San Diego County would be exposed to higher concentrations of NO_x and ROG. Ozone concentrations would continue to exceed both the state and federal standards that have been established at levels designed to protect public health. The exposure to these pollutants would be considered more adverse compared to the small potential increase in exposure to the hazardous chemicals associated with specific control technologies identified in the proposed project.

6.1.6 Hazardous Waste

The proposed plan would result in the generation of additional hazardous wastes. However, the impacts to Class I landfills is not expected to be significant, as quantities would be small, and, in most cases, recycling appears feasible. Therefore, no significant difference is expected between impacts associated with the no-project alternative and the proposed project.

6.2 Less Stringent Alternative

This alternative has three components. First, it proposes to drop energy conservation measures for existing homes because of their potential financial burden to homeowners. This will reduce future costs to the public to retrofit homes before resale. No significant environmental impacts are anticipated from this as compared to the RAQS Project. Second, this alternative will adopt less stringent employee trip reduction measures, resulting in more vehicle trips than the Project. Finally, this alternative is designed to eliminate or reduce risks associated with the use and transportation of anhydrous ammonia required in selective catalytic reduction (SCR) applications while retaining as much of the integrity of the proposed plan as possible. Accordingly, the less stringent control alternative consists of eliminating SCR as the preferred alternative technology for controlling NO_x emissions from boilers used in the generations of electric power (NI-1). Urea injection with combustion modification (UI/CM) will be the alternative to SCR. Two facilities in the county are expected to be affected by this rule — the Encina and South Bay generating plants, which are owned and

operated by San Diego Gas and Electric Company (SDG&E). Another plant that qualifies under the control measure is the Silvergate plant, but this facility is in storage and is not expected to be operational in the future.

6.2.1 Air Quality/Public Health

The proposed project calls for the use of SCR. This process involves the use of anhydrous ammonia. The potential for upsets and subsequent impacts to public health would not be present under the less stringent alternative; however, more NO_x would be generated using the combined UI/CM technology. This technology is less efficient at removing NO_x emissions compared to SCR (VCAPCD, 1990).

The proposed project will result in lower emission levels of NO_x but an increased potential for accidental ammonia release which can be partially mitigated through safety procedures and emergency response plans. These impacts are considered less likely and less severe than impacts to both air quality and public health from more NO_x emissions associated with the less stringent alternative.

By adoption of a less stringent trip reduction program, more vehicle trips and more congestion can be expected. This will result in higher automobile emissions of CO, ROG, and NO_x. As yet, the exact magnitude of these increased emissions has not been quantified. However, dropping ARB-recommended guidelines for a trip reduction program and adopting a less stringent program might be viewed by the ARB as failing to adopt all feasible measures in the RAQS.

6.2.2 Water Resources

Another impact associated with implementation of the less stringent control alternative would be the potential impacts to existing water supplies. The urea injection process requires that solid urea be reconstituted with water prior to use. Large amounts of water would be necessary and such an increased use could be considered significant relative to current drought conditions.

7.0 CUMULATIVE IMPACTS

The California Environmental Quality Act (CEQA) requires an EIR to discuss cumulative impacts. Cumulative impacts can result from individually minor but collectively significant impacts from projects taking place over a period of time. This involves an assessment of the 1991 RAQS relative to other individual projects related to or affected by this project. Because this is a program EIR, the impacts discussed in Section 5 address the potential cumulative environmental effects of all measures proposed for implementation in the 1991 RAQS.

The 1991 Regional Air Quality Strategy is a regional plan. Because of its widespread effect, it impacts and is impacted by projects both within San Diego County and in adjacent air districts. Projects within the county which could provide cumulative impacts include commercial, residential, and agricultural development consistent with the San Diego County General Plan. Attainment plans prepared by adjacent air pollution control districts will also produce effects which would be cumulative to those discussed in Section 5.

Although the impacts of a single project or plan may not be significant when considered in isolation, the cumulative impacts of associated projects may be significant when these projects are considered collectively. Because of this fact, the following issue areas are addressed in this section: air quality, water resources, energy, and hazardous waste generation and disposal.

7.1 Air Quality

The South Coast Air Basin (SCAB) is located immediately north of San Diego County and has similar air quality problems and concerns. Depending on wind and other conditions, pollutants can move from SCAB into San Diego County. The RAQS is intended to improve air quality in the county. Specifically, the RAQS will significantly reduce emissions of NO_x and ROG, the two key precursors to ozone. Thus, air quality will be improved in adjacent air districts which might otherwise be adversely affected by these pollutants generated in San Diego County. Conversely, because these adjacent regions have plans for improving the air quality for their respective jurisdictions, a reduction in pollutants transported into San Diego County is expected.

Electrification is a favored approach to improving air quality in the South Coast Air Quality Management Plan (AQMP). The EIR for Santa Barbara County's RAQS (SBCAPCD, 1990) provides a detailed discussion of the adverse air quality impacts of generating electricity to

provide for the added cumulative demand caused by the various attainment plans within the region. Impacts to air quality will depend on many variables, including how additional electricity is produced, where it is produced, and at what time it is produced. The conclusion reached in the document is that there are too few data to provide any more than highly speculative results. Nevertheless, the potential exists for increased electric production in the southern California area which can lead to increases in NO_x and ROG emissions. In San Diego County, it is believed these increases will be offset by the reductions in emissions that stem from conservation measures that are either contained directly in the RAQS or are instituted as conservation based mitigation measures to offset increased electric use from the RAQS.

Greenhouse gases allow incoming solar radiation to pass through the earth's atmosphere but trap outgoing infrared radiation like the panels of a greenhouse. Some experts believe increasing levels of greenhouse gases threaten to warm the earth by as much as 4 to 9 degrees fahrenheit over the next 50 to 100 years (AOR, 1989). Many measures in the RAQS will result in reformulation of compounds to various low-ROG substances. One potential substitute is 1,1,1-trichloroethane, a greenhouse gas. While potential releases of these compounds are possible, their volumes are small compared to total global contributions of greenhouse gases and are not considered significant. Nevertheless, these small, local releases could contribute in a small way to the cumulative global greenhouse effect.

7.2 Water

If urea injection is used in the less stringent alternative to reduce NO_x emissions, this could cause an impact to water resources. Two major factors combine to make the impact cumulative and potentially significant. First, the southwestern United States is in the fifth year of a drought. Water resources are being drawn down and supplies are being rationed. Second, the population of San Diego County in particular, and Southern California in general, is expected to continue to increase. This increased development would be expected to produce a continued increase in water demand. Given the current climate of uncertainty about water supplies, it would be reasonable to expect a short-term significant impact on water supply; the impact would be expected to be insignificant when water supplies return to their expected pre-drought levels.

7.3 Energy and Utilities

There will be increased overall energy demands due to the implementation of the rules in the RAQS. These demands could be significant when considered in light of the projected employment and population growth of the region. Many control technologies either require energy for implementation or cause a reduction in efficiency of energy use. Opposing such a trend would be an improvement in energy efficiency in motors and implementation of conservation measures. Such an improvement is reasonable to expect, given the significant increase in the market for electrical motors and SDG&E's intention of promoting conservation programs (Mitchell, 1991). Thus, the potential exists for a cumulative impact to energy from the RAQS, but a prediction of its magnitude would be speculative. As a result, this is too speculative to be considered a significant adverse impact.

7.4 Hazardous Waste

As discussed in Section 5.19, many measures in the 1991 RAQS will result in increased quantities of hazardous materials which could significantly impact Class I landfills in the region. When considered along with the use of recycling and thermal incinerators as methods of mitigating the disposal problem, these impacts are not considered significant. However, when considered along with the projected regional growth in population and employment, the potential exists for cumulative impacts to hazardous waste disposal efforts. Because the magnitude of these predicted cumulative impacts is speculative (but possibly small relative to county totals) this is not considered significant.

8.0 SIGNIFICANT IRREVERSIBLE IMPACTS

Potentially significant environmental impacts identified in Section 5 are reduced to a level that are less than significant as a result of mitigation measures. Of the remaining potentially significant issue areas, only the impact from the use of selective catalytic reduction (SCR) is considered to have potential irreversible effects.

SCR systems are used to reduce NO_x emissions from boilers. Significant impacts from the RAQS could result from a catastrophic release of ammonia. However, because effects from an ammonia release would be short-term, these impacts would not be irreversible.

In the less stringent alternative, the use of urea injection with combustion modifications (UI/CM) as a substitute for using SCR to reduce NO_x emissions requires relatively large quantities of water. This increased use of water could be a significant short-term impact to local water supplies because of the current drought. These impacts are not considered irreversible because of their essential short-term nature.

9.0 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

The long-term effect of the RAQS is to improve air quality, resulting in improved public health and welfare. The overall long-term effect is therefore beneficial to society. In order to achieve this long-term beneficial effect, short-term adverse impacts from implementation of the 1991 RAQS might be experienced. With the exception of the risk of upset from the use of ammonia in selective catalytic reduction, these impacts are reduced to insignificant after implementing mitigation measures. As discussed in Section 8, no potentially long-term and irreversible impacts are associated with the 1991 RAQS. Therefore, implementation of the 1991 RAQS is not expected to have adverse effects on long-term productivity in the area.

10.0 GROWTH-INDUCING IMPACTS

The objective of the RAQS is an improvement in air quality. Insofar as better air could lead to increased growth, the plan could produce higher growth. It would be highly speculative, however, to attempt to separate normal growth as discussed in the San Diego General Plan from that specifically resulting from the 1991 RAQS. Any such growth-inducing impacts are expected to be small and, therefore, insignificant.

11.0 REFERENCES

The following sources were used in analyzing this EIR:

- American Conference of Governmental Industrial Hygienists, 1988. Documentation of the Threshold Limit Values.
- American Industrial Hygiene Association, 1988. *Workplace Environmental Exposure Level Guide for Urea.*
- Assembly Office of Research (OAR), October 1989. *California 2000: Exhausting Clean Air: Major Issues in Managing Air Quality.*
- Brunton, Jack, Environmental Supervisor. San Diego Gas and Electric, 1991. Personal Communication.
- California Air Resources Board, 1989. California Air Quality Data.
- California Air Resources Board, June, 1990. *Assessment and Mitigation of the Impacts of Transported Pollutants on Ozone Concentrations within California.*
- California Air Resources Board, August 1990. *Technical Guidance Document: Photochemical Modeling.*
- California Public Utilities Commission, April 1990. *Draft Environmental Impact Report on the Proposed Merger of Southern California Edison and San Diego Gas & Electric Companies.*
- California Public Utilities Commission, August 1990. *Supplement to the Draft Environmental Impact Report on the Proposed Merger of Southern California Edison and San Diego Gas & Electric Companies.*
- Cheminfo Database Canadian Centre for Occupational Health and Safety (for urea).
- Combustion Engineering, April 12, 1989. *Proposal for Southern California Edison Selective Catalytic Reduction Equipment Retrofit for Alamitos 5 & 6*, Combustion Engineering Proposal 40089, April 12, 1989.

- Economic Research Bureau of the Greater San Diego Chamber of Commerce, March 1989. San Diego Gas and Electric Rates 1980-1989.

- Electric Power Research Institute (EPRI), August 1989. *1987 Symposium on Stationary Combustion Nitrogen Oxide Control* (EPRI CS-5631).

- EPRI, July 1989. *1989 Symposium on Stationary Combustion Nitrogen Oxide Control* (EPRI CS-6423).

- EPRI, October 1990. *Electric Vehicles and the Environment: Consequences for Emissions and Air Quality in Los Angeles and U.S. Regions.*

- Frank, George, Transportation Planner, San Diego Association of Governments, September 1991. Personal communications.

- Fundamentals of Industrial Hygiene. Occupational Safety and Health Services, National Safety Council, 1981.

- Hazardous Materials and Hazardous Waste Management Plan, Ormond Beach Generating Station, September 1990.

- Handman, Mike. County of San Diego Emergency Response, 1991. Personal communication.

- Hazardous Waste Management Plan: Ventura County and Incorporated Cities, Final Technical Document. Ventura County Solid Waste Management Department, February 1989.

- Kane, Jerry L., Environmental Department, San Diego Gas & Electric Company, September 1991. Comment to DEIR (see Appendix E).

- Mitchell, Douglas, Resource Planner. San Diego Gas and Electric, 1991. Personal communications.

- National Institute of Occupational Safety and Health (NIOSH), September 1985. *NIOSH Pocket Guide to Chemical Hazards.*

- Patty's Industrial Hygiene and Toxicology, Volume 2B: Toxicology, 3rd Revised Edition, John Wiley and Sons, Inc. 1987.

- Sacramento Metropolitan Air Quality Management District (SMAQMD), February 1991. *Draft Environmental Impact Report, Draft 1991 Air Quality Attainment Plan for the Sacramento Metropolitan Air Quality Management District*, Sch. No. 90021130.

- San Diego Association of Governments (SANDAG), October 1989. *Comprehensive Plan for the San Diego Region, Volume 10, Series 7 Regional Growth Forecast.*

- SANDAG, September, 1990. *Draft 1990 Regional Transportation Plan.*

- San Diego County, May 1989. *Hazardous Waste Management Plan 1989-2000.*

- San Diego County Air Pollution Control District (SDAPCD), October, 1982. *State Implementation Plan Revision for the San Diego Air Basin, Volume I, Executive Summary.*

- SDAPCD, 1989. *1988-89 Annual Report.*

- SDAPCD, 1990. *1990 Annual Report.*

- San Diego County Department of Planning and Land Use, 1991. *Land Use Information System.*

- San Diego County General Plan (SDCGP), August 1990. *Part II: Regional Land Use Element.*

- SDCGP, January 1975. *Part V: Seismic Safety Element.*

- SDCGP, December 1986. *Part VI: Scenic Highway Element.*

- SDCGP, December 1980. *Part VIII: Noise Element.*

- SDCGP, October 1986. *Part IX: Housing Element.*

- SDCGP, August 1990. *Part X: Conservation Element.*

- SDCGP, March 1991. *Part XII: Public Facility Element.*

- San Diego Gas and Electric Company, May 1991. Official Rating of Generating Units, Operations Services.

