1998
Clean Air Plan

Santa Barbara County's plan to attain the state and federal ozone standards

FINAL

December 1998

Santa Barbara County
Air Pollution Control District

Santa Barbara County
Association of Governments

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- **Attainment Demonstration – Federal Ozone Standard**
- **Rate-of-Progress Demonstration – Federal Ozone Standard**
- **Three Year Update to the 1991 AQAP and 1994 CAP – State Ozone Standard**

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GLOSSARY OF TERMS

Acute Health Effect: An adverse heath effect that occurs over a relatively short period of time, (e.g., minutes, or hours.)

Aerosol: Particles of solid or liquid matter that can remain suspended in the air for long periods of time because of extremely small size and lightweight.

Air Basin: An area of the state, often comprising several counties, which is designated by the Air Resources Board (ARB) based on similar meteorological and geographical conditions, with consideration given to political boundary lines when practical. Using these criteria, the ARB has divided the state into 14 air basins. Santa Barbara County is located in the South Central Air Basin, along with San Luis Obispo and Ventura Counties.

Air Pollutant: Any foreign and/or natural substance that is discharged, released, or over propagated into the atmosphere that may result in adverse effects on humans, animal, vegetation and/or materials. Also known as an air contaminant. Examples include but are not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids, or any combination thereof.

Air Pollution Control District (APCD): The local agency governing air quality issues: proposes and adopts local air pollution rules, enforces those rules, responds to air pollution related complaints, issues permits to polluting sources, inventories sources of air pollution emissions.

Air Quality Attainment Plan (AQAP): The comprehensive document, required under the California Clean Air Act (Health and Safety Code Section 40910 et. seq.), which details the programs and control measures to be implemented for the purpose of reducing emissions. Emissions ultimately must be reduced to the extent that measured concentrations of pollutants in the air will not exceed California ambient air quality standards.

Air Quality Simulation Model: A computer program that simulates the transport, dispersion, and transformation of compounds emitted into the air and can project the relationship between emissions and air quality.

Air Toxics: A generic term referring to a harmful chemical or group of chemicals in the air. Typically, substances that are especially harmful to health, such as those considered under EPA's hazardous air pollutant program or California's AB 1807 toxic air contaminant program, are considered to be air toxics. Technically, any compound that is in the air and has the potential to produce adverse health effects is an air toxic.

Airborne Toxic Control Measure (ATCM): A type of control measure, adopted by the ARB (Health and Safety Code Section 39666 et seq.), which reduces emissions of toxic air contaminants from nonvehicular sources.

Alternate Fuels: Any fuel used for vehicular sources other than standard gasoline or diesel fuels. These include ethanol, methanol, compressed natural gas, liquid petroleum gas and electricity. Alternative fuels are cleaner burning and help meet ARB's mobile and stationary emission standards.

Ambient Air: The air occurring at a particular time and place outside of structures. Often used interchangeably

with "outdoor" air.

Ambient Air Quality Standard: Health and welfare based standards established by the state or federal government for clean outdoor air that identify the maximum acceptable average concentrations of air pollutants during a specified period of time.

Anthropogenic Emissions: Emissions related to human activity or devices.

APCD (Air Pollution Control District): A county agency with authority to regulate stationary, indirect, and area sources of air pollution (e.g., power plants, highway construction, and housing developments) within a given county, and governed by a district air pollution control board composed of the elected county supervisors.

ARB (California Air Resources Board): The State's lead air quality agency, consisting of a nine-member Governor-appointed board. It is responsible for attainment and maintenance of the State and federal air quality standards, and is fully responsible for motor vehicle pollution control. It oversees county and regional air pollution management programs.

Area-Wide Source: Stationary sources of pollution (e.g., water heaters, gas furnaces, fireplaces, and residential wood stoves) that are typically associated with homes and non-industrial sources. The emissions from these sources in themselves don't emit a significant amount of emissions, but when considered collectively with other similar sources become significant. The CCAA requires districts to include area-wide sources in the development and implementation of the AQAPs.

Atmosphere: The gaseous mass or envelope surrounding the earth. Where air pollutants are emitted into a building not designed specifically as a piece of air pollution control equipment, such emission into the building shall be considered an emission into the atmosphere.

Attainment: Achievement of air quality standards.

Attainment Area: A geographic area which is in compliance with the National and/or California Ambient Air Quality Standards (NAAQS OR CAAQS).

Attainment Plan: In general, a plan that details the emission reducing control measures and their implementation schedule necessary to attain air quality standards. In particular, the federal Clean Air Act requires attainment plans for nonattainment areas; these plans must meet several requirements, including requirements related to enforceability and adoption deadlines.

Average Daily Emissions: Annual emissions divided by 365 (the number of days in a year).

BACT (Best Available Control Technology): The most up-to-date methods, systems, techniques, and production processes available to achieve the greatest feasible emission reductions for given regulated air pollutants and processes. BACT is a requirement of NSR (New Source Review) and PSD (Prevention of Significant Deterioration). BACT as used in federal law under PSD is defined as an emission limitation based on the maximum degree of emissions reductions allowable taking into account energy, environmental & economic impacts and other costs. [(CAA Section 169(3)]. The term BACT as used in state law means, an emission limitation that will achieve the lowest achievable emission rates, which means the most stringent of either the most stringent emission limits contained in the SIP for the class or category of source, (unless it is demonstrated that one limitation is not achievable), or the most stringent emission limit achieved in practice by that class in category of source. "BACT" under state law is more stringent than federal BACT and is equivalent to federal LAER (lowest achievable emission rate) which applies to NSR permit actions.

In Santa Barbara County, for nonattainment pollutants, BACT for any stationary source is the more stringent of either: a) the most effective emission control device, emission limit, or technique which has been achieved in practice for the type of equipment comprising such stationary source; or b) any other emission control device or technique determined after public hearing to be technologically feasible and cost-effective by the Air Pollution Control Officer; or c) the most stringent limitation contained in any State Implementation Plan. For attainment pollutants, BACT is an emission limitation based on the maximum degree of reduction for each pollutant which would be emitted from any new or modified stationary source, which on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

BAR (Bureau of Automotive Repair): An agency of the California Department of Consumer Affairs that manages the implementation of the motor vehicle Inspection and Maintenance Program.

Best Available Mitigation Measures (BAMM): Design or operation measures that are directly related to the particular project, and are intended to reduce the number of vehicle trips.

Best Available Retrofit Control Technology (BARCT): An emission limitation based on the maximum degree of reduction achievable by existing sources, taking into consideration environmental, energy and economic needs.

Biogenic Emissions: Emissions originating from natural sources such as vegetation.

California Air Resources Board (ARB or CARB): State of California oversight agency responsible for statewide air quality issues.

California Ambient Air Quality Standards (CAAQS): Standards set by the State of California for the maximum levels of air pollutants which can exist in the outdoor air without unacceptable effects on human health or the public welfare. These are more stringent than NAAQS.

California Clean Air Act of 1988 (CCAA): The amendments to the California Health and Safety Code resulting from the passage of Assembly Bill 2595. A California law passed in 1988 which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local APCD's in violation of state ambient air quality standards must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

California Environmental Quality Act (CEQA): A California law which sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process aids decision makers to determine whether any environmental impacts are associated with a proposed project. It requires environmental impacts associated with a proposed project to be identified, disclosed, and mitigated to the maximum extent feasible.

CFCs (Chlorofluorocarbons): Any of a number of substances consisting of chlorine, fluorine, and carbon. CFCs are used for refrigeration, foam packaging, solvents, and propellants. They have been found to cause depletion of the atmosphere's ozone layer.

Chronic Health Effect: An adverse health effect which occurs over a relatively long period of time (e.g., months or years).

CO (Carbon Monoxide): A colorless, odorless gas resulting from the incomplete combustion of fossil fuels. Over 80% of the CO emitted in urban areas is contributed by motor vehicles. CO interferes with the blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects. CO is a criteria air pollutant.

Commute: A home-to-work or work-to-home trip made regularly in connection with employment.

Commute Alternatives: Carpooling, vanpooling, transit, bicycling, and walking as commute modes during peak period, as well as any Alternative Work Hours Program which results in the use of any mode of transportation for commuting outside of the peak periods.

Compliance Efficiency: The percent of emission sources subject to a control measure that are in compliance with its requirements. EPA recommends that compliance efficiency is assumed to be 80 percent unless a District proves otherwise.

Composite Efficiency: The efficiency value which represents the actual effect of a control measure on a source category. Composite efficiency is calculated by finding the product of the control efficiency, percent implementation, the compliance efficiency, and the fraction of the source category affected.

Compressed Work Schedules: Work schedules that compress the traditional 40 hour weekly work period into fewer than five days by adopting longer work day such as 4/40 (4-ten hour days), and 9/80 (8-nine hour and 1-eight hour days out of every ten work days).

Conformity: Conformity is a process mandated in the federal Clean Air Act to insure that federal actions do not impede attainment of the federal health standards. General conformity sets out a process that requires federal agencies to demonstrate that their actions are air quality neutral or beneficial. Transportation conformity sets out a process that requires transportation projects that receive federal funding, approvals or permits to demonstrate that their actions are air quality neutral or beneficial.

Congestion: Traffic conditions on roads, highways, or freeways which do not permit movement at optimal legal speeds.

Congestion Management Program: A state mandated program (Government Code Section 65089a) that requires each county to prepare a plan to relieve congestion and reduce air pollution.

Consumer Products: Products such as detergents, cleaning compounds, polishes, lawn and garden products, personal care products, and automotive specialty products which are part of our everyday lives and, through consumer use, may produce air emissions which contribute to air pollution.

Contiguous Property: Two or more parcels of land with a common boundary or that are separated solely by a public roadway or other public right-of-way.