- Santa Barbara County Air Pollution Control District (SBCAPCD), May 1990. *Final Environmental Impact Report for Santa Barbara County, 1989 Air Quality Attainment Plan*, Sch. No. 89012511.

- South Coast Air Quality Management District (SCAQMD), August 1988. *Revised Draft Environmental Impact Report on Proposed Rule 1135, Emissions of Nitrogen Oxides from Power Generating Steam Boilers*, SCH No. 88032315.

- SCAQMD, May 1989. *Supplement to the Revised Draft Environmental Impact Report on Proposed Rule 1135, Emissions of Nitrogen Oxides from Power Generating Steam Boilers*, SCH No. 88032315.

- SCAQMD, September 1990. *Final Environmental Assessment: Proposed Rule 1174: Control of VOC Emissions from the Ignition of Barbecue Charcoal.*

- SCAQMD and Southern California Association of Governments (SCAG), December 1988. *Final Environmental Impact Report, 1988 Revisions to the Air Quality Management Plan.*

- SCAQMD and SCAG, May, 1991. *Final Environmental Impact Report For: 1991 Revision to the Air Quality Management Plan.*

- Southern California Edison, June 1988. *Selective Catalytic Reduction DeNO$_x$ Demonstration Test - Huntington Beach Unit 2*, Report No. 87-RD-39.

- State of California Air Resources Board Staff Report, Assessment and Mitigation of the Impacts of Transported Pollutants on Ozone Concentrations within California, June 1990.

- Ventura County Air Pollution Control District (VCAPCD), December 1990. *Draft Environmental Impact Report, Rule 59: Electrical Power Generating Equipment- Oxides of Nitrogen Emissions from Utility Boilers*. Sch. No. 90010935.

- Wark, Kenneth and Warner, Cecil F. *Air Pollution, Its Origin and Control*. Hampa and Rowa 1981, Second Edition, p. 10-11.

12.0 ADDENDUM

The Draft Environmental Impact Report (EIR) for the San Diego 1991 Regional Air Quality Strategy (RAQS) was issued on August 1, 1991 and circulated for a 45-day public comment period, which closed on September 16, 1991. A public hearing to solicit input and comments was held on September 12, 1991. Upon receipt of comments, the Final EIR was prepared by the consultant for the lead agency, the San Diego Air Pollution Control District (APCD) and submitted to the APCD on October 2, 1991.

Subsequently, the San Diego Association of Governments (SANDAG) amended the Transportation Control Measures (TCM) Plan for the San Diego Air Quality Plan and submitted it to the San Diego APCD for approval.

Through an addendum to the Final EIR for the San Diego 1991 RAQS, dated April 1992, the Transportation Control Measures Plan is incorporated into the 1991 RAQS. The stated goal of the TCM Plan is to reduce traffic congestion and vehicle emissions in the San Diego air basin in order to meet the requirements of the Congestion Management Act and California Clean Air Act of 1988.

The environmental impacts of the TCM are expected to be very similar to the environmental impacts of the transportation measures detailed in the Draft EIR. The exception is that the TCM Plan does not specify any parking management control measures, except as an option for employers; thus the impacts and mitigation measures for parking controls that were addressed in the Draft EIR are no longer applicable.

A subsequent EIR is not required under California Environmental Quality Act (CEQA) Section 15162 because:

- Incorporation of the TCM does not introduce new significant environmental impacts,
- No substantial changes have been made that would require important revisions to the Final EIR,
- No new information of substantial importance to the RAQS has been introduced, and
- The TCM could not have been made a part of the Final EIR because the final revisions to the TCM Plan were not made by SANDAG until March 27, 1992.

Under Sections 21083 and 21087 of the Public Resources Code and Section 15164 of CEQA, this addendum need not be circulated for public review and has been attached to this Final EIR. This addendum meets the requirements of Section 15164 of CEQA because:

- None of the conditions as described in Section 15162 of CEQA and listed above have occurred,
- Incorporation of the SANDAG TCM Plan required only minor technical changes to be made to the Final EIR to make it adequate under CEQA, and
- Changes to the Final EIR as a result of this addendum do not raise important new issues on the significant effects on the environment as a result of the TCM Plan.

APPENDIX A

NOTICE OF PREPARATION AND INITIAL STUDY

apcd
County of San Diego

R. J. Sommerville
Air Pollution Control Officer

May 23, 1991

**NOTICE OF PREPARATION OF A
DRAFT ENVIRONMENTAL IMPACT REPORT
FOR THE SAN DIEGO
1991 REGIONAL AIR QUALITY STRATEGY**

The San Diego County Air Pollution Control District, acting as lead agency, has determined that the above referenced project may have a significant effect on the environment and that an Environmental Impact Report (EIR) should be prepared. A copy of the Initial Study is attached. A location map is contained in the Initial Study.

The purpose of this notice is to call your attention to this project and to request that your organization assist us in identifying the scope and content of the environmental information that should be addressed in the EIR. Your agency/organization has been identified as a(n):

____ Responsible Agency
____ Trustee Agency
____ Distribution Agency
____ Transportation Planning Agency or Public Agency having responsibility for transportation facilities
____ Adjacent Air Quality AgencyInterested Party
____ Interested Party

Pursuant to California state law, this information must be submitted to us no later than 30 days after your receipt of this letter.

Please send your response to me at the address shown below. If you have any questions or concerns, or would like to discuss the contents of this notice, please contact Robert Mross at (619) 694-3336 as soon as possible.

Sincerely,

H. PAUL SIDHU
Deputy Director

HPS:RM:jo

Attachment: Initial Study

AIR POLLUTION CONTROL DISTRICT
9150 Chesapeake Drive, San Diego, California 92123-1095
(619) 694-3307 FAX (619) 694-2730

Initial Study
San Diego County Air Pollution Control District
San Diego 1991 Regional Air Quality Strategy

ENSR Document No. 1999-001-100
May 1991

Prepared for

San Diego County Air Pollution Control District
San Diego, California

ENSR Consulting and Engineering
1220 Avenida Acaso
Camarillo, California 93012

CONTENTS

1.0 INTRODUCTION

1.1 Project Name

This project is the San Diego 1991 Regional Air Quality Strategy (RAQS). A complete discussion of the 1991 RAQS will be found in the *Draft 1991 San Diego County Regional Air Quality Strategy.*

1.2 Project Applicant

The project applicant is the County of San Diego, Air Pollution Control District (APCD or District), which is located at 9150 Chesapeake Drive, San Diego, California 92123.

1.3 Project Location

The San Diego 1991 Regional Air Quality Strategy will affect sources of air emissions located throughout San Diego County, California. San Diego County is the southwestern most county in California. A map of San Diego County is included as Figure 1-1.

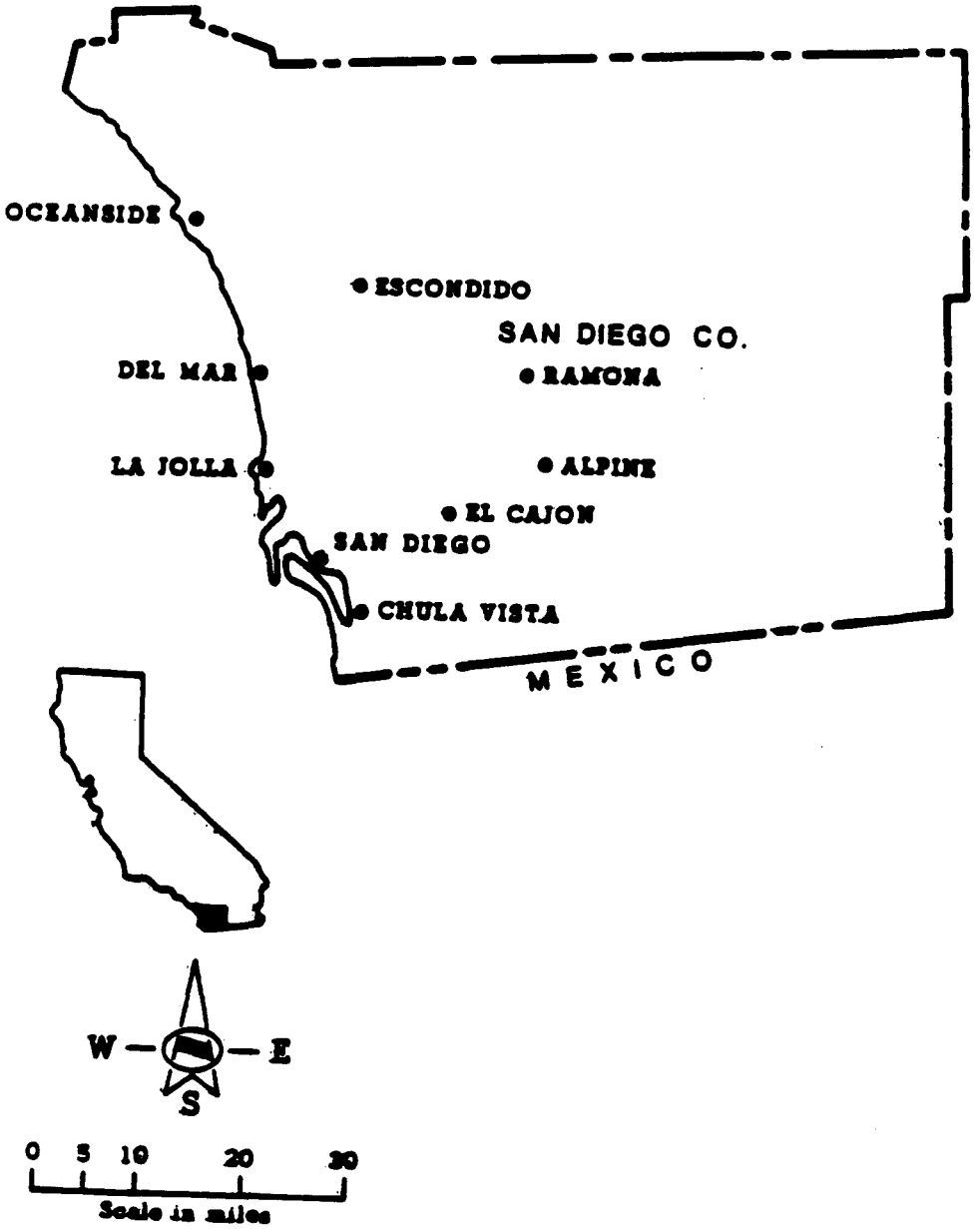
1.4 Need for Assessment of Environmental Impacts

The California Environmental Quality Act (CEQA) requires the evaluation of the environmental impacts of proposed projects and the consideration of feasible methods to reduce, avoid, or eliminate identified significant adverse environmental impacts. In addition, CEQA requires that projects carried out by public agencies be subject to the same level of public review and consideration as private projects requiring approval by public agencies. To fulfill the purpose and intent of CEQA, the APCD is distributing this Initial Study (IS) for the 1991 RAQS. The primary purpose of the 1991 RAQS is to comply with requirements of the California Clean Air Act of 1988 (CCAA).

CEQA allows for one of three determinations for a project depending upon the magnitude of impact to the environment and/or the level of public concern surrounding the project. Where the project has no impact or the impacts can be mitigated, a negative declaration or mitigated negative declaration, respectively, can be prepared. Where the project could significantly impact the environment or is potentially controversial, a full environmental impact report (EIR) is called for.

Figure 1-1

SAN DIEGO AIR BASIN



Due to the scope of the 1991 RAQS and the potential for the project to have a significant effect on the environment, a full environmental impact report (EIR) will be prepared. The EIR for the 1991 RAQS will be prepared as a "Program EIR" as defined in Section 15168 of the CEQA guidelines. The EIR will include a discussion of the expected environmental impacts associated with implementation of the 1991 RAQS. The focus of the EIR will be to examine the collective impact of proposed control measures. Environmental impacts and mitigation measures will be presented for the 1991 RAQS. Alternatives to the 1991 RAQS also will be analyzed in this EIR.

1.5 Background

The federal Clean Air Act (CAA) Amendments of 1977 required all states to attain the National Ambient Air Quality Standards by December 31, 1987. These amendments required states to submit plans that "demonstrated" attainment of the applicable standards by the statutory deadline.

The California Clean Air Act of 1988 (CCAA) added Chapter 10, District Plans to Attain State Ambient Air quality standards, to Part 3 of Division 26 of the California Health & Safety Code (HSC). This chapter of the HSC requires, among other things, that districts develop plans to achieve the state ambient air quality standards as expeditiously as practical. These plans must include regulations that require control technologies for reducing emissions from existing sources. For air districts that do not project attainment of the state standards until after 1994, the CCAA imposes additional requirements. These include:

- Modify existing permitting regulations, known as New Source Review, to ensure that there is no net increase in emissions of nonattainment pollutants or their precursors from all new or modified stationary sources.

- Institute transportation control measures to reduce the rate of increase in vehicle trips and miles travelled and increase vehicle occupancy rates.

- Institute an indirect source review (ISR) program to mitigate air quality impacts from emissions of indirect sources, such as shopping centers and office complexes.

- Require the application of best available retrofit control technology (BARCT) for existing emission sources.

As part of the CCAA planning process, the Air Resources Board (ARB) formally designated San Diego County as a nonattainment area for the state standards for ozone and particulate matter less than 10 microns in diameter (PM_{10}) in June 1989. The western portion of San Diego County (west of the mountains) is also a nonattainment area for carbon monoxide (CO) and nitrogen dioxide (NO_2).

Ozone (smog) is a pollutant of great concern in San Diego County. In 1990, San Diego County exceeded the federal ozone standard on 39 days and the state standard on 139 days. This is an improvement from 10 years previously when the federal standard was exceeded on 87 days and the state standard on 167 days in 1980. Pollution transported from the Los Angeles basin is a contributor to these violations. The CCAA requires the South Coast Air Quality Management District to mitigate the impact of its emissions from Los Angeles County to San Diego County.

The CCAA requires that a revised plan to control smog, carbon monoxide, and nitrogen dioxide be submitted to the ARB this year to provide for attainment of the air quality standards as expeditiously as practicable. Actions to address state particulate standards are deferred until an ARB report on the feasibility of attaining these standards is submitted to the Legislature in 1991, and specific requirements are established by the state.

An area's air pollution is severe if the state board finds and determines that the district cannot attain and maintain the applicable state standard until after December 31, 1997. San Diego has not yet been formally designated as a severe nonattainment area. Appropriate designation will not occur until after the initial plans are submitted to the ARB in 1991. However, attainment of the ozone standard in San Diego County by December 1997 is unlikely, and the ARB has required that the San Diego APCD prepare the 1991 RAQS to meet all the requirements for a severe area.

The CCAA issues several mandates for severe nonattainment areas. Among these are the following requirements:

- Attainment of the state air quality standards by the earliest practicable date.
- Annual emission reductions of 5 percent per year beginning in 1988 for all air pollutants for which state standards are not met.
- A permitting program designed to achieve no net increase in emissions of nonattainment pollutants or their precursors from all new or modified permitted stationary sources.

- The application of best available retrofit control technology (BARCT) for existing emission sources.

- Provisions to develop area and indirect source control programs.

- Adoption and implementation of transportation control measures to substantially reduce trip growth and vehicle miles travelled growth, achieve a 1.5 average vehicle occupancy for weekday commute trips by 1999, and have no net increase in vehicle emissions after 1997.

- Measures to achieve the use of a significant number of low-emission motor vehicles by operators of motor vehicle fleets.

- Submission of an attainment plan by June 1991 and triennial updates thereafter.

According to CCAA, if the 1991 RAQS is unable to meet the above mentioned 5 percent requirement, then all feasible measures must be implemented. Preliminary analysis by the APCD indicates that the 5 percent annual reduction target will not be met in San Diego County, and all feasible measures will be required.

2.0 PROJECT DESCRIPTION

As stated in Section 1, San Diego County exceeds the state and federal standards for ozone, NO_2 and CO. The proposed 1991 RAQS is a regional plan whose purpose is improving air quality in the county by reducing ozone concentrations. Ozone is the product of a complex chain of chemical reactions which occur in the atmosphere in the presence of sunlight. The primary compounds in these chemical reactions are reactive organic gases (ROG) and oxides of nitrogen (NO_x). Thus, ROG and NO_x are said to be precursors to the formation of ozone.

The proposed San Diego 1991 Regional Air Quality Strategy (RAQS) contains control strategies designed to improve air quality by concurrently reducing emissions of ROG and NO_x. These strategies comprise specific control measures that are organized into two basic types: 1) stationary sources, which include both point and area source control measures, and 2) transportation control measures, designed to reduce emissions from transportation related sources.

The APCD has identified over fifty individual industrial and areawide control tactics. Appendix-A contains a list of all tactics currently under consideration for inclusion in the 1991 RAQS. Individual industrial tactics concern point sources of emissions of ROG or NO_x. Examples include coatings (e.g. paints), cleaning solvents, semiconductor manufacturing, and combustion modifications (e.g., flue gas recirculation) and/or post combustion modifications (e.g., selective catalytic reduction) of boilers and engines. Areawide sources are small sources scattered across the county, whose cumulative effect on air quality can be significant. Examples include space heating and air conditioning, household products, and charcoal lighter fluid. Many of the industrial and areawide control tactics for reducing ROG and NO_x emissions, which will be included in the 1991 RAQS, will ultimately also help attain the state standard for PM_{10} and NO_2.

Transportation Control Measures (TCM) are being proposed, which, in coordination with California's new motor vehicle emission standards, will help achieve reductions in ROG, NO_x and CO. These measures are grouped under four major headings: a trip reduction program to reduce vehicles on roads, a transportation capacity expansion program to provide alternatives to single-occupant motor vehicles, a traffic systems management program to improve traffic flow, and an indirect source control program to require that new indirect sources of ROG and NO_x emissions mitigate their air quality impacts. Additionally, measures are being developed to achieve the use of a significant number of low emission vehicles by operators of motor vehicle fleets.

Most of the control measures require local implementation, although some are statewide measures adopted by ARB to meet CCAA mandates. The 1991 RAQS will consist of the following elements:

- Air Quality: This element evaluates historical and current air quality data.

- Baseline Emissions Inventory: This element provides point and area source inventories of emissions of ROG, NO_x, and CO for the 1991 RAQS base year. Forecasts of future year emissions are projected from the base year.

- Stationary and Area Source Control Measures: This element includes the evaluation of new and existing control measures to reduce ROG and NO_x emissions from stationary and area sources. Control measures are evaluated for alternative control technologies or strategies, control measure efficiency, emission reduction potential, and cost effectiveness. Tactics considered for inclusion in the 1991 RAQS as stationary and areawide source control measures are identified in Appendix A.

- Mobile Source and Transportation Control Measures: This element includes the evaluation of new and existing control measures to reduce ROG and NO_x emissions from mobile sources. These control measures are identified in Appendix A.

- Emission Forecasts: Emission forecasts of future ROG and NO_x emissions are made for the purpose of assessing future emissions. The forecasts are generated by projecting the baseline inventory into the future, taking into account the effects of expected socioeconomic changes and the impact of proposed emission control measures.

- Air Quality Modeling: Air quality models are used to predict future air quality, given future emissions. While not precise, these models provide reasonable estimates of the potential effects of large-scale regional emission changes on air quality. Air quality modeling is not required for the 1991 RAQS; only implementation of all feasible measures is required. Triennial updates will introduce modeling.

- Plan Implementation: The key to achieving the aims of the 1991 RAQS is to adopt and implement rules based on the proposed control measures contained in the 1991 RAQS. This involves identifying the agencies responsible for implementing the proposed measures, determining the rulemaking schedule, defining education and information programs aimed at informing the public about air quality concerns,

establishing procedures to evaluate and mitigate emissions growth from specific types of projects, and determining how the 1991 RAQS will be monitored.

3.0 INITIAL STUDY CHECKLIST

3.1 Checklist

For each issue listed in the Table 3-1, Environmental Checklist Form, a determination was made as to whether the project (individually or cumulatively) would have an effect on the environment, and whether the effect would be significant. This checklist is followed in the next section with the rationale for the determination of each issue. Those issues considered to be either of significance or are of unknown significance are discussed briefly here since they will be the focus of a more extensive treatment in the EIR.

3.2 Discussion of Responses to the Checklist

For each issue marked "Yes" or "Maybe" in Table 3-1, the following discussion is provided:

1g. **Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards:** Some control measures may require adoption of selective catalytic reduction (SCR) which necessitates the use and storage of large quantities of ammonia. Siting and design of ammonia storage systems at industrial locations could increase the likelihood of a catastrophic release of ammonia due to earthquakes or other geologic hazards. The significance of such potential impacts will be examined in the EIR.

2a. **Substantial air emissions or deterioration of ambient air quality:** The 1991 RAQS is intended to reduce air pollutant emissions and improve ambient air quality. However, some of the control measures might cause indirect increases in emissions of harmful compounds. For example, certain types of control equipment under consideration in the 1991 RAQS could result in emissions of criteria air pollutants; afterburners installed to incinerate emissions of reactive organic gases (ROG) involve combustion and would therefore emit nitrogen oxides, carbon monoxide, and particulate matter. Also, certain measures could result in emissions of hazardous or toxic substances. For example, the adoption of SCR requires the use and storage of ammonia, a toxic substance, which will be released into the atmosphere. The significance of these potential emissions will be examined in the EIR.

Table 3-1
Environmental Checklist Form

No.	Issue Area	Yes	Maybe	No
1.	**Earth.** Will the proposal result in:			
	a. Unstable earth conditions or in changes in geologic substructures?			X
	b. Disruptions, displacements, compaction or overcovering of the soil?			X
	c. Change in topography or ground surface relief features?			X
	d. The destruction, covering or modification of any unique geologic or physical features?			X
	e. Any increase in wind or water erosion of soils, either on or off the site?			X
	f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?			X
	g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?		X	
2.	**Air.** Will the proposal result in:			
	a. Significant air emissions for some air contaminants?		X	
	b. The creation of objectionable odors?		X	
	c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?		X	
3.	**Water.** Will the proposal result in:			
	a. Changes in currents, or the course of direction of water movements, in either marine or fresh waters?			X
	b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?			X
	c. Alterations to the course or flow of flood waters?			X
	d. Change in the amount of surface water in any water body?			X
	e. Discharge into surface waters, or any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?		X	
	f. Alteration of the direction or rate of flow of ground water?			X
	g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?			X
	h. Substantial reduction in the amount of water otherwise available for public water supplies?		X	
	i. Exposure of people or property to water related hazards such as flooding or tidal waves?			X

Table 3-1 (Continued)
Environmental Checklist Form

No.	Issue Area	Yes	Maybe	No
4.	**Plant Life.** Will the proposal result in:			
	a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?			X
	b. Reduction of the numbers of any unique, rare or endangered species of plants?			X
	c. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?			X
	d. Reduction in acreage of any agricultural crop?			X
5.	**Animal Life.** Will the proposal result in:			
	a. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?			X
	b. Reduction of the numbers of any unique, rare or endangered species or animals?			X
	c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?			X
	d. Deterioration to existing fish or wildlife habitat?		X	
6.	**Noise.** Will the proposal result in:			
	a. Increases in existing noise levels?		X	
	b. Exposure of people to severe noise levels?			X
7.	**Light and Glare.** Will the proposal produce new light or glare?			X
8.	**Land Use.** Will the proposal result in a substantial alteration of the present or planned land use of an area?		X	
9.	**Natural Resources.** Will the proposal result in increases in the rate of use of any natural resource?		X	
10.	**Risk of Upset.** Will the proposal involve:			
	a. A risk of an explosion or the release of hazardous substances (including, but not limited to oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?		X	
	b. Possible interference with an emergency response plan or an emergency evacuation plan?			X
11.	**Population.** Will the proposal alter the location, distribution, density, or growth rate of the human population of an area?		X	
12.	**Housing.** Will the proposal affect existing housing, or create a demand for additional housing?			X

Table 3-1 (Continued)
Environmental Checklist Form

No.	Issue Area	Yes	Maybe	No
13.	**Transportation/Circulation.** Will the proposal result in:			
	a. Generation of substantial additional vehicular movement?			X
	b. Effects on existing parking facilities, or demand for new parking?			X
	c. Substantial impact upon existing transportation systems?		X	
	d. Alterations to present patterns of circulation or movement of people and/or goods?		X	
	e. Alterations to waterborne, rail or air traffic?			X
	f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?			X
14.	**Public Services.** Will the proposal have an effect upon, or result in a need for, new or altered governmental services in any of the following areas:			
	a. Fire protection?		X	
	b. Police protection?		X	
	c. Schools?			X
	d. Parks or other recreational facilities?			X
	e. Maintenance of public facilities, including roads?			X
	f. Other government services?		X	
15.	**Energy.** Will the proposal result in:			
	a. Use of substantial amounts of fuel or energy?		X	
	b. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?		X	
16.	**Utilities.** Will the proposal result in a need for new systems, or substantial alterations to existing utilities.		X	
17.	**Human Health.** Will the proposal result in:			
	a. Creation of any health hazard or potential health hazard (excluding mental health)?		X	
	b. Exposure of people to potential health hazards?		X	
18.	**Aesthetics.** Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?			X
19.	**Recreation.** Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?		X	

Table 3-1 (Continued)
Environmental Checklist Form

No.	Issue Area	Yes	Maybe	No
20.	**Cultural Resources.** Will the proposal:			
	a. Result in the alteration of or the destruction of a prehistoric or historic archaeological site?			X
	b. Result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?			X
	c. Have the potential to cause a physical change which would affect unique ethnic cultural values?			X
	d. Restrict existing religious or sacred used within the potential impact area?			X
21	**Mandatory Findings of Significance.** Does the project have:			
	a. The potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		X	
	b. The potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)			X
	c. Impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)		X	
	d. Environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X	

2b. **The creation of objectionable odors:** Some control measures require the use or collection of compounds which could cause objectionable odors. For example, in SCR systems, small amounts of ammonia are released. The significance of these potential impacts will be examined in the EIR.

2c. **Alternation of air movement, moisture, or temperature, or any change in climate, either locally or regionally:** Reformulating coatings, cleaners and solvents to low-ROG content might result in compounds being used that are hazardous or toxic. For example, one such substitute solvent, 1,1,1-trichloroethane, while not currently classified as a toxic air contaminant, is suspected as a contributor to global warming and stratospheric ozone depletion. The significance of these potential impacts will be examined in the EIR.

3e. **Discharge into surface waters, or any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity:** Certain control measures could affect water quality. For example, improper disposal or handling of spent vapor recovery media, such as carbon canisters, can result in release of toxics and hydrocarbons that would be harmful to water resources if released in sewers or waterways. Also, methanol, as a fuel substitute, can adversely affect water quality. Its corrosiveness increases the likelihood of a spill and its miscibility increases the extent of contamination to ground water if accidentally released. The significance of these potential impacts on water quality will be examined in the EIR.

3h. **Substantial reduction in the amount of water otherwise available for public water supplies:** Certain types of control measures, such as wet scrubbers or urea injection, could increase water consumption. The significance of these potential impacts on water supply will be examined in the EIR.

5d. **Deterioration to existing fish or wildlife habitat:** Certain control measures could affect wildlife habitat: transportation construction projects could eliminate or reduce habitat; in SCR systems, the accidental, catastrophic release of ammonia during operations or transportation could present a risk to biological resources. The significance of these potential impacts on biological habitat will be examined in the EIR.

6a. **Increases in existing noise levels:** Certain control measures could cause increases in noise levels. For example, some emission control equipment could increase noise levels to objectionable levels. Also, trip reduction programs, if successful, will result in fewer vehicles on the road which, in turn, could lead to increased vehicle speeds and noise, especially at peak traffic hours. The significance of these potential impacts on noise levels will be examined in the EIR.