Contingency Measure: Contingency measures are statute-required back-up control measures to be implemented in the event of specific conditions. These conditions can include failure to meet interim milestone emission reduction targets or failure to attain the standard by the statutory attainment date. Both state and federal Clean Air Acts require that District plans include contingency measures.

Control Efficiency: The percent of emissions that are controlled (i.e. not emitted) as a result of some control on a polluting device or process.

Control Measure: A strategy to reduce the emissions of air pollution caused by a specific activity or related group of activities. An existing control measure is a measure which is currently being implemented as a rule. A proposed for adoption control measure is a measure that the APCD will be mandated to make into a rule if the plan is approved by the Board. A further study control measure is a measure that has the potential of being proposed for adoption, but warrants further study.

Corporate Average Fuel Economy: The sales-weighted average fuel economy of an automobile manufacturer's annual production; CAFE is also used to refer to the Federal law that mandates that automobile manufacturers meet minimum average fuel economy standards.

Cost-Effective: A cost per unit of emission reduction which is lower than or equivalent to the maximum unit costs of the same emission reduction through the use of demonstrated Best Available Control Technology, calculated in current year dollars.

Criteria Pollutants: Pollutants for which State or National Ambient Air Quality Standards exist. Criteria pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, sulfates, hydrogen sulfide, and particulate matter with a diameter of 10 microns or less.

Design Day Value: For ozone, the state defines that a calculated design day is based on three years of data excluding: extreme values, values that result from exceptional events or values attributable to overwhelming transport from an upwind district. Under federal law, the design day for ozone is the fourth highest one-hour concentration experienced at an individual monitoring station during the past three years.

Electric Motor Vehicle: A motor vehicle, which uses a battery-powered electric motor as the basis of its operation. Such vehicles emit virtually no air pollutants. Hybrid electric motor vehicles may operate using both electric and gasoline powered motors. Emissions from hybrid electric motor vehicles are also substantially lower than conventionally powered motor vehicles.

EMFAC: The EMission FACtor model used by ARB to calculate on-road mobile vehicle emissions. This model is part of ARB's overall on-road mobile source Mobile Vehicle Emission Inventory (MVEI) model.

Emission Budget: An emission "ceiling" for future transportation emissions that cannot be exceeded.

Emission Forecasting: Estimating air pollutant emissions in future years using population, economic and control projections.

Emission Inventory: An estimate of the amount of pollutants emitted from mobile and stationary sources into the atmosphere over a specific period such as a day or a year.

Emission Offsets: A rule-making concept whereby approval of a new or modified stationary source of air pollution is conditional on the reduction of emissions from other existing stationary sources of air pollution. These reductions are required in addition to reductions required by BACT.

Emission Reductions: The amount of emissions that will be reduced due to the implementation of a

control measure. Emission reductions can be calculated by finding the product of the emissions and the composite efficiency, while accounting for existing control.

Emission Standard: The maximum amount of a pollutant that is allowed to be discharged from a polluting source such as an automobile or smoke stack.

Employment Centers: Locations having a concentration of jobs or employment. Centers may vary in size and density, serving sub-regional or local markets, generally meeting the needs of the immediate population.

Environmental Impact Report (EIR): A document discussing the potential adverse environmental impacts of a project required by the California Environmental Quality Act.

Environmental Protection Agency (EPA): The United States agency charged with setting policy and guidelines, and carrying out legal mandates for the protection of national interests in environmental resources.

Ethanol: A clear liquid derived from biomass (also known as "ethyl alcohol" or "grain alcohol").

Exceedance: Ambient pollutant concentrations measured above the applicable ambient air quality standards.

Facility: A structure, building, or operation, that has one or more permitted pieces of equipment.

Federal Clean Air Act (FCAA): A federal law passed in 1970 and amended in 1977 and 1990 which forms the basis for the national air pollution control effort. Basic elements of the act include national ambient air quality standards for major air pollutants, air toxics standards, acid rain control measures, and enforcement provisions.

Feasible: Feasibility is most frequently used in the context of "feasible" stationary source control measures. In this context, feasible means Best Available Retrofit Control Technology (see definition, above).

Flexible Fuel Vehicle (FFV): A vehicle capable of operating on any combination of methanol, ethanol, and gasoline.

Fraction Reactive Organic Gases (FROG): The weight fraction of reactive organic gases in emissions of total organic gases from a source.

FIP (Federal Implementation Plan): In the absence of an approved State Implementation Plan (SIP), a plan prepared by the EPA which provides measures that nonattainment areas must take to meet the requirements of the Federal Clean Air Act.

Fugitive Dust: Dust particles which are introduced into the air through certain activities such as soil cultivation, off-road vehicles, or any vehicles operating on open fields or dirt roadways.

Gasoline Tolerant: A term used to describe vehicles that normally operate on methanol but can run on gasoline as well.

Growth Management Plan: A plan for a given geographical region containing demographic projections (i.e.,

housing units, employment, and population) through some specified point in time, and which provides recommendations for local governments to better manage growth and reduce projected environmental impacts.

Hydrocarbon: Any of a large number of compounds containing various combinations of hydrogen and carbon atoms. They may be emitted into the air as a result of fossil fuel combustion, fuel volatilization, and solvent use, and are a major contributor to smog. (Also see VOC.)

Incentives: Measures designed to encourage certain actions or behavior. These include inducements for the use of carpools, buses and other high-occupancy vehicles in place of single occupant automobile travel. Examples include HOV lanes, preferential parking and financial incentives.

Indirect Source: Any facility, building, structure, or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant (or precursor) for which there is a state ambient air quality standard. Examples of indirect sources include employment sites, shopping centers, sports facilities, housing developments, airports, commercial and industrial development, and parking lots and garages.

Indirect Source Control Program: Rules, regulations, local ordinances and land use controls, and other regulatory strategies of air pollution control districts or local governments used to control or reduce emissions associated with new and existing indirect sources.

Inspection and Maintenance Program: A motor vehicle inspection program implemented by the BAR. It is designed to identify vehicles in need of maintenance and to assure the effectiveness of their emission control systems on a biennial basis. Enacted in 1979 and strengthened in 1990. (Also known as the "Smog Check" program.)

Lead Agency: The public agency which has the principal responsibility to carry out or approve a project.

Level of Service (LOS): A measure of the congested level on a highway facility or intersection based primarily on the comparison between the facility's capacity and the traffic volume it carries. Increasing levels of congestion are designated along a scale from A to F.

Liquified Petroleum Gas (LPG): A gaseous byproduct of petroleum refining that is compressed to a liquified form for sales. LPG consists of butane, propane, or a mixture of the two, and of trace amounts of propylene and butylene.

Local Agency: Any public agency other than a state or federal agency.

Low Emission Vehicle (LEV): The LEV standards for passenger cars represent a 70 percent reduction in gasoline-equivalent hydrocarbon and a 50 percent reduction in NO_X from ARB's 1994 standards.

Maintenance Plan: In general, a plan that details the actions necessary to maintain air quality standards. In particular, the federal Clean Air Act requires maintenance plans for areas that have been redesignated as attainment areas.

Memorandum of Understanding (MOU): The Santa Barbara Association of Governments (SBCAG) is the regional agency responsible for preparing regional transportation plans and programs. Most of these programs require the participation of cities, the county, and other affected local agencies. A number of these programs also have implications to regional air quality plans such as the Clean Air Plan. Because the SBCAG currently works with cities and the county on regional transportation programs, and because of

the close interaction between many of these programs and the regional air quality plan, the APCD and SBCAG have entered into a Memorandum of Understanding whereby SBCAG is charged with developing the transportation elements of the plan, especially the transportation control measures. TCMs are essentially measures that seek to reduce the use of the single passenger automobile and are implemented by a number of local agencies such as local cities and the county.

Methanol: A colorless, clear liquid derived from natural gas or coal (also known as "methyl alcohol" or "wood alcohol").

Mitigation: A change or alternative to the proposed project which reduces or eliminates its significant adverse environmental impacts. Mitigation can be in the form of traditional offsets, transportation-based mitigation measures that are directly associated with the project under consideration, or mitigation fees to be used to secure off site mitigation.

Mobile Source: Sources of air pollution such as automobiles, motorcycles, trucks, buses, off-road vehicles, boats and airplanes. (Contrast with stationary sources.)

Model Rule: A generically formatted control measure, prepared as a guide for adoption by regulatory agencies. Model rules have no force of law until they are adopted by a regulatory agency. Historically, model rules were prepared by the California Air Resources Board and given to local Air Pollution Control Districts for their consideration. The model rule process has been replaced by the suggested control measure process.

NAAQS (National Ambient Air Quality Standards): Standards set by the federal EPA for the maximum levels of air pollutants which can exist in the outdoor air without unacceptable effects on human health or the public welfare.

Net Emissions: The actual emissions occurring from a new or modified project after actual on site and off site mitigation, and other effective mitigation has been applied, as determined by the Air Pollution Control Officer.

Nitrogen Oxides (Oxides of Nitrogen, NO_x): A general term pertaining to compounds of nitric acid (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO 2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility.

Nonattainment Area: A geographic area identified by the EPA and/or ARB as not meeting either NAAQS or CAAQS standards for a given pollutant.

NSR (New Source Review): A program used in development of permits for new or modified industrial facilities which are in a nonattainment area, and which emit nonattainment criteria air pollutants. The two major requirements of NSR are Best Available Control Technology and Emission Offset.

Outer Continental Shelf: The area of the Pacific Ocean extending twenty-five miles out to sea from the State Tidelands (which extends three miles from the coastline).

Oxygenate: Any oxygen-rich substance added to gasoline to enhance octane and reduce carbon monoxide emissions.

Ozone: A strong smelling, pale blue, reactive toxic chemical gas consisting of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the upper atmosphere ozone layer as well as at the earth's surface. Ozone at the earth's surface causes numerous adverse health effects and is a criteria air pollutant. It is a major component of smog.

Ozone Precursors: Chemicals such as hydrocarbons and oxides of nitrogen, occurring either naturally or as a result of human activities, which contribute to the formation of ozone, a major component of smog.

Park & Ride: A program that permits a patron to drive a vehicle to a transit station, park in the area provided for that purpose and ride the transit system to his or her destination.

Peak Period/Peak Hour Demand: The time of most intensive use of a service or facility. In terms of travel, generally there is a morning and an afternoon peak on streets and highways.

Permit: Written permission and authorization from a government agency that allows for the construction and/or operation of an emission generating facility or its equipment within certain specified limits or conditions.

Photochemical: Of, relating to, or resulting from the chemical action of radiant energy, especially sunlight.

Planning Inventory: Emissions inventory from which pollution from natural sources (e.g., seeps, vegetation) are excluded because they are currently not regulated by implementation of APCD rules.

PM (Particulate Matter): Solid or liquid particles of soot, dust, smoke, fumes, and aerosols.

PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the air sacs in the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction and is a criteria air pollutant.

$PM_{2.5}$ (Particulate Matter less than 2.5 microns): A major air pollutant consisting of tiny solid or liquid particles, generally soot and aerosols. The size of the particles (2.5 microns or smaller, about 0.0001 inches or less) allows them to easily enter the air sacs deep in the lungs where they may cause adverse health effects, as noted in several recent studies. $PM_{2.5}$ also causes visibility reduction, but is not considered a criteria air pollutant at this time.

Population Exposure Index: A measurement of overall population exposure to ambient pollutant levels based an average per capita exposure and the severity of the exceedance.

Precursor: Any directly emitted pollutant that, when released into the atmosphere, forms or causes to be formed or contributes to the formation of a secondary pollutant for which an ambient air quality standard has been adopted, or whose presence in the atmosphere will contribute to the violation of one or more ambient air quality standards.

PSD (Prevention of Significant Deterioration): A program used in development of permits for new or modified industrial facilities in an area that is already in attainment. The intent is to prevent an attainment area from becoming a non-attainment area. This program, like NSR, can require BACT and, if an AAQS is projected to be exceeded, Emission Offsets.

Pseudocyclic Oil Well: A cyclic well is an oil well where steam is periodically injected into the well reservoir to stimulate production, but where the well is unaffected by steam injection occurring in adjacent wells. A pseudocyclic oil well is also periodically steam injected, however, it is affected by steam injection occurring in adjacent wells.

Public Transportation : Transportation service by bus, rail para-transit, airplane, and ship offered by an operator on a regular basis to the general public.

Public Workshop: A workshop held by a public agency for the purpose of informing the public and obtaining its input on the development of a regulatory action or control measure by that agency.

Reactive Organic Compound (ROC): See reactive organic gases.

Reactive Organic Gases (ROG): A reactive chemical gas, composed of hydrocarbons, that react with nitrogen oxides and contribute to the formation of ozone. Also known as Volative Organic Compounds (see VOC), or as Non-Methane Organic Compounds (NMOCs). The APCD considers all volatile compounds containing carbon ***except*** the following to be reactive: ethane, methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, methyl chloroform (TCA), methylene chloride (dichloromethane), CFC-11, CFC-12, HCFC-22, FC-23, CFC-113, CFC-114, CFC-115, HCFC-123, HCFC-134a, HCFC-141b, HCFC-142b.

Reactivity: A measure of the tendency of a hydrocarbon species to react with nitrogen oxides to form atmospheric ozone.

Reasonable Further Progress: Annual incremental reductions in emissions of the relevant air pollutant and its precursors required to ensure attainment of the applicable air quality standard by the applicable date.

Reasonably Available Control Technology (RACT): Process changes and/or devices to minimize air pollution from mobile and stationary sources that are cost-effective and readily available.

Reformulated Gasoline: A gasoline whose composition is changed to reduce exhaust emissions.

Retrofit: Modification of a polluting device to make it less polluting.

Ridesharing: A cooperative effort of two or more people to travel together. Examples are carpools, vanpools, buspools, trains, and public transit.

ROP Plan: The 1993 Rate-of-Progress Plan. The 1993 ROP Plan demonstrated that by 1996 existing and proposed control measures reduced emissions of reactive organic gases (ROG) to a level 15% below the 1990 baseline inventory.

Santa Barbara Channel: The area of the Pacific Ocean between Santa Barbara County's southern coast and the Channel Islands.

Santa Maria Basin: An area of undersea oil reserves off the western coast of Santa Barbara County.

Secondary Pollutants: Pollutants not emitted directly, but formed in the atmosphere through chemical reactions or transformation of other pollutants (i.e., ozone).

Single Occupant Vehicle (SOV): A motor vehicle occupied by one employee for commute purposes, including motorcycles.

Smog: A combination of smoke, ozone, hydrocarbons, nitrogen oxides, and other chemically reactive compounds which, under certain conditions of weather and sunlight, may result in a murky brown haze that causes adverse health effects. The primary source of smog in California is motor vehicles.

Smog Check: A vehicle inspection and maintenance exam. Smog Check Program: (See Inspection and Maintenance Program.)

Smoke: A form of air pollution consisting primarily of particulate matter (i.e., particles). Other components of smoke include gaseous air pollutants such as hydrocarbons, oxides of nitrogen, and carbon monoxide. Sources of smoke may include fossil fuel combustion, agricultural burning, and other combustion processes.

Solvent : A substance that dissolves another to form a solution.

Source: Something that produces air pollution emissions. Sources can be stationary or mobile, and anthropogenic or natural.

South Coast: The area of Santa Barbara County south of the ridge of the Santa Ynez Mountains and adjacent tidelands.

SO_2 (Sulfur Dioxide): A strong smelling, colorless gas that is formed by the combustion of fossil fuels. Power plants, which may use coal or oil high in sulfur content, can be major sources of SO_2. SO_2 and other sulfur oxides contribute to the problem of acid deposition. SO_2 is a criteria pollutant.

State Implementation Plan (SIP): A comprehensive plan prepared by each state, mandated by the federal Clean Air Act, which describes the existing air quality conditions and measures which will be taken to attain and maintain national ambient air quality standards.

State Tidelands: The area of the Pacific Ocean within three miles of the shores of Santa Barbara County.

Stationary Source: A non-mobile structure, building, facility, equipment installation or operation. Examples include oil production facilities, industrial coating operations, a rock crushing facility, and factories that use large amounts of solvents. A stationary source is classified as having a common production process, located on one or more adjacent properties, and is under the same or common ownership, operation, or control. (Contrast with mobile sources.)

Stationary Source Control Measures: A control measure designed to limit the kind and amount of pollutants emitted from stationary sources.

Telecommuting: Working at a location other than the conventional office. This place may be the home, or an office other than the employee's primary office. Telecommuting employees can communicate with

their offices by telephone.

Total Organic Gases (TOG): Reactive organic gases plus non-reactive organic gases.

Toxic Air Contaminant: An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code Section 39650 et seq.) than pollutants subject to CAAQS. Health effects due to TACs may occur at extremely low levels, and it is typically difficult to identify levels of exposure which do not produce adverse health effects.

Transitional Low Emission Vehicle (TLEV): TLEV vehicle standards will be 50 percent less hydrocarbon emissions than 1993 model-year conventional gasoline vehicles.

Transport: The act of emissions from one source being carried by wind to other locations.

Transportation Control Measure (TCM): Any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions. TCMs can include encouraging the use of carpools and mass transit. TCM's include both Transportation Demand Management and Transportation System Management measures.

Transportation Demand Management (TDM): The implementation of measures which encourage people to change their mode of travel, or not to make a trip at all, (e. g., ridesharing, pricing incentives, parking management and telecommuting.)

Transportation System Management (TSM): The implementation of measures which improve the efficiency of transportation infrastructure.

Trip: A single or one direction vehicle movement.

UAM (Urban Airshed Model): The three-dimensional photochemical grid model used to simulate ozone formation. Used to project episodic ozone concentrations. (See also air quality simulation model.)

Ultra Low Emission Vehicle (ULEV): ULEV standards would lower gasoline-equivalent hydrocarbon emissions by 85 percent, carbon monoxide by 50 percent, and NO_X emissions by 50 percent, from 1993 levels.

Vanpool: A van used routinely by six or more employees to commute together. The three basic types of vanpools are owner-operated, employer-sponsored, and vendor-operated.

Vehicle Miles Traveled (VMT): Number of miles traveled by a given vehicle in a specified time period. This number is sometimes estimated for the entire fleet of on road vehicles.

Violation: A number of measured exceedances of an applicable ambient air quality standard.

Visibility: The distance that atmospheric conditions allow a person to see at a given time and location. Visibility reduction from air pollution is often due to the presence of sulfur and nitrogen oxides, as well as particulate matter.

Volatile Organic Compound (VOC): This term is generally used similarly to the term "reactive organic gases" but excludes ethane which the federal government does not consider to be reactive. VOCs are hydrocarbon compounds that exist in the ambient air and contribute to the formation of smog and/or may themselves be toxic. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints.

Zero Emission Vehicle (ZEV): A vehicle which will maintain zero emissions throughout its lifetime.