8. **Substantial alteration of the present or planned land use in the area:** Some control measures, such as indirect source review, could lead to changes in land use patterns that could have an impact on community character. In addition, loss of agricultural (or other) land could result from construction of transportation facilities. The significance of such potential impacts on land use will be examined in the EIR.

9. **Increases in the rate of use of any natural resource:** Some stationary source control measures could increase the demand for energy from nonrenewable fossil fuels due to the installation of control equipment. The significance of such potential impacts on natural resources will be examined in the EIR.

10a. **Risk of an explosion or the release of hazardous substances in the event of an accident or upset condition:** Some control measures could increase the likelihood of a major accident. For example, in SCR systems, the catastrophic release of ammonia during operations or transportation could occur. The significance of such potential impacts will be examined in the EIR.

11. **Alter the location, distribution, density or growth rate of population in the area:** Control measures such as New Source Review and Indirect Source Control could alter the spatial distribution, if not the level, of population in the area. The significance of such potential impacts on population will be examined in the EIR.

13c. **Substantial impact upon existing transportation systems:** Transportation control measures will reduce vehicle trips and vehicle miles travelled; however, some secondary impacts on the transportation system could result from the proposed control measures. For example, certain measures could increase the demand for pedestrian and bicycle facilities and increase the demand for bus transit services. The significance of such potential impacts on transportation systems will be examined in the EIR.

13d. **Alterations to present patterns of circulation or movement of people and/or goods:** Please see the discussion under item 13c, directly above. Also, New Source Review and Indirect Source Control programs could alter the spatial distribution of required transportation facilities. The significance of such potential impacts on transportation systems will be examined in the EIR.

14a. **Effects on fire protection:** Certain control measures require the use of hazardous materials. The increased risk of a major accident could increase demands for emergency services and facilities in the area. The significance of these potential impacts will be examined in the EIR.

14b. **Effects on police protection:** Please see the discussion for item 14a, directly above.

14f. **Effects on other government services:** Please see discussion for item 14a, directly above.

15a. **Use of substantial amounts of fuel or energy:** Some stationary source control measures could increase the demand for energy from nonrenewable fossil fuels and/or electricity due to the installation of emission control equipment. On the other hand, transportation control measures designed to reduce automobile use should decrease the demand for nonrenewable fuels. The significance of such potential impacts on energy demand will be examined in the EIR.

15b. **Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy:** Please see discussion for item 15a, directly above.

16. **Result in a need for new systems, or substantial alterations to existing utilities:** Some control measures could affect utilities in the area. For example, as mentioned in 15a and 15b, directly above, certain control measures might increase the demand for natural gas and/or electricity to power control equipment. The significance of such potential impacts on utilities will be examined in the EIR.

17a. **Creation of any health hazard or potential health hazard:** Certain control measures might create indirect health hazards. For example, in SCR systems, there is the potential for release of ammonia during operation or transportation; in vapor recovery systems, accidental release of vapor recovery media can result in release of harmful toxics. The significance of such potential impacts on health will be examined in the EIR.

17b. **Exposure of people to potential health hazards:** Please see the discussion for item 17a, directly above.

19. **Impact on the quality or quantity of existing recreational opportunities:** Certain control measures could impact recreation sites. For example, in SCR systems, the catastrophic release of ammonia during operations or transportation could cause short-term harm to resources in recreational areas. The significance of such potential impacts will be examined in the EIR.

4.0 DETERMINATION OF ENVIRONMENTAL DOCUMENT

DETERMINATION OF ENVIRONMENTAL DOCUMENT

[ ] I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION should be prepared.

[ ] I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measure(s) described in Section C of the Initial Study will be applied to the project. A MITIGATED NEGATIVE DECLARATION should be prepared.

[X] I find the proposed project, individually and/or cumulatively, MAY have a significant effect on the environment and determine that an ENVIRONMENTAL IMPACT REPORT is required.

5/21/91

H. Paul Sidhu
Deputy Director
County of San Diego
Air Pollution Control District

Date

APPENDIX A

CONTROL MEASURES

5.0 CONTROL MEASURES

This appendix contains a list of all tactics that have been identified by the APCD as potential measures to be implemented as future rules. Existing rules that have been implemented by the APCD are not a part of this project and, therefore, are not discussed here. However, some tactics contain proposed revisions to existing rules, and these tactics are presented here.

5.1 Stationary Source Control Measures

5.1.1 Reactive Organic Gases

5.1.1.1 Industrial Specific Controls

The following are stationary source, industrial control tactics designed to reduce reactive organic gases (ROG):

- **Automobile Refinishing.** Require the use of low volatile organic compounds (VOC) coatings and solvents, high transfer efficiency application equipment, improved procedures for storage and handling of cleanup solvents, use of enclosed systems for equipment cleaning, improved maintenance and operating procedures, and proper record keeping.

- **Wood Furniture Coating.** Revise Rule 67.11 to require use of low VOC coatings or add-on control equipment and elimination of low usage exemption.

- **Marine Vessel Coating Operations.** Require lower solvent content coatings and cleanup materials and closed applicator cleaning systems for coating operations associated with construction and repair of marine vessels.

- **Solvent Cleaning and Degreasing.** Revise Rules 67.6 and 11 to require emission controls and permits for currently exempt degreasers, remote reservoir cleaners, and strip tanks; increase freeboard ratio and require freeboard chillers for vapor degreasers; additional controls, lip exhausts and carbon absorbers for vapor degreasers emitting 10 tons/year or more.

- **Polyester Resin Operations.** Revise Rule 67.12, Polyester Resin Operations, which requires material and process changes to reduce styrene emissions, use of low VOC solvents or reclamation systems for cleaning solvents, higher efficiency application equipment, special procedures for storage of cleanup solvents and solvent-laden materials, and record keeping for polyester resin operations.

- **Cleanup Solvents.** Require the use of lower VOC content cleaning solvents and improved solvent handling procedures for cleaning of equipment and materials used in surface coating operations.

- **Plastic Parts, Rubber, Composites & Glass Coating Operations.** Requires use of low ROG coating and cleanup solvents for plastic, rubber, and composite coatings; process changes or add-on control for glass coating, high transfer efficiency application equipment, enclosed systems for equipment cleaning; improved maintenance and operating procedures; and proper record keeping.

- **Foam Blowing/Plastics Expanding.** Require the use of alternate blowing agents or the addition of control equipment such as a carbon adsorption unit or an incinerator.

- **Adhesives.** Require the use of lower VOC content adhesive formulations or add-on control equipment; use of adhesive application equipment with higher transfer efficiency; use of low VOC content solvents and enclosed systems for equipment and surface cleanup operations; and improved record keeping of VOC containing materials.

- **Petroleum Dry Cleaning.** Revise Rule 67.2, Dry Cleaning Equipment Using Petroleum-Based Solvent, by lowering the petroleum solvent usage exemption limit and increasing the ROG emission control level for large petroleum-based solvent dry cleaning facilities.

- **Kelp Processing and Bio-Polymer Manufacturing.** Revise Rule 67.10, Kelp Processing and Bio-polymer Manufacturing Operations, to increase required efficiency of control from 90 to 95 percent.

- **Paint and Ink Manufacturing.** Require use of add-on control equipment for large companies, use of low VOC cleaning materials or solvent reclamation, and use enclosed systems for cleaning tools and equipment; require proper record keeping.

- **Metal Parts and Products Coating.** Enforce control of emissions from surface coating of metal parts and products by use of low VOC solvents, high efficiency application equipment, special procedures for storage and use of cleanup solvents; require improved record keeping and tightening of exemption requirements.

- **Can and Coil Coating.** Revise Rule 67.4 to require use of zero VOC (ROG) compounds as can end sealing coatings for can coating operations, and use of zero VOC coatings or add-on control devices for coil coating operations.

- **Commercial Bakeries.** Require 90 percent reduction of ROG emissions from commercial bakeries producing more than 1,000,000 pounds of bread per year.

- **Semiconductor Manufacturing and Electronic Packaging Operations.** Require use of add-on control devices for slip casting; use of lower VOC content or lower vapor pressure materials for tool and equipment cleaning; improved housekeeping practices for handling of organic solvents; proper record keeping.

- **Underground Storage Tank Removal.** This tactic reduces ROG emissions which occur as a result of excavation and/or treatment of soil contaminated by leaking underground storage tanks and pipelines.

- **Underground Storage Tank Removal and Soil Contamination.** Delineate special procedures for underground storage tank (UST) removal and handling of excavated soil and installation of emission controls in soil decontamination projects.

- **Polyester and Epoxy Resin Operations.** Revise Rule 67.12, Polyester Resin Operations, to eliminate the low usage exemption; to extend the application of cleanup solvent control requirements to also cover epoxy resin operations; and to require add-on controls for large polyester resin operations.

- **Tank Degassing.** Restrict uncontrolled degassing and emission control during cleaning and decommissioning of above ground gasoline storage tanks.

- **Groundwater Decontamination.** Require use of water phase carbon adsorption or add-on control equipment of air stripping operations in groundwater decontamination projects; Initiate special reporting, monitoring and record keeping requirements.

- **Ethylene Oxide Sterilizers.** Require the use of emission control equipment, basic equipment modifications, record keeping requirements, source testing, reporting provisions and/or alternative sterilization techniques to reduce air emissions of Ethylene Oxide (EtO) in San Diego County.

- **New Source Review (NSR).** The purpose of this control measure is to reduce ROG and NO_x emissions in the county by lowering the District's current NSR threshold to a level as yet to be determined. The California Clean Air Act requires that severe nonattainment areas have a permit program to achieve no net increase in emissions from all permitted new or modified stationary sources.

5.1.1.2 Areawide Controls

The following are stationary source, areawide control tactics designed to reduce reactive organic gases (ROG):

- **Barbecue Grill Charcoal Ignition.** After 1992, prohibit the sale of any material and/or method used to ignite barbecue charcoal unless the ROG emissions resulting from the ignition are less than or equal to 0.02 pound of ROG per start.

- **Architectural Coatings.** Modify Rule 67.0, Architectural Coatings Rule, to require lower solvent content for previously exempt categories and require future reductions from currently controlled categories.

- **Consumer Products.** Require reformulated products to be used in households or institutional and commercial establishments with less photochemically reactive formulations.

- **Utility and Lawn/Garden Equipment.** Reduce exhaust emission standards for 1994 and subsequent model lawn and garden and utility engines. Replace engines intended for use in pre-1994 equipment with engines complying with the emission standards for 1994 beginning in 1999.

- **Deodorants and Antiperspirants.** Require reformulation or substitution of underarm deodorants and antiperspirant products to reduce the quantity of organic solvent or aerosol propellant.

- **Commercial Charbroiling.** Control emissions from commercial charbroiling operations. (Source category is composed of restaurants and eating establishments.)

- **Marina Gasoline Refueling.** Require use of a vacuum assist vapor recovery system to capture and process vapors displaced from vessel fuel tanks during gasoline dispensing.

5.1.2 Oxides of Nitrogen (NO_x)

5.1.2.1 Industrial Specific Controls

The following are stationary source, industrial control tactics designed to reduce NO_x:

- **Small Internal Combustion Engines.** Require combustion modifications or flue gas treatment from existing, nonpermitted internal combustion engines which have maximum power output ratings of 50 to 200 brake horsepower. Lower the Permit to Operate (P/O) exemption limit in Rule 11 in order to bring these engines into the permit system.

- **Methanol Fuel For Stationary Diesel Engines.** Require substitution of methanol for diesel fuel in stationary diesel engines.

- **Boiler NO_x Controls.** Obtain NO_x reductions from existing electrical generating utility boilers and large steam production boilers by retrofit control technology, including low NO_x burners (LNB), flue gas recirculation (FGR), selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), and urea injection.

- **Methanol Fuel For Turbines.** Control NO_x emissions by requiring use of methanol as a substitute fuel for stationary combustion gas turbines.

- **Methanol Fuel For Large Boilers.** Control NO_x emissions by requiring use of methanol as a substitute fuel for utility electrical generation and large steam producing boilers.

- **Combustion Emission Limits Based On Gaseous Fuel.** Require all stationary combustion units to emit at a rate no greater than burning gaseous fuel.

- **Industrial and Commercial Boilers.** Require low excess air (LEA), low NO_x burners (LNB), flue gas recirculation (FGR), selective catalytic reduction (SCR), or selective non-catalytic reduction (SNCR) to obtain NO_x reductions from permitted commercial and industrial boilers which have heat input ratings of less than 100 million BTU/hr.

- **Selective Catalytic Reduction For Lean Burn Engines.** Use selective catalytic reduction as add-on control technology for NO_x emissions from lean burn reciprocating engines operating on natural gas, digester gas, or landfill gas.

- **Phosphoric Acid Fuel Cells To Replace Electricity-Generating Internal Combustion Engines.** Replace electricity-generating internal combustion engines with phosphoric acid fuel cells (PAFC) at facilities with power requirements of 40 to 1000 kw.

- **Phosphoric Acid Fuel Cells To Replace Electricity-Generating Utility Boilers.** Replace electricity-generating, utility boilers with PAFC.

- **New Source Review (NSR).** The purpose of this control measure is to reduce ROG and NO_x emissions in the county by lowering the District's current NSR threshold to a level as yet to be determined. The CCAA requires that severe nonattainment areas have a permit program to achieve no net increase in emissions from all permitted new or modified stationary sources.

5.1.2.2 Areawide Controls

The following are stationary source, areawide control tactics designed to reduce NO_x emissions:

- **Utility and Lawn/Garden Equipment.** Reduce exhaust emission standards for 1994 and subsequent model lawn and garden and utility engines. Replace engines intended for use in pre-1994 equipment with engines complying with the emission standards for 1994 beginning in 1999.

- **Low-NO_x Residential Water Heaters.** Require that after 1992, natural gas-fired water heating systems installed in all new residential multi- and single-family homes and replaced in existing homes meet a NO_x emission limit of 2.3 pounds per year per unit.

- **Low NO_x Commercial Water Heaters.** Require that after 1992, natural gas-fired water heating systems installed in all new buildings and replaced in existing buildings meet a NO_x emission limit of 2.3 pounds per year per unit.

5.1.2.3 Energy Conservation

The following are stationary source, energy conservation control tactics designed to reduce NO_x emissions:

- **Swimming Pool Solar Water Heaters - New.** After 1992, require installation of flat-plate solar collectors on all new heated swimming pools.

- **Swimming Pool Solar Water Heaters - Retrofit.** Require installation of flat-plate solar equipment to replace existing natural gas-fired pool heaters upon home resale.

- **Residential Central Heaters - Heat Transfer Pumps Installed In New Homes.** Require installation of heat transfer pumps in all new homes in lieu of conventional natural gas-fired central furnaces.

- **Residential Central Heaters - Replacement With Heat Transfer Pups.** Require installation of heat transfer pumps when existing conventional natural gas-fired central furnaces are replaced.

- **Hot Tub/Spas Solar Water Heaters - New.** Require installation of solar equipment on all new residential hot tubs and spas.

- **Hot Tub/Spas Solar Water Heaters - Retrofit.** Require installation of solar equipment to replace existing residential natural gas-fired hot tub and spa heaters upon home resale.

- **Residential Solar Hot Water Heaters.** Require installation of solar equipment on natural gas-fired water heating systems in all new residential multi- and single-family homes.

- **Residential Solar Hot Water Heaters - Retrofit Existing Homes.** Require solar equipment on natural gas-fired water heating systems upon resale of multi- and single-family homes.

- **Commercial Solar Hot Water Heaters.** Require installation of solar equipment on natural gas-fired water heating systems in all new commercial buildings.

5.2 Transportation Control Measures

- **Transportation Demand Management (Trip Reduction) Program (TDM).** This program includes proposed Regulation XIV as well as measures for commute, education, truck, and noncommute travel. These requirements are supported by maximum penalties of law. This program includes the following:

    1. Commute Travel Reduction Program
    2. College Travel Reduction Program
    3. Goods Movement/Truck Operation Program
    4. Noncommute Travel Reduction Program.

- **Transportation Capacity Expansion Program.** This program supports the TDM program through the provision of alternatives to single-occupant motor vehicles, especially for commute and education travel. The program includes the following:

    1. Transit Improvements and Expansion
    2. Vanpool Program
    3. High Occupancy Vehicle (HOV) Lanes
    4. Park-and-Ride Facilities
    5. Bicycle Facilities Program

- **Traffic Systems Management Program.** The only proposed tactic under this program provides for traffic flow improvements through the computerization of traffic signals. This program will reduce ROG and NO_x emissions by 0.22 percent.

- **Indirect Source Control (ISC) Program.** The purpose of this control measure is to reduce ROG and NO_x emissions by requiring that new indirect sources mitigate their air quality impacts. Indirect sources are land uses and facilities that do not by themselves produce significant amounts of pollutants, but which generate or attract motor vehicle traffic whose emissions adversely affect air quality. Examples of indirect sources are residential developments, office complexes, and shopping centers. To respond to the California Clean Air Act, the District will develop an indirect source review program. The cities and the County in this region will prepare air quality programs or elements for their respective general plans, incorporating

features of the indirect source review program. These additions to local general plans are important because they represent the integration of air quality considerations into development policies and requirements. The general plan programs/elements will identify policies and design requirements for new development that will improve accessibility for pedestrians, transit, and bicycles. These policies and design criteria should make it at least as easy to travel by walking or other modes as by car. Additionally, measures are being developed to achieve the use of a significant number of low emission vehicles by operators of motor vehicle fleets.

APPENDIX B

RESPONSES TO NOTICE OF PREPARATION AND INITIAL STUDY

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON Governor

DEPARTMENT OF FISH AND GAME

330 Golden Shore, Suite 50
Long Beach, CA 90802
(213) 590-5113

June 14, 1991

Mr. Robert Mross
San Diego Pollution Control District
9150 Chesapeake Drive
San Diego, California 92123-1095

Dear Mr. Mross:

We have reviewed the Notice of Preparation for the San Diego 1991 Regional Air Quality Strategy (SCH 91061009). To enable our staff to adequately review and comment on this project, we recommend the following information be included in the Draft Environmental Impact Report:

1. A complete assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened and locally unique species and sensitive and critical habitats.

2. A discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

3. A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts. Stream buffer areas and maintenance in their natural condition through non-structural flood control methods should also be considered in order to continue their high value as wildlife corridors.

More generally, there should be discussion of alternatives to not only minimize adverse impacts to wildlife, but to include direct benefit to wildlife and wildlife habitat. Those discussions should consider the Department of Fish and Game's policy that there should be no net loss of wetland acreage or habitat values. We oppose projects which do not provide adequate mitigation for such losses.

Diversion, obstruction of the natural flow, or changes in the bed, channel, or bank of any river, stream, or lake will require notification to the Department of Fish and Game as called for in the Fish and Game Code. Notification should be made after the project is approved by the lead agency.

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact Kris Lal of our Environmental Services staff at (213) 590-5137.

Sincerely,

Bruce E. Eleam-for

Fred Worthley
Regional Manager
Region 5

cc: Office of Planning & Research

GRANVILLE M. BOWMAN
DIRECTOR
(619) 694-2212
(LOCATION CODE 7501)

County of San Diego

DEPARTMENT OF PUBLIC WORKS

5555 OVERLAND AVE. SAN DIEGO. CALIFORNIA 92123-1295

COUNTY ENGINEER
COUNTY AIRPORTS
COUNTY ROAD COMMISSIONER
TRANSPORTATION OPERATIONS
COUNTY SURVEYOR
FLOOD CONTROL
LIQUID WASTE
SOLID WASTE

June 28, 1991

TO: H. Paul Sidhu, Deputy Director
Air Pollution Control District

FROM: for Sharon Jasek Reid, Deputy Director
Department of Public Works

SUBJECT: Notice of Preparation for the San Diego 1991 Regional Air Quality Strategy

The Department of Public Works is not a Responsible Agency for this project. DPW will be affected by the control measures proposed by the RAQS. Effects to DPW are as operator of certain facilities (landfills, wastewater treatment and conveyance facilities, and road maintenance stations), as an agency responsible for transportation of solid waste, and as the major provider of public transit in the unincorporated area.

Department of Public Works Facilities

Many of the facilities operated by DPW have been established to protect the public's health and safety, and/or in response to state or federal law. No specific new control measures have been identified for these facilities. It is expected that new landfills, road stations, and wastewater facilities will be built in future years to accommodate San Diego's growing population. How will the RAQS, and in particular the "no net increase" rule, be applied to these future facilities?

Can the Air Pollution Control Board or the California Air Resources Board grant waivers if a facility results in a net increase of pollutants, yet is needed for health and safety reasons?

How will the RAQS complement or contradict requirements for methane gas collection systems at landfills and ordinary maintenance and operation of solid waste, liquid waste, and road maintenance facilities?

There are currently several state-approved methods for groundwater decontamination at landfills. One or more cause emission of ROGs, through the use of aeration techniques. The draft regulations appear to conflict with some of accepted methods used to comply with other agencies' regulations. The draft EIR should address such conflicts in agency regulations.

The EIR should determine if mandated engine retrofitting would create more solid waste and hazardous materials to be disposed of in landfills, and discuss potential impacts to the County's landfills.

We ask that your EIR consultant work with Kathy Lehtola, Principal Solid Waste Program Manager, in relation to these concerns. She can be reached at (619) 694-2177.

Department of Public Works Operations

The retrofitting of diesel engines to methanol is known to cause problems with the life and reliability of engines. The Department of Public Works is especially concerned about retrofitting emergency generator and pump engines required for DPW facilities. We would like to see the draft EIR address the health and safety impacts to the community in the event that currently unproven technologies are adopted, implemented, and then fail. The financial consequences of this should be considered as well. Development of cleaner diesel fuel should be discussed as an alternative to retrofitting engines.

Services in portions of unincorporated area may have geographical problems in getting and distributing certain fuels such as natural gas. The EIR should discuss logistics of dispensing natural gas and other fuels, if the plan proposes their use.

We ask that your EIR consultant work with William Back, Chief of Fleet Operations, in researching these matters. He can be reached at (619) 964-3181.

Transit Operations

The EIR should discuss the potential for increased traffic noise that might be generated from increased speeds due to less congestion, and from projected increases in rail and bus service.

RAQS may eventually result in fewer people having access to personal vehicles. The EIR should address mass transit and its ability to respond to an emergency evacuation plan.

The EIR should address the increase in demand for safe park-and-ride facilities located in convenient, safe, transit accessible locations. Proximity of transit facilities to child care and shopping facilities will become of greater importance.

The EIR should discuss projected increases in all forms of transit. An analysis of the ability of transit agencies to respond in a timely manner to project increased needs should be presented. Because the "California Car Culture" is so ingrained in our society, the revised RAQS will result in significant cultural changes. The EIR and the RAQS themselves should address how these new measures might be implemented to facilitate their acceptance by the residents of San Diego County.

Should your environmental consultant require information about DPW Transit Operations, please contact Larry Watt, Principal Transportation Specialist, at (619) 694-3562.

Thank you for the opportunity to comment on this very important project.

cc: Maggie Loy (0340)
Tony Mendoza (0386)
Bill Back (0334)
Kathy Lehtola (0383)

San Diego
ASSOCIATION OF
GOVERNMENTS

Suite 800, First Interstate Plaza
401 B Street
San Diego, California 92101
(619)595-5300 Fax (619)595-5305

June 18, 1991

Mr. H. Paul Sidhu, Deputy Director
San Diego Air Pollution Control District
9150 Chesapeake Drive
San Diego, CA 92123

SUBJECT: NOP/DEIR for the San Diego 1991 Regional Air Quality Strategy

Dear Mr. Sidhu: Paul

We have reviewed the Notice of Preparation of the Draft Environmental Impact Report for the San Diego 1991 RAQS. We concur with the assessments in the Initial Study Checklist with the following exceptions, which we propose be added to the EIR.

11. **Housing.** Will the proposal affect existing housing or create a demand for additional housing. Our recommendation: Maybe.

12. **Transportation/Circulation.** Will the proposal result in:
    b. Effects on existing parking facilities, or demand for new parking? Our recommendation: Maybe.
    e. Alterations to waterborne, rail, or air traffic? Our recommendation: Maybe.

14. **Public Services.** Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:
    e. Maintenance of public facilities, including roads? Our recommendation: Maybe.

Thank you for the opportunity to comment on the NOP/DEIR. If you have any questions about these comments, please call me at 595-5363.

Sincerely,

LEE HULTGREN
Director of Transportation

LH/NV/ah

Sidhu

CITY OF SANTEE

June 21, 1991

H. Paul Sidhu
Deputy Director
Air Pollution Control District
9150 Chesapeake Drive
San Diego, CA 92123-1095

Re: NOP for Draft Environmental Impact Report
for the San Diego 1991 Regional Air Quality Strategy

Dear Mr. Sidhu:

The City of Santee appreciates the opportunity to respond to the above referenced Notice of Preparation. Staff has analyzed the NOP and has the following comments:

1. As an alternative proposal, the Transportation Demand Management Program, as currently proposed by SANDAG, should be analyzed. Through continued negotiations, all or part of this alternative program may eventually become APCD's proposal as well.

Further comments may be forthcoming pursuant to City Council review next week. If you have any questions, do not hesitate to contact me at 258-4100.

Sincerely,

Douglas Williford, AICP
Principal Planner
Department of Planning and Community Development

DW:sm

10765 Woodside Avenue • Santee, California 92071-3198 • (619) 562-6153

STATE OF CALIFORNIA - BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 11, P.O. BOX 85406, SAN DIEGO 92186-5406

July 10, 1991

11-SD-VAR

MROSS
Robert ~~Ross~~
SDAPCD
9150 Chesapeake Drive
San Diego, CA 92123-1095

Dear Mr. Ross:

Notice of Preparation of a DEIR for the
San Diego 1991 Regional Air Quality
Strategy - SCH 91061009

Caltrans District 11 looks forward to the opportunity to review the referenced EIR.

Sincerely,

JESUS M. GARCIA
District Director

By

James T. Cheshire
JAMES T. CHESHIRE, Chief
Environmental Planning Branch

APPENDIX C

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APPENDIX D

TRANSCRIPT OF PUBLIC MEETING
AND
RESPONSES TO PUBLIC COMMENTS

SAN DIEGO AIR POLLUTION CONTROL DISTRICT

PUBLIC WORKSHOP FOR DISCUSSION OF THE

DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE

1991 REGIONAL AIR QUALITY STRATEGY

TAKEN AT SAN DIEGO, CALIFORNIA
SEPTEMBER 12, 1991

KAREN A. BLACK, REPORTER
CERTIFICATE NO. 8997

JAN WHITE & ASSOCIATES
CERTIFIED SHORTHAND REPORTERS

THE KOLL CENTER
501 WEST BROADWAY, SUITE 1335
SAN DIEGO, CALIFORNIA 92101
(619) 234-0991

ORIGINAL

I-N-D-E-X

SPEAKER APPEARANCES

PAUL DAVIS

JEFF BAXTER

RICHARD SIMON

JERRY KANE

PETER FORD

ALSO PRESENT:

SUNNY BARRETT

DORN BISHOP

WILLIAM TAYLOR

SALLY MORROW

H. PAUL SIDHU,
DEPUTY DIRECTOR
AIR POLLUTION CONTROL DISTRICT
9150 CHESAPEAKE DRIVE
SAN DIEGO, CA 92123-1095

ROBERT J. MROSS,
ASSOCIATE AIR RESOURCES SPECIALIST
AIR RESOURCES & STRATEGY DEVELOPMENT DIVISION
AIR POLLUTION CONTROL DISTRICT
9150 CHESAPEAKE DRIVE
SAN DIEGO, CA 92123

MR. DAVIS: WE MIGHT AS WELL GET STARTED. MY NAME IS PAUL DAVIS. I AM WITH THE AIR POLLUTION CONTROL DISTRICT, AND I AM PROGRAM POLICY SPECIALIST FOR THE DISTRICT.