GLOSSARY OF ACRONYMS

AB 2588	Assembly Bill 2588, The Air Toxic "Hot Spots" Information and Assessment Act of 1987
AEI	Annual Emission Inventory
APCD	Air Pollution Control District
APCO	Air Pollution Control Officer
API	American Petroleum Institute
AQAP	Air Quality Attainment Plan
ARB	California Air Resources Board
ATCM	Air Toxic Control Measure
ATV	All Terrain Vehicle
AVR	Average Vehicle Ridership
BACT	Best Available Control Technology
BAMM	Best Available Mitigation Measures
BAR	Bureau of Automotive Repair
BARCT	Best Available Retrofit Control Technology
BBLS	Barrels
BOPD	Barrels of Oil Per Day
BTU	British Thermal Unit
CAC	Community Advisory Council
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act of 1988
CCC	California Coastal Commission
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CES	Category of Emission Source
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality
CMP	Congestion Management Program
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CO_2	Carbon Dioxide
District	Santa Barbara County Air Pollution Control District
DMV	Department of Motor Vehicles
DOG	Department of Oil and Gas (California)
DPR	Department of Pesticide Regulation
EDS	Statewide Emission Data System
EIR	Environmental Impact Report
EKMA	Empirical Kinetic Modeling Approach
EPA	Environmental Protection Agency (United States)
ERC	Emissions Reduction Credit

ERF	Environmental Research Foundation
EtO	Ethylene Oxide
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Amendments
FFV	Flexible Fuel Vehicle
FIP	Federal Implementation Plan
FMVCP	Federal Motor Vehicle Control Program
FROG	Fraction Reactive Organic Gases
FPM10	Fraction Particulate Matter Less Than 10 Microns in Diameter
FTIP	Federal Transportation Improvement Program
FTP	Federal Emissions Test Procedure
GVR	Gasoline Vapor Recovery
H&SC	Health & Safety Code
HAP	Hazardous Air Pollutant
H_2S	Hydrogen Sulfide
HC	Hydrocarbons
HDT	Heavy Duty Truck
HDV	Heavy Duty Vehicle
HOV	High Occupancy Vehicle
hp	Horsepower
IC	Internal Combustion
IMPROVE	Interagency Monitoring of Protected Visual Environments Program
I&M	Inspection and Maintenance
IPM	Integrated Pest Management
IRTA	Institute for Research & Technical Assistance
ISTEA	Intermodal Surface Transportation Efficiency Act
ISR	Indirect Source Review
ITG	Innovative Technology Group
LAER	Lowest Achievable Emission Rate
LDT	Light Duty Truck
LDV	Light Duty Vehicle
LEV	Low Emission Vehicle
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
M	Thousand
MM	Million
M85	85 percent Methanol/15 percent Gasoline Fuel
MDT	Medium Duty Truck
MDV	Medium Duty Vehicle
MMBTU	Million British Thermal Units
MMSCFD	Million Standard Cubic Feet Per Day
MOU	Memorandum of Understanding
MSCF	Thousand Standard Cubic Feet
MTBE	Methyl Tertiary-Butyl Ether
MVFF	Motor Vehicle Fueling Facility (Gas Station)
MVRF	Motor Vehicle Refurbishing Facility (Auto Body Repair Shop)
MVIP	Motor Vehicle Inspection Program

NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Protection Act
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NGL	Natural Gas Liquids
NMHC	Non-Methane Hydrocarbons
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_X	Oxides of Nitrogen
NOV	Notice of Violation
NSPS	New Source Performance Standards
NSR	New Source Review
O_3	Ozone
OCS	Outer Continental Shelf
OVA	Organic Vapor Analyzer
PAM	Photochemical Assessment Monitoring Station
PAN	Peroxyacyl Nitrate
Pb	Lead
PEI	Planning Emission Inventory
PM	Particulate Matter
PM_{10}	Particulate Matter Less Than 10 Microns in Diameter
ppb	Parts Per Billion
pphm	Parts Per Hundred Million
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration
psi	Pounds Per Square Inch
PSI	Pollution Standards Index
psia	Pounds Per Square Inch Absolute Pressure
PVC	Polyvinyl Chloride
PVRV	Pressure Vacuum Relief Valves
RACT	Reasonably Available Control Technology
RHC	Reactive Hydrocarbons - same as ROG
RMD	Resource Management Department (Santa Barbara County)
ROC	Reactive Organic Compounds - same as ROG
ROG	Reactive Organic Gases - same as ROC
ROP	Rate-of-Progress Plan
RTP	Regional Transportation Plan
RVP	Reid Vapor Pressure
SARA	Superfund Amendment and Reauthorization Act
SBCAPCD	Santa Barbara County Air Pollution Control District
SBCAG	Santa Barbara County Association of Governments
SBMTD	Santa Barbara Metropolitan Transportation District
SCC	Source Classification Code
SCCAB	South Central Coast Air Basin
SCCCAMP	South Central Coast Cooperative Aerometric Monitoring Program
scf	Standard Cubic Feet
SCOS	Southern California Ozone Study
SCR	Selective Catalytic Reduction

SIC	Standard Industrial Classification Code
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SO_2	Sulfur Dioxide
SO_4	Sulfates
SOX	Oxides of Sulfur
SOV	Single-Occupant Vehicle
SUV	Sport Utility Vehicle
TAC	Toxic Air Contaminant
TCM	Transportation Control Measure
TDM	Transportation Demand Management
THC	Total Hydrocarbons
TLEV	Transitional Low Emission Vehicle
TMP	Transportation Management Plan
TOC	Total Organic Compounds
TOG	Total Organic Gases
TPD	Tons Per Day
TPY	Tons Per Year
TSM	Transportation Systems Management
TSP	Total Suspended Particulates
UAM	Urban Airshed Model
ug	Microgram
ug/m^3	Micrograms Per Cubic Meter
ULEV	Ultra-Low Emission Vehicle
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VMT	Vehicle Miles Travelled
VOC	Volatile Organic Compounds
VRS	Vapor Recovery System
ZEV	Zero Emission Vehicle

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

Air quality in Santa Barbara County continues to improve, with 1997 being one of the cleanest years on record. Yet our air quality has not improved to the point that it is clean enough to meet the federal 1-hour ozone standard. Continuing progress toward clean air is a challenging task that demands participation of the entire community. A clean air plan represents the blueprint for air quality improvement in Santa Barbara County. A clean air plan's goals are to explain the complex interactions between emissions and air quality, as well as design the best possible emission control strategy in a cost-effective manner. This 1998 Clean Air Plan represents a partnership among the Air Pollution Control District, the Association of Governments, the California Air Resources Board, the United States Environmental Protection Agency, local businesses, and the community-at-large to reduce pollution from all sources: cars, trucks, industry, consumer products, and many more.

We have come a long way; the number of days on which we experience unhealthful air quality in Santa Barbara County has been reduced significantly over the last 20 years despite substantial increases in population. The community should be proud of our accomplishments to date in reducing air pollution. This 1998 Clean Air Plan reflects a commitment to continue this progress and bring truly clean air to all of the residents of Santa Barbara County.

The purpose of this 1998 Clean Air Plan is to address both state and federal clean air act mandates. More specifically, this Plan addresses all federal planning requirements for "serious" nonattainment areas including a Rate-of-Progress demonstration and a demonstration that the county will attain the federal 1-hour ozone standard by 1999. In addition, this Plan re-establishes on-road mobile source reactive organic gas and oxides of nitrogen emission budgets for the purposes of transportation conformity. This Plan also provides a three-year update to the Air Pollution Control District's 1991 Air Quality Attainment Plan and 1994 Clean Air Plan for the state ozone standard, as required by the 1988 California Clean Air Act.

WHY IS THIS PLAN BEING PREPARED?

The 1990 federal Clean Air Act Amendments established attainment dates and planning deadlines for ozone nonattainment areas. Under the Amendments, Santa Barbara County was originally classified as a "moderate" nonattainment area with a statutory attainment date of November 15, 1996. On December 10, 1997, the United States Environmental Protection Agency (USEPA) issued a final action finding that Santa Barbara County had not met the federal 1-hour ozone standard by the statutory attainment date. This action was based upon the USEPA's review of our local air quality data for 1994 through 1996 that showed violations of the federal 1-hour ozone standard. As a result of this action, the entire Santa Barbara County nonattainment area was reclassified from "moderate to "serious" by operation of federal law. The final action mandates that we continue progress toward the federal 1-hour ozone standard through the development of a revised Clean Air Plan by January 9, 1999. This document addresses this mandate.

Additionally, under state law, a comprehensive plan must be developed every three years. To coordinate all applicable state and federal planning requirements, this Plan integrates the technical and policy issues associated with both ozone standards. This Plan therefore satisfies both state and federal planning requirements.

WHAT IS NEW IN THIS PLAN REVISION?

Each clean air plan revision represents a snapshot in time, based on the best available current information. This Plan is similar to the 1994 Clean Air Plan but includes significant new information. Some key new elements are:

- Updated local air quality information (1997);
- Updated emission inventories for 1990 and 1996;
- Identification of every feasible measure as part of the overall emission control strategy;
- A Rate-of-Progress determination for reactive organic gases; and
- An attainment demonstration for the federal 1-hour ozone standard.

HOW WAS THIS PLAN REVISION PREPARED?

We developed this plan in partnership with the Santa Barbara County Association of Governments (SBCAG), the California Air Resources Board (ARB), and the United States Environmental Protection Agency (USEPA). The SBCAG provided future growth projections, developed the transportation control measures, and estimated the on-road mobile source emissions. The ARB provided information on statewide mobile source and consumer product control measures. The USEPA provided information on the status of the control efforts for federally regulated sources.

To help provide important local policy and technical input on Air Pollution Control District (APCD) clean air plans and rules, the APCD Board of Directors established the Community Advisory Council. Starting in January of 1998, monthly meetings considered the various components of this Plan. The information and guidance provided by the Community Advisory Council was, on many occasions, directly incorporated into this Plan. APCD staff also conducted four public workshops to obtain direct public input on the Plan.

WHAT ARE THE HEALTH EFFECTS OF OZONE?

The health effects of ozone focus on the respiratory tract. Asthma, bronchitis and other respiratory disorders are worsened by high ozone concentrations. High ozone concentrations can be especially harmful to children, elderly people, people with respiratory illnesses, and people who exercise outdoors. Long-term exposure to moderate levels of ozone can damage even healthy people's lungs. Ozone air pollution is also bad for the economy by increasing health care expenses, loss of work due to illness, and damage to agricultural crops, buildings, paint and rubber.

IS AIR QUALITY IMPROVING?

Santa Barbara County's air quality is improving, as measured ozone concentrations continue to decline. In 1997, for example, our monitoring stations recorded only 10 exceedances of the more stringent state ozone standard and only 1 exceedance of the federal ozone standard. This represents the cleanest year on record! So far, during 1998, we have experienced 15 exceedances of the state 1-hour ozone

standard and two exceedances of the federal 1-hour ozone standard. Figure Ex-1 shows the number of state and federal ozone standard exceedances from 1988 through 1997. The most important feature of Figure EX-1 is the continuing decline of state 1-hour ozone standard exceedances during the last ten years.

WHAT ARE THE KEY FEDERAL REQUIREMENTS THAT THIS PLAN ADDRESSES?

In November 1990, Congress enacted a series of amendments to the federal Clean Air Act intended to increase air pollution control efforts throughout the nation. Title 1 of the Act was significantly revised to address those areas not meeting federal air quality standards. The revisions identified specific emission reduction goals, Rate-of-Progress requirements, attainment demonstrations, and incorporated more stringent sanctions for failure to attain or meet interim milestones.

When the USEPA reclassified Santa Barbara County as a "serious" nonattainment area, it triggered a requirement to submit a revised plan that addresses the "serious" nonattainment requirements outlined in Section 182(c) of the federal Clean Air Act. This Plan addresses all applicable planning requirements for "serious" nonattainment areas, including a Rate-of-Progress demonstration and a demonstration that the county will attain the federal 1-hour ozone standard by 1999. In addition, this Plan re-establishes on-road mobile source reactive organic gas and oxides of nitrogen emission budgets for the purposes of transportation conformity.

WHAT ARE THE KEY STATE REQUIREMENTS THAT THIS PLAN ADDRESSES?

The California Clean Air Act was signed into law on September 30, 1988. Key requirements of the law that this Plan addresses are the Triennial Progress Report (H&SC Section 40924(b)) and the Triennial Plan Revision (H&SC Section 40925(a)). Additionally, the Plan must provide an annual 5% emission reduction of ozone precursors, or, if this cannot be done, include every feasible measure as part of the emission control strategy. Finally, state law requires this Plan to provide for attainment of the state ambient air quality standards at the earliest practicable date (H&SC Section 40910).

HOW HAS THE EMISSIONS INVENTORY CHANGED?

In this Plan, a 1996 emissions inventory has been developed and used to both adjust the 1990 emissions inventory and to forecast the 1999 and 2005 inventories. The inventories have been developed in accordance with ARB and USEPA policies and procedures. The 1996 emissions inventory represents the most up-to-date inventory established for Santa Barbara County, while the 1990 emissions inventory is used to calculate the Rate-of-Progress requirements. The emissions inventory follows a new organizational structure developed by ARB that assigns all air pollution sources into one of four categories. The four categories are stationary sources, area-wide sources, mobile sources, and natural sources. On-road mobile source emissions are estimated with the latest approved computer models, vehicle registration information, and emission factors.

WHERE DOES OUR HUMAN GENERATED AIR POLLUTION COME FROM?

Figure EX-2 shows the Planning Emissions Inventory for 1996. This figure presents the estimated emissions of reactive organic gases and oxides of nitrogen (precursors that combine to form ozone) generated locally from human activities and does not include emissions on the Outer Continental Shelf or those from natural sources (seeps and vegetation). The largest contributor to our locally generated air pollution is on-road mobile sources (cars and trucks) which combine to contribute over 50% on the emissions inventory. Other mobile source (boats, planes, trains), the evaporation of solvents, combustion of fossil fuels, surface cleaning and coating, and petroleum production and marketing combine to make up the remainder. These sources of pollution are the focus of this Plan since they are the ones that local, state, and federal controls can address.

HAS THE OVERALL CONTROL STRATEGY CHANGED?

The overall combined reactive organic gas and oxides of nitrogen control strategy remains essentially the same as that adopted in the 1994 Clean Air Plan with a few small refinements. The 1994 Clean Air Plan contained: (1) the control measures needed to meet federal requirements for attaining the federal 1-hour ozone standard, and (2) additional control measures needed to address state requirements and attain the state 1-hour ozone standard. As already mentioned, this Plan evaluates every feasible local

control measure for Santa Barbara County and sets a schedule for control measure adoption. This Plan also provides updated information on emission control measures approved under the 1994 California State Implementation Plan.

DOES THE PLAN SHOW THAT WE WILL MEET THE FEDERAL 1-HOUR OZONE STANDARD?

This Plan demonstrates that we will attain the federal 1-hour ozone standard by 1999. The demonstration is based on a photochemical modeling assessment of the overall control strategy proposed in the Plan. However, the impacts of transported pollution from areas outside of our local control may impact our ability to achieve this milestone.

HOW WILL WE ADDRESS THE NEW FEDERAL STANDARDS FOR OZONE AND PARTICULATE MATTER?

In light of new public health data, the USEPA has issued new federal standards for ozone and particulate matter. The new federal ozone standard will be based on an 8-hour averaging time; it will replace the 1-hour ozone standard once it is attained. Attainment and nonattainment designations for the 8-hour ozone standard are expected by July 2000. The USEPA also established a new fine particulate standard ($PM_{2.5}$) for both a short-term (24-hour) and long-term (annual) averaging period, as well as changing the form of the existing PM_{10} standard. Attainment and nonattainment designations for the new fine particulate standards are expected between 2002 and 2005.

This Plan does not specifically address these new standards, although emission controls and inventories are analyzed and presented for the year 2005 for informational purposes. The USEPA is currently developing policies and guidance, as required under the federal Clean Air Act Amendments, for areas to follow as they plan to meet the new standards. The APCD is participating in this process and obtaining the required information to assess our attainment status and strategies to address these new standards.

Figure EX-1

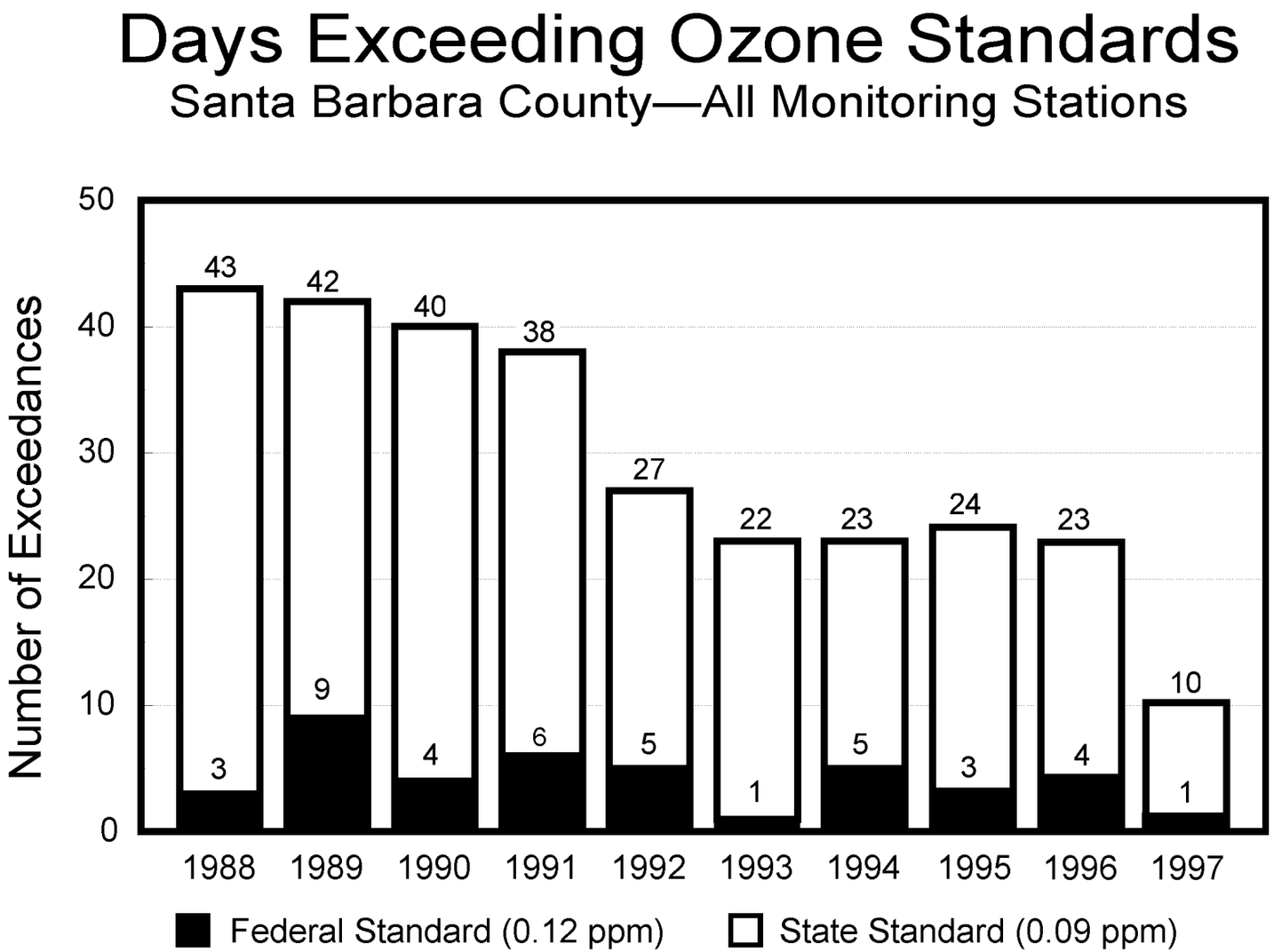
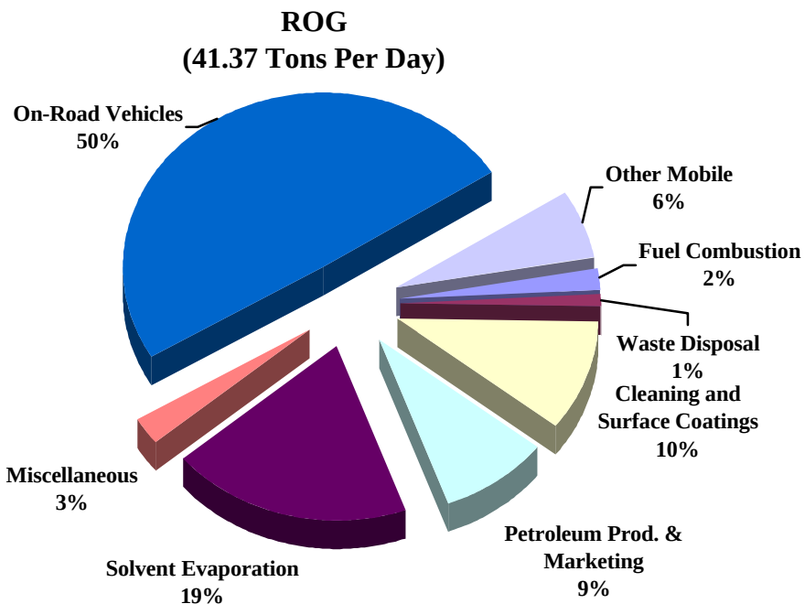
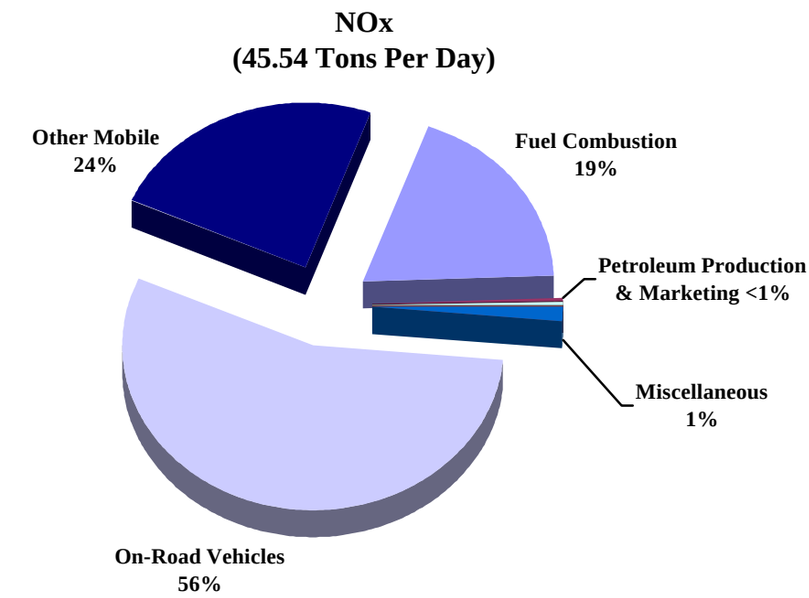