I WOULD LIKE TO THANK YOU FOLKS FOR COMING OUT TO THE WORKSHOP TODAY. THE WORKSHOP TODAY IS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED 1991 REGIONAL AIR QUALITY STRATEGY.

I WOULD LIKE TO MAKE SOMETHING CLEAR AS WE START THIS. THIS IS NOT A TRADITIONAL WORKSHOP IN THE DISTRICT'S TRADITIONAL WORKSHOP SENSE. OUR WORKSHOPS USUALLY INVOLVE TAKING REGULATIONS TO THE PUBLIC FOR PUBLIC REVIEW AND COMMENT IN AN EFFORT TO TRY AND WORK OUT WITH INDUSTRY AND AFFECTED PARTIES ITEMS OF CONCERN WITHIN THE PROPOSED REGULATORY MEASURES.

IN THIS CASE, HOWEVER, WE'RE NOT DISCUSSING A PROPOSED REGULATORY MEASURE; WE'RE DISCUSSING ENVIRONMENTAL ASSESSMENT AND THE FORM OF THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE REGIONAL AIR QUALITY STRATEGY.

THE PURPOSE OF THIS WORKSHOP IS NOT TO DISCUSS WHETHER OR NOT ANY ITEM BELONGS IN THE STATEGY. THE PURPOSE OF THIS WORKSHOP IS TO EXPRESSLY DISCUSS THE ASSESSMENT OF THE STRATEGY IN THE DRAFT EIR.

WITH THAT HAVING BEEN SAID, I WANT TO GIVE A

BRIEF BACKGROUND. I WILL THEN TURN IT OVER TO JEFF BAXTER AND RICK SIMON FROM ENSR, THE PEOPLE WHO PREPARED THE DOCUMENT, FOR A BRIEF DISCUSSION OF SOME OF THE ITEMS THAT ARE IN THE DRAFT EIR.

WE ARE NOT GOING TO GET LOCKED INTO A DIALOGUE TODAY. THE RESPONSE TO THE COMMENTS THAT ARE RAISED TODAY WILL BE ADDRESSED IN THE FINAL EIR. IF THERE IS A BRIEF RESPONSE WE CAN GIVE TO A COMMENT OR SOMETHING FOR CLARIFICATION, WE WILL BE GLAD TO PROVIDE THAT, BUT THE PURPOSE OF THIS WORKSHOP IS MERELY TO RECEIVE COMMENTS SO THAT THEY CAN BE RESPONDED TO IN THE FINAL EIR.

THE PROJECT THAT'S COVERED BY THE DRAFT EIR IS THE REGIONAL AIR QUALITY STRATEGY BEING DEVELOPED PURSUANT TO THE CALIFORNIA CLEAN AIR ACT OF 1988. TO THE EXTENT FEASIBLE, THIS ROUND OF AIR QUALITY PLANNING WILL ALSO TRY TO INCORPORATE OR NOT RUN COUNTER TO REQUIREMENTS THAT ARE IN THE FEDERAL CLEAN AIR ACTS AMENDED IN 1990.

THE REGIONAL AIR QUALITY STRATEGY IS DESIGNED TO ADDRESS THE THREE POLLUTANTS FOR WHICH SAN DIEGO COUNTY IS NOW ON ATTAINMENT AND FOR WHICH THE CALIFORNIA CLEAN AIR ACT REQUIRES A REGIONAL AIR QUALITY STRATEGY: CARBONMONOXIDE, OZONE, AND NITROGEN DIOXIDE.

NITROGEN DIOXIDE, WHILE WE ARE TECHNICALLY A

NONATTAINMENT AREA, IT'S LIKELY THAT ATTAINMENT IS ON THE HORIZON. HOWEVER, THE STATE OF CALIFORNIA HAS INDICATED THAT IT CONSIDERS NITROGEN DIOXIDE TO BE AN EQUAL CONTRIBUTOR TO THE OZONE PROBLEM AS REACTIVE ORGANIC GASES, REACTIVE HYDROCARBONS, WHATEVER NAME YOU WISH TO ATTRIBUTE TO IT.

THE STRATEGY IS REQUIRED BY LAW TO ACHIEVE A FIVE PERCENT PER YEAR REDUCTION IN NONATTAINMENT POLLUTANTS OR THEIR PRECURSORS. IF THAT'S NOT FEASIBLE, THEN WE ARE TO IMPLEMENT ALL FEASIBLE MEASURES ON AN EXPEDITIOUS SCHEDULE.

THE DISTRICT HAS MAINTAINED FOR QUITE A WHILE THAT IT IS HIGHLY UNLIKELY WE WILL ATTAIN FIVE PERCENT PER YEAR.

GIVEN THAT, WE'RE THROWN INTO WHAT WE REFER TO AS PLAN B, ALL FEASIBLE MEASURES ON AN EXPEDITIOUS SCHEDULE. THAT IS THE PROPOSED STRATEGY THAT HAS BEEN EVALUATED BY THIS DRAFT EIR. IT COVERS SAN DIEGO COUNTY. IT COVERS SAN DIEGO COUNTY'S POLITICAL BOUNDARIES THAT ARE APPROXIMATELY THE GEOGRAPHIC BOUNDARIES FOR THE AIR BASIN.

THAT'S A BRIEF OVERVIEW OF THE PROJECT AND HOW WE GOT TO WHERE WE ARE. WITH THAT, I WANT TO TURN IT OVER TO MR. BAXTER FOR A BRIEF DISCUSSION ON ITEMS THAT NEED TO BE DISCUSSED IN THE EIR.

MR. BAXTER: THANK YOU, PAUL. THE 1991 REGIONAL AIR QUALITY STRATEGY IS A REGIONAL PLAN PURSUANT TO THE CALIFORNIA CLEAN AIR ACT. THE EIR THAT WAS PERFORMED IS A PROGRAM EIR UNLIKE AN EIR YOU MIGHT SEE ON A SPECIFIC PROJECT WHERE IT MIGHT CITE SPECIFIC DATA. A PROGRAM EIR TAKES A MORE QUALITATIVE AND AGGREGATE APPROACH TO THE PROBLEM.

WE LOOKED AT THE 1991 RAQS IN A GENERAL SENSE. WE ALSO LOOKED AT TWO ALTERNATIVES: THE NO PROJECT ALTERNATIVE AND THE LESS STRINGENT ALTERNATIVE.

THE LESS STRINGENT ALTERNATIVE INCLUDED NO SELECTIVE CATALYTIC REDUCTION OF RULES. IT WAS A -- THERE WERE NO ENERGY CONSERVATION MEASURES BEING DELETED FROM THE 1991 RAQS, AND THERE WAS AN ALTERNATIVE PREPRODUCTION PLANT IN THE REGIONAL ALTERNATIVE.

I WAS ASKED TODAY PRETTY MUCH TO JUST DISCUSS THE ITEMS THAT TURNED OUT TO BE SIGNIFICANT AFTER MITIGATION, AND THAT'S WHAT I WILL DO.

ON THE 1991 RAQS OF THE EIR, THERE WAS ONE MAJOR ISSUE THAT WAS SIGNIFICANT, AND THAT WAS THE RISK OF UPSET DUE TO THE USE, STORAGE, AND TRANSPORT OF ANHYDROUS AMMONIA. ACCIDENTS CAN OCCUR DURING TRANSPORT, THE USE, OR THE STORAGE OF THE AMMONIA.

IN THE 1991 REGIONAL AIR QUALITY STRATEGY, THE MAIN SOURCE OF AN INCREASE IN THE USE OF ANHYDROUS

AMMONIA COMES FROM THE REQUIREMENT OF SELECTIVE CATALYTIC REDUCTION FOR LARGE UTILITY BOILERS, AND THIS WOULD APPLY MOSTLY -- THIS WOULD BE DIRECTED MOSTLY TOWARD SAN DIEGO GAS AND ELECTRIC'S SCENE AND SOUTH BAY GENERATION STATIONS WHERE THE SCR IS USED AS A CONTROL MEASURE TO REDUCE NITRATE OXIDE EMISSIONS FROM THE ELECTIC POWER GENERATION STATIONS. ANHYDROUS AMMONIA IS A HAZARDOUS MATERIAL, AND IF EMITTED IN LARGE CONCENTRATIONS, CAN BE A SERIOUS HAZARD.

NOW, WHILE THE HANDLING AND MAINTAINING AND SAFETY PROCEDURES DEALING WITH ANHYDROUS AMMONIA ARE WELL UNDERSTOOD AND PRACTICED IN INDUSTRY TODAY, AND THE CHANCE OF A RISK OF UPSET ARE SMALL, IF IT DOES HAPPEN, IT WOULD BE SIGNIFICANT IF AN UPSET DID OCCUR.

THE MITIGATION MEASURES THAT ARE PROPOSED WILL BE TO REQUIRE A PROPER AND SUFFICIENT TRAINING ON THE PART OF ON-SITE PERSONNEL IN CASE OF AN ACCIDENT, AND ALSO THE IMPLEMENTATION OF AN EMERGENCY RESPONSE PLAN TO REDUCE TIME TO GET HELP AND TO GET PROPER PROCEDURES HANDLED IN A QUICK AND CORRECT WAY.

AGAIN, THOUGH, WE FELT THAT THIS WAS A SIGNIFICANT IMPACT, BECAUSE IF IT DOES OCCUR, IT WILL BE SIGNIFICANT EVEN THOUGH IT'S HIGHLY UNLIKELY.

I MIGHT MENTION ONE OTHER AREA THAT CAME UP, AND THAT IS IN SOME OF THE LAND USE MEASURES FOR

GROWTH-INDUCING MEASURES IN THE PLAN MAY WELL RESTRICT PARKING, AND WILL RESTRICT PARKING IN PARKING ZONES, AND WHILE THIS COULD LEAD TO INCREASED PARKING OFF STREET, WHICH WOULD CAUSE QUITE A BIT OF DIFFICULTY TO LOCAL MERCHANTS AND TO HOUSEHOLDS, WE DIDN'T FEEL THIS WAS SIGNIFICANT, BY THE WAY, BECAUSE LOCAL PARKING ORDINANCES AND VARIOUS PROCEDURES SHOULD OVERCOME AND ALLEVIATE ANY KIND OF IMPACT FROM THIS.

THAT PRETTY MUCH WRAPS UP THE SIGNIFICANT IMPACTS AFTER MITIGATION.

MR. DAVIS: THANK YOU, JEFF. WITH THAT, WHAT I WOULD LIKE TO DO, GIVEN THE SMALL CROWD HERE TODAY, JUST THOSE OF YOU WHO WERE HERE IN THIS ROOM FOR THE CRITERIA WORKSHOP PROBABLY RECALL THE STANDING ROOM ONLY. I MADE UP A SPEAKERS' LIST HERE. HAS EVERYONE SIGNED WHO WOULD LIKE TO SPEAK?

MR. KANE: I GUESS I HAVEN'T YET.

MR. DAVIS: WITH THAT, I WOULD JUST LIKE TO CLOSE OUT OUR PRESENTATION BY INDICATING THAT THE DISTRICT -- THE DISTRICT WAS NOT CONVINCED THAT LEGAL REQUIREMENTS IMPOSED BY THE CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIRED ENVIRONMENTAL IMPACT REPORT FOR THIS PROJECT.

HOWEVER, GIVEN THE REGIONAL SIGNIFICANCE, WE FELT IT PRUDENT TO FOLLOW THE SEQUEL PROCEDURES TO ALLOW

FOR THE MAXIMUM DEGREE OF PUBLIC PARTICIPATION IN THE DEVELOPMENT OF THE REGIONAL AIR QUALITY STRATEGY. THE COMMENTS RAISED TODAY AND THE WRITTEN COMMENTS THAT HAVE BEEN RECEIVED WILL BE ADDRESSED PURSUANT TO PROCEDURE GUIDELINES IN THE FINAL ENVIRONMENTAL REPORT.

SO WITH THAT, PETE FORD, WHY DON'T I TURN THIS OVER TO YOU, AND I'LL JUST LET YOU STAND AND MAKE YOUR COMMENTS. PLEASE IDENTIFY YOURSELF SO THAT FOR THE RECORD WE HAVE INDICATED WHO YOU ARE AND WHO YOU REPRESENT.

MR. FORD: I'M PETE FORD. I WORK WITH SAN DIEGO GAS AND ELECTRIC, AND MY COMMENTS PRIMARILY ARE ON THE MANDATING OF SOLAR HOT WATER HEATING IN THE RESIDENTIAL AREA. WE HAVE SUBMITTED WRITTEN COMMENTS, AND I AM NOT GOING TO GO INTO GREAT DETAIL AS TO WHAT IT INVOLVES.

WHAT I WOULD LIKE TO DO IS JUST EMPHASIZE THE FACT THAT WE FEEL WE'VE UNDERSTATED THE IMPACT ON SDG&E AND ON THE RESIDENTIAL CUSTOMERS WHO ARE GOING TO MANDATE TO INSTALL THIS AT TIME OF SALE.

WE FEEL THAT GIVEN THE ALTERNATIVE OF ABOUT A 4,000 TO $5,000 INCREASE COST TO THE SALE OF THEIR HOUSE, THEY WILL OPT FOR THE LESS EXPENSIVE ALTERNATIVE OF INSTALLING AN ELECTRIC WATER HEATER.

OUR GRID DOES NOT SUPPORT THE ELECTRIC WATER

HEATER IN THE MARKET THAT HAS 94 PERCENT SATURATION IN GAS AT THIS TIME, AND IF LESS THAN HALF OF THOSE PEOPLE DO OPT FOR THAT ALTERNATIVE, WE'RE LOOKING AT APPROXIMATELY ABOUT A THIRD INCREASE IN OUR GENERATING CAPACITY REQUIREMENT. IT'S ABOUT 307 SOME-ODD MEGAWATTS. THAT'S ABOUT AS FAR AS I'LL TAKE IT.

MR. DAVIS: THANK YOU, PETER. JERRY.

MR. KANE: JERRY KANE, SDG&E. JUST A BRIEF COMMENT -- PERHAPS JUST A QUESTION ON THE CLEARLY SIGNIFICANT POTENTIAL IMPACTS OF AN AMMONIA SPILL WHEN TRUCKING THE AMMONIA TO A POWER PLANT. THERE IS QUITE CLEAR THE SIGNIFICANT POTENTIAL RISK. I HAVE IDENTIFIED MITIGATION MEASURES TO INCLUDE EMERGENCY RESPONSE TRAINING, ET CETERA, AND THEN THE RESIDUAL IMPACT AFTER THAT MITIGATION AS BEING NOT SIGNIFICANT.

I BELIEVE THAT THE RESIDUAL IMPACT IS GREATER THAN NONSIGNIFICANT AS YOU INDICATED FOR THE FOLLOWING REASON: IF THERE WAS AN AMMONIA SPILL, THE IMPACT ON THE COMMUNITY WOULD BE ESSENTIALLY INSTANTANEOUS. I DON'T SEE HOW EMERGENCY RESPONSE TRAINING TO SPEED UP A RESPONSE CAN HANDLE AN INSTANTANEOUS IMPACT; THEREFORE, WE DISAGREE WITH YOUR CLAIM THAT THE RESIDUAL IMPACT WOULD NOT BE SIGNIFICANT.

MR. DAVIS: THANK YOU.

MR. SIMON: WE'LL ADDRESS THAT IN THE

FINAL --

MR. BAXTER: I THINK THERE WAS SOME CONFUSION. YOU MEAN ON THE HUMAN HEALTH?

MR. KANE: ON THAT AND IN OTHER IMPACTS.

MR. BAXTER: WE'LL ADDRESS THAT IN THE --

MR. KANE: MAYBE I'M MISUNDERSTANDING SOMETHING. PERHAPS YOU CAN EXPLAIN WHAT I'M NOT SEEING.

MR. SIMON: OKAY. I GOT IT.

MR. KANE: ALL RIGHT.

MR. DAVIS: ANY OTHER SPEAKERS' COMMENTS? WITH THAT, I'D LIKE TO THANK EVERYONE FOR COMING.

THE FINAL ENVIRONMENTAL IMPACT REPORT WILL BE CONSIDERED BY THE AIR POLLUTION CONTROL BOARD WHEN IT CONSIDERS THE ADOPTION OF THE REGIONAL AIR QUALITY STRATEGY WHICH WE ANTICIPATE IN NOVEMBER. THANK YOU VERY MUCH.

(WHEREUPON, THE MEETING WAS CONCLUDED AT 9:20 A.M.)

STATE OF CALIFORNIA)
:
COUNTY OF SAN DIEGO)

I, KAREN A. BLACK, A CERTIFIED SHORTHAND REPORTER, CERTIFICATE NO. 8997, DO HEREBY CERTIFY THAT THE FOREGOING SAN DIEGO AIR POLLUTION CONTROL DISTRICT PUBLIC WORKSHOP FOR DISCUSSION OF THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE 1991 REGIONAL AIR QUALITY STRATEGY WAS REPORTED BY ME IN SHORTHAND, AT THE TIME AND PLACE HEREIN NAMED; THAT SAID WORKSHOP WAS THEN TRANSCRIBED THROUGH COMPUTER-AIDED TRANSCRIPTION, AND THE FOREGOING TRANSCRIPT CONTAINS A TRUE RECORD OF SAID HEARING.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND ON THIS 19th DAY OF SEPTEMBER, 1991, AT SAN DIEGO COUNTY, CALIFORNIA.

Karen A. Black

KAREN A. BLACK
CERTIFICATE NO. 8997

RESPONSES TO PUBLIC COMMENTS

1. Comment beginning on Page 9,line 10 and ending on Page 10, line 7

Please see modifications to text in Section 5.13.1.3 and Section 5.13.2.3.

2. Comment beginning on Page 10, line 8 and ending on Page 11, line 9

The potential for an ammonia spill during transportation is very small (as discussed in Section 5.17 and 5.18.1.3 of the text), and, therefore, is not considered a significant impact to public health and safety. If there is a catastrophic spill, the impacts could be significant from the point of view of a risk of upset.

APPENDIX E

COMMENTS AND RESPONSES TO COMMENTS TO DRAFT EIR

County of San Diego

NORMAN W. HICKEY
CHIEF ADMINISTRATIVE OFFICER
(619) 531-5250
FAX (619) 557-4060

CHIEF ADMINISTRATIVE OFFICE
1600 PACIFIC HIGHWAY, SAN DIEGO, CALIFORNIA 92101-2472

June 28, 1991

TO: Richard Sommerville, Director
Air Pollution Control District

FROM: Norman W. Hickey
Chief Administrative Officer

COMMENTS ON NOTICE OF PREPARATION OF A DRAFT EIR FOR 1991 REGIONAL AIR QUALITY STRATEGY

Staff from the Department of Planning and Land Use (DPLU) has reviewed the Notice of Preparation (NOP) for the draft Environmental Impact Report (EIR) for the San Diego 1991 Regional Air Quality Strategy and has the following comments:

o The NOP lists the County (DPLU) as an interested party. The County is a responsible agency per Section 15041 of the State California Environmental Quality Act (CEQA) Guidelines. All local land use and building regulating agencies should be listed as responsible agencies. Section 15041.b states that a responsible agency "may require changes in a project to lessen or avoid only the effects, either direct or indirect, of the part of the project which the agency will be called on to carry out or approve." There will be several instances in which DPLU will be carrying out portions of this plan. Examples include implementation of indirect source controls, and inspections for architectural coatings, low-NOx water heaters, and solar pool heaters, all of which DPLU maintains responsibility to implement.

  The State CEQA Guidelines discourage single purpose agencies as lead agencies for preparation of an EIR. According to Section 15051.1 of the Guidelines, the lead agency "will normally be the agency with general governmental powers, such as a city of county, rather than an agency with a single or limited purpose such as an air pollution control district or a district which will provide a public service or public utility to the project." While it is appropriate for the APCD to be the lead agency in this case, it may be important to obtain input of responsible agencies with expertise in Land Use and Transportation because of the nature of the evolving strategy.

1-1

RESPONSES TO COMMENTS

Letter #1: Chief Administrative Officer, County of San Diego

Note: This first letter was in response to the Initial Study and Notice of Preparation but was received by the consultant after the draft EIR was printed and distributed. Accordingly, this letter and responses to it are included here.

1-1 This comment is noted.

San Diego Gas & Electric Comments
APCD Residential Solar Hot Water Heater Tactics
September 1991

1.0 CONCERNS

1.1 General: The proposed Tactic for requiring addition of Solar Water Heating to residential dwellings at the time of sale and for all new construction has serious impacts on SDG&E gas and electric service. Faced with the requirement of adding solar heat as a condition of sale, versus the option of replacing the gas water heater with an electric unit, at a fraction of the cost, both the building industry and existing residential customers will opt for the electric alternative. San Diego Gas & Electric opposes regulation mandating that solar equipment be installed based on the fact that such regulation contributes directly and significantly to the requirement for new generation facilities and does not provide San Diego residents with an alternative which is in their best interests.

Without the rebates available from the Federal Government, the State of California, and local Utilities, as in years past, solar technology does not represent a cost effective alternative for residential customers and places an inordinate burden on SDG&E services. By mandating that solar technology be installed, competition for solar projects will be effectively eliminated, causing increases in the installed costs of these systems and further conversions of gas fired water heaters to electric.

1.2 Worst Case Impact: Currently, if all residential gas water heaters were converted to electric heat, a worst case equivalent of 2,909 MW of connected electric load would result, translating to 1,293 MW of operating load, or 743 MW of directly coincident On Peak summer operating load, based on 646,487 residential gas customers and 4.5 kW of connected load per water heater and considering operating diversity[3]. In addition, natural gas consumption by residential water heating alone represents 14.9 billion cubic feet, or 24% of the total gas consumption by all SDG&E customers excluding SDG&E interdepartmental usage.

1.3 Demand Side Management: Not only are SDG&E services seriously affected, but these tactics are in direct conflict with Public Utilities Commission mandates for Demand Side Management and threaten to reverse all progress made thus far in this direction. Such demand management programs in place at SDG&E represent a part of the overall resource plan which will allow SDG&E to serve its customers in the future. This resource plan does not include the addition of electric water heating and will not support the additional demand required.

1.4 Research and Development: Future research and development projects will also be affected through solar technology mandates such as those being considered. Any regulation which requires a specific technology be installed over another results in an extreme disincentive to continue alternative developments. Technology mandates by the APCD will reduce motivation for development of clean combustion sources by excluding such developments from future consideration. Potential loss of future emissions reduction occurs as a result.

Report Attached to Letter #2 (cont.)

Please see responses to letter #2.

Report Attached to Letter #2 (cont.)

Please see responses to letter #2.

2.0 TITLE 24 REQUIREMENTS

2.1 General: A review of Title 24 requirements, specifically Section 2-5351, sets forth annual energy budgets required for residential facilities at the time of construction. While it has been suggested to the APCD, in the Workshops held recently, that Title 24 does not allow conversion of gas to electric water heating, this is in fact a fallacy. Regardless of the equipment fuel source, the energy budget must be maintained for new construction, and electric equipment in fact, falls within the required budget, therefore supporting conversion of gas equipment to electric.

2.2 Retrofit Requirements: For existing dwellings, Title 24 requires no specific compliance, calculation, or other guidelines regarding the replacement of water heating systems using a different fuel source. Replacement of gas equipment with the electric alternative of equal capacity is allowable, without detriment.

3.0 LOCAL BUILDING CODES

3.1 Requirements: The City of San Diego Building Department indicates no applicable codes, requirements, or regulations prohibiting the conversion of gas fired water heating to electric. However, permits are required for this work and are issued without plans and specifications. Any code requiring that residential water heaters be replaced with equipment using a like fuel source would not be enforceable and would result in anti-competitive direction and are therefore not included in local codes. The resulting consequence is that conversion from gas to electric in order to avoid the cost associated with solar installations is in compliance with local codes as well as California Energy Commission Title 24 requirements.

4.0 SDG&E IMPACTS

4.1 Parameters: The following parameters are used to form the basis of determining the impact on SDG&E services:

Residential Dwelling Sales (Jan 1990 - Jan 1991)	96,383 Units [1]
Number of SDG&E Residential Gas Customers (12 Mo. ending 7/91)	646,487 Net [2]
Gas Availability (Residential)	83 Percent [3]
Gas Service Utilized, When Available	94 Percent [3]
Electric Water Heater Average Connected Load	4.50 kW [4]
Electric Water Heater Summer On Peak Coincident Operating Load	1.15 kW [5]
Electric Water Heater Winter On Peak Coincident Operating Load	1.75 kW [5]
Residential Water Heater Gas Usage (Annual per Heater)	239 Therms [6]
Residential Total Gas Usage (Annual per Dwelling)	506 Therms [6]

4.2 Residential Gas Consumption: Traditionally, the SDG&E gas department places significant emphasis on providing quality service to core residential customers. These customers made up 51% of the total therm consumption by all customers, excluding SDG&E interdepartmental, over the 12 months ending July 1991. Of this, an 47% of residential gas consumption is used for water heating[4].

4.3 Affected Population: From the San Diego Tax Assessor files, there were 96,383 residential units sold during 1990. Of this, using the SDG&E data of 83% of all residences having natural gas availability, and 94% of those with gas available using this fuel for water heat, then:

$$(96{,}383 \text{ Units})(0.83)(0.94) = 75{,}198 \text{ Units}$$

Which represents the approximate number of residential dwellings, including new construction, sold each year in San Diego which utilize natural gas as a source of water heating. In addition, given the 646,487 residential customers with gas service, the sales figures represent 12% of all gas customer dwellings per year are sold. Simple mathematics shows that within 10 years, considering diversity, the requirement for solar heating on residential dwellings will have affected all gas customers. From this, a large fraction are expected to install electric water heating at the time of sale.

4.4 Expected Impact - Electric: If only 50% of existing customers choose the electric alternative, an additional 1,454 MW of connected load, or 372 MW of operating summer On Peak load will result directly coincident with the SDG&E electric system summer peak. In winter, an increase in required demand on the SDG&E grid would be approximately 566 MW coincident with the winter peak. These values represent an overall operating condition, accounting for connected load diversity, of 1.15 kW contribution per heater converted to electric for the On Peak summer period and 1.75 kW per heater for the On Peak winter period. Data is representative of all residential customers having electric water heating, per the attached graphs developed by SDG&E Load Research as a part of a pilot program to cycle residential water heaters. [5]

4.5 Clarification: It is also worth noting that those customers electing to replace their gas water heater with electric upon resale of their home will not necessarily see the increase in utility bills due to this particular conversion. Such increases will be passed on to the new owners and will be significant. San Diego Gas & Electric revenues will increase due to these conversions and concern from SDG&E is not expressed in the area of lost natural gas revenues, rather, concern is expressed in meeting the electric demand and underutilization of an existing gas distribution system.

Report Attached to Letter #2 (cont.)

Please see responses to letter #2.

5.0 SYSTEM INSTALLATION COSTS

5.1 General: The proposed Tactics for residential solar utilize installed costs based on conversations with non-union solar contractors currently experiencing fierce competition for projects in a dwindling market. Such installed costs are not representative of the impacts that mandated projects would have, causing increased prices and reduced competition, leading to non cost effective installations from both the APCD and the residential customer's financial viewpoints.