Days Exceeding Ozone Standards
Santa Barbara County—All Monitoring Stations
Number of Exceedances
50
40
30
20
10
0
43
42
40
38
27
22
23
24
23
10
3
9
4
6
5
1
5
3
4
1
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
Federal Standard (0.12 ppm)
State Standard (0.09 ppm)

Figure EX-2
1996 Santa Barbara County
Planning Emission Inventory*





*The Annual Emissions Inventory discussed in Chapters 3 and 6 also include emissions on the Outer Continental Shelf (OCS) and natural sources (e.g., seeps and biogenics) that are not represented here.

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

1.1 PURPOSE

Clean air is an essential resource to the people of Santa Barbara County. Good air quality enhances the environment, improves public health, and contributes to the attractiveness of the area to residents, businesses, and tourists. Fortunately, our air quality has improved through implementation of prior air quality plans. The purpose of this plan is to continue to improve air quality in Santa Barbara County as required by both the California Clean Air Act (CCAA) of 1988 and the Federal Clean Air Act Amendments (FCAAA) of 1990.

Santa Barbara County's air quality has historically violated both the state and federal ozone standards. Ozone concentrations above these standards adversely affect public health, diminish the production and quality of many agricultural crops, reduce visibility, degrade materials, and damage native and ornamental vegetation. Under both the 1990 FCAAA and the 1988 CCAA, the level of our ozone problem originally resulted in the county being classified as a "moderate" nonattainment area. On December 10, 1997, the United States Environmental Protection Agency (USEPA) issued a final action finding that Santa Barbara County had not attained the federal 1-hour ozone standard by the statutory attainment date of November 15, 1996, for "moderate" nonattainment areas. As a result of this action, the entire Santa Barbara County federal nonattainment area was reclassified as a "serious" nonattainment area by operation of federal law. The final USEPA action mandates that we continue progress toward the federal 1-hour ozone standard through the development of a revised Clean Air Plan by January 9, 1999. The purpose of this 1998 Clean Air Plan (1998 CAP) is to comply with these additional federal planning requirements and to address all applicable state planning requirements.

Specifically, this 1998 CAP addresses all FCAAA planning requirements for "serious" nonattainment areas including a Rate-of-Progress demonstration and an attainment demonstration of the federal 1-hour ozone standard by 1999. In addition, this 1998 CAP re-establishes on-road mobile source reactive organic gas (ROG) and oxides of nitrogen (NO_x)

emission budgets for the purposes of transportation conformity. This 1998 CAP also provides a three-year update to the 1991 Air Quality Attainment Plan and 1994 CAP for the state ozone standard, as required by the 1988 CCAA.

1.2 CURRENT STATE AND FEDERAL REQUIREMENTS

Section 182(c) of the FCAAA requires all "serious" nonattainment areas to prepare a plan to reduce ozone forming pollution, and provide a demonstration that the control strategy proposed in the plan will result in the attainment of the federal 1-hour ozone standard by 1999. This 1998 CAP is the third major planning effort under the 1990 FCAAA and also complies with the triennial plan progress report and plan revision requirements under the 1988 CCAA. A complete summary of all state and federal Clean Air Act requirements that apply to Santa Barbara County is provided and discussed in Chapter 10.

The first step in the current federal planning process is to develop a Rate-of-Progress demonstration that existing and proposed control measures will, between 1996 and 1999, reduce emissions of reactive organic gases (ROG) by 9 %. This requirement, in conjunction with the 15 % Rate-of-Progress mandate under Section 182(b), mandates a total ROG reduction of 24 % between 1990 and 1999, based on the 1990 adjusted base year inventory. The 1990 adjusted base year inventory accounts for seasonal variations (increases) in emissions during the ozone season and excludes emissions from natural sources that are beyond our ability to control. The second phase of the federal planning process uses all available information to demonstrate that the comprehensive air pollution control strategy in this 1998 CAP will achieve the federal 1-hour ozone standard by 1999. This demonstration is accomplished using a photochemical grid model that estimates future year (1999) ozone concentrations from all sources of air pollution that impact our local air quality.

In addition to the existing federal 1-hour ozone standard, the USEPA promulgated a new 8-hour ozone standard on July 18, 1997, that is generally more protective of public health than the 1-hour standard. On July 16, 1997, President Clinton issued a directive to the USEPA on the implementation of the revised air quality standards for both ozone and particulate

matter. The USEPA subsequently issued draft implementation guidance for the new standards consistent with the directive on November 17, 1998. The implementation guidance proposes new attainment designations and classifications, attainment dates, reasonable further progress requirements, control measure policies and additional guidance on New Source Review and transportation conformity. While the purpose of this 1998 CAP is to address the federal 1-hour ozone standard, the strategies outlined in this 1998 CAP are expected to make progress toward this new 8-hour standard. It is anticipated that area designations for the new federal 8-hour ozone standard will occur in the year 2000 with attainment plans due in 2003.

Failure to fully meet the requirements of the FCAAA can lead to federal intervention in our local air pollution control program. Loss of federal highway funds and increased emission offset requirements for new stationary sources are possible outcomes under the mandatory sanctions imposed for failure to meet FCAAA requirements. Failure to attain the federal 1-hour ozone standard by 1999 could also result in the USEPA reclassifying Santa Barbara County as "severe" nonattainment area. The strategy outlined in this 1998 CAP is structured in such a way as to minimize the probability of these events. If Santa Barbara County is unable to attain the federal 1-hour ozone standard by 1999 due to the impacts of transported pollution from areas outside our local control, we may request that the USEPA extend our attainment date. This request would be based upon a new USEPA policy, dated July 17, 1998, on the extension of attainment dates for downwind transport areas.

California law mandates that APCDs periodically revise and update attainment plans towards achieving the state 1-hour ozone standard. The effort being undertaken for this 1998 CAP address attainment of the state 1-hour ozone standard, which is more protective of public health than the federal 1-hour ozone standard. This 1998 CAP will therefore satisfy all state triennial planning requirements.

The Santa Barbara County 1998 CAP will be forwarded to the California Air Resources Board (ARB) for their review in January 1999, before being submitted to the USEPA as part

of the State Implementation Plan (SIP). The 1998 CAP is due to the USEPA by January 9, 1999.