5.2 Installation Costs: To better assess the overall cost effectiveness of implementing solar heat on residential gas fired water heaters, industry standards are preferred over the verbal conversations used for Tactics formulation. Accepted standards for estimation of costs associated with the installation of solar equipment are found through use of either Richardson's or Means Mechanical estimating guides. Copies of applicable pages of the 1991 Means Mechanical Cost Data are attached for your reference and reflect installed costs based on the type of system desired.

Review of this data indicates that to install a complete solar heating system providing residential hot water would cost at minimum $4,500. To this, the Means City Index of $112.1 per $100 applies, as does the added 2% costs for construction permits and 2% cost for contractor insurance. Net result, using this Means standard, is a minimum installed cost of $5,200, based on union mechanical contractor wage scales.

When considering non-union labor, a price reduction is possible ($1,000 to $1,500); however, the APCD is advised to consider impacts of basing proposed regulation on non-union labor. System installed costs should therefore be revised to reflect actual values of $3,800 through $5,200 to include performance by both union and non-union contractors and to reflect accepted industry standards. The value of $2,000 per site stated as a part of the Tactic is inadequate and should be revised to reflect an average of $4,500. Consideration of retrofit vs. new development projects is also warranted, recognizing that large new developments, installed on a production scale, will reduce in installation costs significantly, however, retrofit market costs will remain high.

6.0 APCD COST EFFECTIVENESS

6.1 Revised Cost Effectiveness: With consideration to the above, and utilizing remaining parameters stated in the APCD tactic, cost effectiveness for the two residential solar tactics proposed should be revised. Note that SDG&E disagrees with the proposed compliance rate specified, due to the concerns stated herein, however, this parameter is utilized to present a common basis with the proposed tactic for cost effectiveness calculation.

Report Attached to Letter #2 (cont.)

Please see responses to letter #2.

Applicable Parameters:

Base Installed Cost of Residential Solar Heating	$4,500 Per Unit [7]
Avoided Gas Energy Billing	$ 123 Per Year [8]
Annual Solar System Maintenance Costs	$ 15 Per Year [8]
Capital Recovery Factor (15 Years @ 10% Interest)	0.13147 [8]
Current Residential Gas Water Heater NOx Reduction	2.53 lb/Year [8]
Current Residential Gas Water Heater CO Reduction	0.24 lb/Year [8]
Percent Control Efficiency	52% [8]
Percent Compliance Rate (Retrofit)	95% [8]

Annualized Solar Costs:

($4,500)(0.13147) + 15 = $607/Year

NOx Cost Effectiveness:

New: [($607/Year-0.52($123/Year)]/(2.53 lb/Year) = $215/lb NOx
Retrofit: [($607/Year-0.52($123/Year)]/[(2.53 lb/Year)(0.95)] = $226/lb NOx

CO Cost Effectiveness:

New: [($607/Year-0.52($123/Year)]/(0.24 lb/Year) = $2,263/lb CO
Retrofit: [($607/Year-0.52($123/Year)]/[(0.24 lb/Year)(0.95)] = $2,382/lb CO

Indicating that the cost effectiveness values contained within the Tactics should be increased in excess of 142% to reflect actual values.

6.2 Solar Technology Ranking: A review of all proposed tactics presented by the APCD reveals that cost effectiveness of solar equipment is already second only to fuel cells in terms of non-cost effective results. Revision in accordance with the above deteriorates the cost effectiveness, but still maintains solar as the least cost effective tactic next to requiring fuel cells. Orders of magnitude separate this technology and a cost effective solution, raising the question of the feasibility of this measure and suggesting that both the lack of cost effectiveness and the adverse impacts require that proposed solar mandates be abandoned.

7.0 SCAQMD

7.1 Solar Standards: Discussions between SDG&E and the South Coast AQMD indicate that solar mandates are being rejected in that air quality district and are included only as an optional method of compliance with more stringent emission standards. Such standards are porposed to be technology neutral, allowing a variety of measures to attain compliance.

Please see responses to letter #2.

7.2 Residential dwellings less than 2,000 square feet are also ignored in the SCAQMD proposals and focus is instead placed on the larger size residential sector. Recommend that the San Diego APCD verify these directions being taken by the SCAQMD and revise current proposals to incorporate less stringent measures.

8.0 CONCLUSIONS

8.1 Alternatives: Realizing that there are emissions produced as a result of gas fired residential water heaters, San Diego Gas & Electric, although in opposition to technology mandates, particularly solar, would be willing to support measures which increase customers energy efficiency and/or provide cost effective reductions based on customers financial requirements. Recommend that alternatives be reviewed in lieu of solar water heating which set emission levels according to currently available technology.

Use of condensing water heater designs, fiber matrix and low NOx burners, pulse combustion and similar developments in combustion would better fit both the interests of the APCD and the affected population. Condensing designs increase fuel efficiency to near 100% vs. the current 80% levels for non-condensing equipment. These efficiency increases reduce emissions directly by requiring less combustion per usable BTU and attain stack temperatures near ambient. Condensed acid requires non corrosive construction and higher cost equipment; however, financial benefits are also present.

Low NOx burners and flue gas recirculation technologies also represent a decrease in emissions and would be preferred over solar installations. With these technologies, increases in fuel do occur which would need to be balanced against total emissions.

Educational programs informing customers of benefits acquired through insulating water heaters, cycling during non use periods, and lowering household water temperatures would also provide cost effective results.

8.2 General: With consideration to the preceding, the recommendation is put forth that adoption of solar measures by the San Diego APCD be rejected. The adverse effects and the lack of cost effectiveness suggest that solar technologies be considered not feasible in preparing the Regional Air Quality Strategy for 1991, particularly for the residential water heating sector.

The potential addition of electric demand directly coincident with the SDG&E summer On Peak period, coupled with elimination of gas system utilization presents impacts on SDG&E which are in direct conflict with Public Utility Commission mandates for demand management and eliminates all progress made thus far. Consideration of future generation requirements by SDG&E to meet possible demands should also be weighed along with the lack of cost effectiveness as consideration for abandonment of solar technology in the residential sector.

Report Attached to Letter #2 (cont.)

Please see responses to letter #2.

In addition, conversion of gas fired water heating to electric generates emissions at the power plant, offsetting potential gains in emission reduction and should be factored into proposals. Since alternative measures exist which are preferable to solar water heating, SDG&E recommends that other alternatives be pursued.

References:

1. San Diego County Tax Assessor Files
2. SDG&E R.2 Report, July 1991
3. SDG&E Home Energy Survey, 1989
4. Manufacturer Catalogs, 30 to 50 Gal Size
5. SDG&E Residential Peakshift Graphs - Water Heater Timer Project (Attachment B)
6. SDG&E Conditional Demand Study of Residential Unit Energy Consumption, 12/90
7. Means Mechanical Estimating Guide, 1991 (Attachment A)
8. APCD Residential Solar Hot Water Heater Tactic

Report Attached to Letter #2 (cont.)

Please see responses to letter #2.

SDSU

VICE PRESIDENT
BUSINESS AND FINANCIAL AFFAIRS
SAN DIEGO STATE UNIVERSITY
SAN DIEGO CA 92182-0714

(619) 594-6017

September 16, 1991

Mr. Robert J. Mross
San Diego APCD
9150 Chesapeake Drive
San Diego, CA 92123

SUBJECT: DRAFT EIR REPORT FOR THE SAN DIEGO 1991 REGIONAL AIR QUALITY STRATEGY

Dear Mr. Mross:

We have reviewed the draft EIR prepared for the San Diego Air Pollution Control District and offer the following comments. Education is having to pass on significant budget reductions to the detriment of students within the system. There is considerable concern that the amount of funding necesary to meet control measures applicable to the institution, particularly costs to purchase and install new equipment or retrofit existing machinery would be prohibitive. It is questionable whether other San Diego State University properties (the Mt. Laguna Observatory and the Imperial Valley campus) would be able to meet the compliance deadline of 1996 as well. We support alternative compliance provisions as proposed by SDG&E. 3-1

We have concerns about the 5.11.1.1, Parking Controls particularly the interpretation of Transportation Control Measures Criteria. The amount of university parking spaces is regulated by formula. If the cost of parking is increased to discourage vehicle trips, negative consequences occur: (1) Reduction of permit sales jeopardizes the integrity of revenue bonds sold to underwrite the construction of parking structures, (2) On-street parking would definitely affect residents in the area who currently assess themselves a cost per month for the benefit of a B Zone permit to restrict parking in front of their homes. Parking managment control impacts will be significant. At the September 11, 1991 meeting of the Air Quality Strategy Development Committee, APCD and SANDAG were charged with arriving at a TDM plan which would initially encourage the citizens' participation to select ways to meet AVR standards and incorporate APCD accountability within reasonable timeframes. 3-2 3-3

Sincerely,

Elizabeth Brilliant
Assistant Vice President

RESPONSES TO COMMENTS

Letter # 3: San Diego State University

3-1 Financial and economic consequences of the RAQS are beyond the scope of this EIR. Please see response to comment 1-7.

3-2 Please see text, Section 5.11.

3-3 This comment is noted.

CITY OF POWAY

September 16, 1991

Robert J. Mross
San Diego County
Air Pollution Control District
9150 Chesapeake Drive
San Diego, CA 92123-1095

SUBJECT: City of Poway Comments on the Draft Environmental Impact Report (Draft EIR - SCH #91061009) for the Draft San Diego 1991 Regional Air Quality Strategy (RAQS)

Dear Mr. Mross:

The City of Poway Planning Services Department has evaluated the scope and contents of the subject Draft EIR for the 1991 RAQS and pursuant to Section 15044 of the State CEQA Guidelines submits the following comments for your consideration.

Land Use

1. It is stated in the environmental initial study checklist and discussion of responses to the checklist (#8) that the significance of such potential impacts on land use will be examined in the EIR. However, in Section 5.7 (Land Use) of the draft EIR the statement is made that no adverse environmental impacts were identified and subsequently no mitigation measures are required for this area. With no written analysis, is it to be concluded that there are absolutely no adverse environmental impacts to land use by the proposed project? The comments in the initial study indicated that there were potential impacts and that they would be addressed in the EIR. This analysis should not be omitted because this is a program EIR. (See comments for program EIR.) A discussion of impacts to the environment in this area must be included. 4-1

2. It is stated in the draft EIR that transportation control measures to reduce emissions of carbon monoxide (CO), oxides of nitrogen (Nox), and reactive organic compounds (ROC) numbers TC-2 (Alternative Transportation Mode Capacity Expansion), TC-3 (Traffic Management Program), and TC-4 (Land Use) have yet to be adopted. Further stated in Section 4.2.3.1. (Ozone), 4-2

City Hall Located at 13325 Civic Center Drive
Mailing Address: P.O. Box 789, Poway, California 92074-0789 • (619) 748-6600, 695-1400

RESPONSES TO COMMENTS

Letter # 4: City of Poway

4-1 Please see modifications to text in Section 5.7

4-2 This comment is noted.

4.2.3.2 (Particulate Matter), 4.2.3.3. (Nox), 4.2.3.4) (CO), 4.2.3.5 (Sulfur Dioxide), and 4.2.3.6 (Hydrocarbons/Reactive Organic Gases), that motor vehicle emissions are a major contributor of the total emissions from baseline sources. The prevalent land use patterns encourage and will continue to encourage the use of the automobile; hence, there will continue to be emissions from these sources. It is recommended that programs TC-2, TC-3, and TC-4 be coordinated such that regional air quality concerns may be addressed in a comprehensive manner. Prior to the adoption of these programs, the potential environmental impacts of their implementation should be subject to environmental review pursuant to Section 15168(c).

Population/Housing

1. It is stated in the environmental initial study checklist and discussion of responses to the checklist (#11) that there may be alterations to the location, distribution, density, or growth rate of population in the area, and that the significance of such potential impacts on population will be examined in the EIR. However, in Section 5.9 (Housing/Population) of the draft EIR, it is stated that no adverse environmental impacts nor mitigation measures were identified for this issue area. With no written analysis, is it to be concluded that there are absolutely no adverse environmental impacts to housing/population by the proposed project? The comments in the initial study indicated that there were potential impacts and that they would be addressed in the EIR. This analysis should not be omitted because this is a program EIR. (See comments for program EIR.) A discussion of impacts to the environment in this area must be included.

4-3

2. As mentioned in the discussion on land use, control measure strategy TC-4 (Land Use) should also be examined in terms of impacts upon the location, distribution, density, or growth rate of population in the area. Efforts should be made to coordinate programs through consultation with public agencies, especially SANDAG. All programs should be subject to environmental review prior to their adoption.

4-4

Effects Not Found to be Significant

It is stated in Section 15128 of the Guidelines: "An EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR." Section 2.3 of the draft EIR of the 1991 RAQS does not state any of the reasons that

4-5

4-3 Please see modifications to text in Section 5.9

4-4 This comment is noted.

4-5 Section 2 is a summary of the EIR. For detailed discussions, please see Section 5.

are required pursuant to Section 15128 of the Guidelines. These should be included to substantiate any claims made.

Environmental Setting

It is stated in Section 15125(b) of the Guidelines: "The EIR shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans." Since their are no adopted plans for control measures TC-2, TC-3, and TC-4, the inconsistencies cannot be determined and evaluated. This does not preclude discussion of inconsistencies between regional plans and local general plans, especially in terms of land use. 4-6

The City of Poway Planning Services Department appreciates the opportunity to comment on the scope and content of the draft EIR. It is requested that the draft EIR be revised to incorporate appropriate analysis of land use and population/housing and that the final EIR be sent to the Poway Planning Services Department as soon as it is available in order to review the document for revisions that are made to the draft EIR and the response to the above comments. The contact person is Matthew Fagan, 679-4260. 4-7

Sincerely,

Reba Wright-Quastler

Reba Wright-Quastler, Ph.D., AICP
Director of Planning Services

RWQ:ls

MRF\MROSS.LTR

4-6 This is beyond the scope of this EIR.

4-7 This comment is noted. Also, please see modifications to text in Sections 5.7 and 5.9. above.

ENSR

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