1.3 AIR QUALITY ATTAINMENT PLANNING SUMMARY

Several prior air quality plans have been prepared for Santa Barbara County. The first clean air plan for Santa Barbara County was the 1979 Air Quality Attainment Plan (1979 AQAP) which was updated in 1982. These two plans were prepared in response to mandates established by the federal Clean Air Act of 1977. At that time only the southern portion of the county, the region south of the Santa Ynez Mountains, was in violation of the federal 1-hour ozone standard. The 1982 update predicted attainment of the federal ozone standard by 1984, but acknowledged that pollution generated on the Outer Continental Shelf (OCS) was not included in the plan, therefore the county's ability to attain the federal ozone standard was uncertain.

The predicted attainment of the federal ozone standard did not occur. As a consequence, the USEPA called for an update to the 1982 AQAP on March 17, 1986. In response, the county prepared the 1989 AQAP, which was adopted by the Air Pollution Control District (APCD) Board of Directors (Santa Barbara County Board of Supervisors) in June of 1990. The 1989 Plan committed the county to adopt and implement over 50 new emission control measures designed to bring the South County into attainment with the federal ozone standard. Many of the emission control measures in the 1989 AQAP have been or are in the process of being adopted as APCD rules.

A 1991 Air Quality Attainment Plan (1991 AQAP) was also prepared. This plan was required by the California Clean Air Act of 1988 to bring the county into attainment of the more health protective California ozone standard. The 1991 AQAP was adopted by the APCD Board of Directors in December 1991 and was approved by the ARB in August 1992.

On November 15, 1990, President Bush signed legislation amending the federal Clean Air Act (the 1990 FCAAA). The 1990 FCAAA required Santa Barbara County, as a "moderate" nonattainment area, to submit a Rate-of-Progress Plan to the USEPA by November 15, 1993, and an attainment demonstration by November 15, 1994. The 1994 Clean Air Plan was adopted by the Santa Barbara County Air Pollution Control District Board of Directors and formally submitted to the USEPA on November 15, 1994, to address these new federal mandates. The 1994 CAP included: amendments to the 1993 Rate-of-Progress (1993 ROP) Plan; an attainment demonstration of the federal ozone standard by 1996; a request for redesignation from a nonattainment area to an attainment area for the federal ozone standard; and a plan to show maintenance of the federal ozone standard through the year 2006. The 1994 CAP also provided a three-year update to the 1991 Air Quality Attainment Plan for the state ozone standard, as required by the California Clean Air Act of 1988.

On January 8, 1997, the USEPA approved several elements of the 1994 CAP including the amendments to the 1993 Rate-of-Progress Plan, the base year emission inventory, and the control strategy. The attainment demonstration element was not approvable by the USEPA due to violations of the federal 1-hour standard during 1994-1996 and was withdrawn from the 1994 CAP submittal. Similarly, the USEPA never acted upon the maintenance plan element due to the measured violations of the federal 1-hour ozone standard.

On December 10, 1997, the USEPA issued a final action finding that Santa Barbara County had not attained the federal 1-hour ozone standard by the statutory attainment date of November 15, 1996, for "moderate" nonattainment areas. As a result of this action, the entire Santa Barbara County nonattainment area was reclassified as a "serious" nonattainment area by operation of federal law. The final USEPA action mandates that we continue progress toward the federal 1-hour ozone standard through the development of a revised Clean Air Plan by January 9, 1999. This 1998 CAP addresses the new federal planning requirements for "serious" nonattainment areas.

A summary of Santa Barbara County's state and federal planning activities beginning with the 1989 AQAP is presented in Table 1-1.

1.4 PLAN ORGANIZATION

Chapter 2, Local Air Quality, provides a summary of Santa Barbara County's air quality, and identifies the nature and extent of the ozone problem.

Chapter 3, Emission Inventory, identifies the sources and quantities of reactive organic gases, oxides of nitrogen, and carbon monoxide that contribute to ozone formation in Santa Barbara County. This emission inventory is tailored to meet federal requirements.

Chapter 4, Emission Control Measures, provides an overview of the APCD's control measures. In addition, the chapter summarizes ARB's programs for reducing emissions from off-road mobile sources and consumer products. This chapter identifies the status of each control measure in relation to both state and federal requirements.

Chapter 5, Transportation Control Measures, describes all transportation related control measures, and identifies their applicability to both state and federal requirements.

Chapter 6, Emission Forecasting, details the forecast procedures used to develop future year emission inventories for 1999 and 2005.

Chapter 7, Future Air Quality, provides an overview of the air quality information used to demonstrate attainment of the federal 1-hour ozone standard by 1999.

Chapter 8, Implementation Support Activities, identifies and discusses other APCD program and policies that facilitate continued progress toward attainment of state and federal ozone standards.

Chapter 9, Rate-of-Progress, documents that this 1998 CAP will achieve the federally mandated emission reduction requirements under sections 182(b) and 182(c) of the 1990 FCAAA.

Chapter 10, State and Federal Clean Air Act Requirements, provides an overview of all state and federal Clean Air Act planning requirements and discusses how the work completed in conjunction with this 1998 CAP complies with all applicable requirements.

Chapter 11, State Mandated Triennial Progress Report and Triennial Plan Revision, summarizes how the development and adoption of the 1998 CAP satisfies the triennial update requirements of the California Clean Air Act.

Chapter 12, Public Participation, summarizes all public input received during the development of this 1998 CAP.

For continuity, all tables and figures associated with each chapter will appear at the end of the chapter. In addition to the above chapters, four appendices document and support the 1998 CAP. These include the following:

Appendix A:	*Emission Inventory and Forecasting Documentation*
Appendix B:	*Stationary Source Control Measure Working Papers*
Appendix C:	*Transportation Control Measure Working Papers & On-Road Mobile Source Emissions Analysis*
Appendix D:	*Ozone Attainment Demonstration*

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Table 1 - 1

Comparison of the 1989 AQAP, 1991 AQAP, 1993 ROP Plan, 1994 CAP, and 1998 CAP

	1989 AQAP	1991 AQAP	1993 ROP Plan	1994 CAP	1998 CAP
Mandates	Federal Clean Air Act of 1977	California Clean Air Act of 1988	Federal Clean Air Act Amendments of 1990	Federal Clean Air Act Amendments of 1990 California Clean Air Act of 1988.	Federal Clean Air Act Amendments of 1990 California Clean Air Act of 1988
Air Quality Standards	The federal 1-hour ozone standard is 0.12 parts per million. An area is designated nonattainment if it violates the standard more than three times in three years at a single monitoring station.	The state 1-hour ozone standard is 0.09 parts per million. An area is designated nonattainment based on a calculated "design day" value. [1]	The federal 1-hour ozone standard is 0.12 parts per million. An area is designated non-attainment if it violates the standard more than three times in three years at a single monitoring station.	Addresses both the state 1-hour ozone standard (0.09 parts per million) and the federal 1-hour ozone standard (0.12 parts per million)	Addresses both the state 1-hour ozone standard (0.09 parts per million) and the federal 1-hour ozone standard (0.12 parts per million)
Region Covered	The 1989 AQAP covered only the southern portion of Santa Barbara County. At the time this plan was prepared, northern Santa Barbara County was classified as attainment of the federal 1-hour ozone standard.	All of Santa Barbara County failed to attain the state 1-hour ozone standard. The 1991 AQAP covered the entire county.	Under the Federal Clean Air Act of 1990, all of Santa Barbara County failed to attain the federal 1-hour ozone standard.	Under the Federal Clean Air Act of 1990, all of Santa Barbara County failed to attain the federal 1-hour ozone standard. The 1994 CAP covers the entire county and the Outer Continental Shelf.	The USEPA re-classified the entire county as a “serious” nonattainment area. The 1998 CAP covers the entire county and the Outer Continental Shelf.
Emission Inventory	A 1985 baseline inventory of emission sources in the south Santa Barbara County was developed. An inventory of sources in the Outer Continental Shelf (OCS), beyond the state's three mile jurisdictional boundary, was included to address the impacts of pollution from the OCS on the county's ability to attain the federal 1-hour ozone standard.	A 1987 baseline inventory of emission sources county-wide was developed, but excluded sources in the Outer Continental Shelf.	A 1990 baseline inventory of emission sources county-wide was prepared, not including sources in the outer continental shelf. Also, an "emission budget" for ROG. was established. [2]	A 1990 baseline inventory of emission sources county-wide was developed, which included an updated inventory of Outer Continental Shelf sources. Also, an "emission budget" for ROG and NO_x. was established.	A 1996 baseline inventory of emission sources county-wide has been developed, including an updated inventory of Outer Continental Shelf sources. The 1996 inventory will be used to update the 1990 emissions and to forecast the 1999 and 2005 emissions. Also, an "emission budget" for ROG and NO_x was established.
Plan Summary	The 1989 AQAP was required to include computer modeling to estimate the effect of the proposed controls on air quality and to determine ROG and NO_x reductions needed to attain the federal 1-hour ozone standard.	The 1991 AQAP was required to reduce ROG and NO_x emissions by 5% per year until the state 1-hour ozone standard was achieved, or to have included all feasible control measures.	The 1993 ROP Plan was required to achieve a 1996 ROG emission inventory which is 15% less than the 1990 adjusted base year ROG emission inventory.	The 1994 CAP was required to demonstrate attainment of the federal 1-hour ozone standard by 1996; document amendments to the 1993 ROP Plan; initiate the federal re-designation process; and satisfy state triennial update requirements.	The 1998 CAP is required to demonstrate attainment of the federal 1-hour ozone standard by 1999 and show a 24% reduction in ROG emissions between 1990 and 1999. This 1998 CAP also satisfies state planning requirements.

[1] The design day value is called the one-in-one year recurrence rate value, and is based on a statistical analysis that essentially discounts any pollution episodes expected to occur just once per year.

[2] An emission budget is a ceiling for future transportation ROG and/or NO_x emissions.

CHAPTER 2

LOCAL AIR QUALITY

Introduction

Climate of Santa Barbara County

Air Quality Monitoring

Air Quality Overview

Discussion of Pollutants Which Violate Standards

Conclusions

2. LOCAL AIR QUALITY

2.1 INTRODUCTION

This chapter provides the background for the plan by presenting an overview of the climate and current air pollution levels in Santa Barbara County. This information is important for understanding the factors that influence air quality in the county, and for assessing progress towards attainment of air quality standards. The purpose of the plan is to establish a blueprint for improving air quality in the county for those pollutants that exceed state and federal ambient air quality standards. Accordingly, this chapter devotes greater attention to the pollutants for which the county violates federal and state standards. There are two related terms that are used frequently in this chapter: *exceedance* and *violation*. A standard *exceedance* occurs when a measured concentration exceeds any applicable air quality standard. A standard *violation* occurs after a certain number of exceedances have been measured and is dependent on the standard in question. For example, a federal 1-hour ozone standard violation occurs when four federal ozone standard exceedances are measured during a three year period at a single air monitoring station. Attainment and nonattainment designations are based on violations of standards.

The next section of this chapter, Section 2.2, discusses the local climate of Santa Barbara County in terms of precipitation, temperatures, winds, inversions and their relationship to air quality. Section 2.3 describes the air quality monitoring network in the county. An overview of the existing air quality for all pollutants measured in the county is presented in Section 2.4. Section 2.5 examines each pollutant that violates state or federal standards in greater detail. Finally, Section 2.6 highlights the conclusions of the chapter.

2.2 CLIMATE OF SANTA BARBARA COUNTY

Santa Barbara County has a Mediterranean climate characterized by warm, dry summers, and cooler, relatively damp winters. Mild temperatures occur throughout the year, particularly near the coastline. Maximum summer temperatures average 70 degrees Fahrenheit near the coast and in the high 80s to

low 90s inland. During winter, average minimum temperatures range from the 40s along the coast to the 30s inland.

The climate of Santa Barbara is strongly influenced by a persistent high pressure area which lies off the Pacific Coast. As a result, sunny skies are common throughout most of the area. Rain storms periodically occur, mostly from October to April, when the high pressure has shifted south. Annual rainfall amounts range from about 10 to 18 inches along the coast, with more substantial amounts in the higher elevations. On occasion, tropical air masses produce rainfall during the summer.

Cool, humid, marine air causes frequent fog and low clouds along the coast, generally during the night and morning hours in the late spring and early summer. The fog and low clouds can persist for several days at a time until broken up by a change in the weather pattern.

The airflow around the county plays an important role in the movement of pollutants. In North County (north of the ridgeline of the Santa Ynez Mountains), the sea breeze (from sea to land) is typically northwesterly throughout the year while the prevailing sea breeze in South County is from the southwest. During summer months, these winds are stronger and persist later into the night. At night, the sea breeze weakens, and as air adjacent to the surface cools, it descends down the coastal mountains and mountain valleys resulting in light land breezes (from land to sea). This land/sea breeze cycle combined with local topography greatly influence the direction and speed of the winds throughout the county. In addition, the alternation of the land-sea breeze cycle can sometimes produce a "sloshing" effect, where pollutants are swept offshore at night and subsequently carried back onshore during the day. This effect is exacerbated during periods when wind speeds are low.

Topography also plays a role in wind patterns experienced in the county. The terrain around Point Conception, combined with the change in orientation of the coastline from north-south to east-west can cause counterclockwise circulation (eddies) to form east of the Point. These eddies fluctuate temporally and spatially often leading to highly variable winds along the southern coastal strip. Point Conception also marks the change in the prevailing surface winds from northwesterly to southwesterly.

The sea-breeze that persists in Santa Barbara County is common to all of California. These winds generally carry pollutants generated in the coastal areas to areas well inland. Typically, the air quality measured in the coastal areas of California is much better than that experienced inland. A good example of this is found in Long Beach. Long Beach seldom exceeds state and federal ozone standards. However, a significant amount of pollution is generated in the area and is carried inland by the sea-breeze. This pollution impacts the inland areas and increases the number and magnitude of ozone exceedances measured in these downwind areas. Because of this, emission controls must be implemented in Long Beach (Long Beach is just an example, this situation exists for many areas of California) in order to improve the air quality in the downwind areas. This same situation applies to Santa Barbara County where pollution emitted in the coastal areas is carried by the sea-breeze to inland areas necessitating a regional approach to address the ozone problem.

Another type of wind regime that influences air quality in Santa Barbara is the "Santa Ana" wind. Santa Ana winds are dry northeasterly winds that occur primarily during the fall and winter months. These are warm, dry winds blown from the high inland desert, which then descend down the slopes of a mountain range. Wind speeds associated with Santa Ana are generally 15-20 mph, though they can sometimes reach speeds in excess of 60 mph. During Santa Ana conditions, pollutants emitted in Santa Barbara, Ventura County, and the South Coast Air Basin (the Los Angeles region) are moved out to sea. These pollutants can then be moved back onshore into Santa Barbara County (via the Santa Barbara Channel) in what is called a "post Santa Ana condition." The effects of the post Santa Ana condition can be experienced throughout the county. However, not all post Santa Ana conditions lead to high pollutant concentrations.

A condition similar to the "Santa Ana" can occur in our area and is commonly called a "sundowner." A "sundowner" condition can produce strong, hot northerly winds along the coastal area of Santa Barbara County below the Santa Ynez Mountains. While this condition can drastically affect the local climate (usually for short periods of time), it does not have a significant negative influence on our air quality.

Upper-level winds in the atmosphere are also important in the air quality of Santa Barbara County. These winds are routinely measured at Vandenberg Air Force Base once each morning and afternoon.

The winds at 1,000 feet and 3,000 feet are generally from the north or northwest throughout the year. Occurrences of southerly and easterly winds are most frequent in winter, especially in the morning. Upper-level winds from the southeast are infrequent during the summer, though when they do occur, they are usually associated with periods of high ozone levels. As with the surface winds, upper-level winds can move pollutants that originate in other areas into the county.

Yet another factor that affects the concentrations of pollutants in the air is the stability of the atmosphere. Atmospheric stability regulates the amount of air exchange (referred to as mixing) both horizontally and vertically. A high degree of atmospheric stability that restricts mixing and low wind speeds is generally associated with higher pollutant concentrations. These conditions are typically related to temperature inversions (temperature increase with height) which cap the pollutants that are emitted below or within them. Ozone concentrations are frequently higher directly below the base of elevated inversions than they are at the surface. Ozone concentrations aloft can remain higher than at lower levels due to being separated from emissions of nitric oxide at the surface, which can react with ozone to destroy it. For this reason, elevated monitoring sites will occasionally record higher ozone concentrations than sites at lower elevations.

At Vandenberg Air Force Base, surface inversions (0-500 ft) are most frequent during the winter, and subsidence inversions (1000-2000 ft) are most frequent during the summer. Generally, the lower the inversion base height and the greater the rate of temperature increase from the base to the top, the more pronounced effect the inversion will have on inhibiting vertical dispersion. The subsidence inversion is very common during summer along the California coast, and is one of the principle causes of air stagnation.

As noted above, poor air quality is often associated with "air stagnation" (high stability/restricted air movement). Therefore, it is reasonable to expect a higher frequency of pollution events in the southern portion of the county where light winds are frequently observed, as opposed to the North County where the prevailing winds are strong and persistent.

In summary, the surface and upper-level wind flow varies both seasonally and geographically in the county and inversion conditions can affect the movement and dispersion of pollutants. It should be

emphasized that the prevailing flow patterns in the county are not necessarily those that cause high ozone values. On the contrary, previous studies suggest that high ozone values are associated with unusual flow patterns (Kessler, 1988). The meteorology associated with high ozone levels in Santa Barbara County is discussed further in Section 2.5.

2.3 AIR QUALITY MONITORING

The State of California has established ambient air quality standards to protect human health. The federal government has also established health-based standards ("primary" standards), which are generally less protective of public health than state standards. In addition, the federal government has established "secondary" standards to protect public welfare. State and federal standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter 10 micrometers or less in size (PM_{10}), and lead. On July 18, 1997, a new federal standard was promulgated for ozone (8-hour) and suspended particulate matter 2.5 micrometers or less in size ($PM_{2.5}$). In addition, California has standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. All applicable state and federal standards are shown in Table 2-1.

Monitoring of ambient air pollutant concentrations is conducted by the California Air Resources Board (ARB), the Santa Barbara County Air Pollution Control District (APCD), and industry. Monitors operated by the ARB and the APCD are part of the State and Local Air Monitoring System (SLAMS). The SLAMS monitors are located to provide local and regional air quality information. Monitors operated by industry, at the direction of the APCD, are called Prevention of Significant Deterioration (PSD) stations. PSD stations are required by the APCD to ensure that new and modified sources under APCD permit do not interfere with the county's ability to attain and maintain air quality standards. Historically, ambient air quality monitoring stations have operated in North County and San Luis Obispo by the Environmental Research Foundation (ERF) which is a non-profit organization funded by local industry. Methods and procedures used in monitoring follow guidelines prescribed by the ARB and the U.S. Environmental Protection Agency (EPA) to ensure consistency with the standards.

Figure 2-1 shows the locations of all past and present monitoring stations that have operated in Santa Barbara County. Many of the sites depicted in Figure 2-1 have been de-commissioned, but are summarized here for informational purposes. The installation dates, status, and parameters measured for all stations are listed in Table 2-2. Several of the stations have been in operation for more than 8 years and some for over 15 years. Figure 2-2 presents a summary of the current monitoring network.

2.3.1 ENHANCED MONITORING

On December 10, 1997, the USEPA reclassified the Santa Barbara County one-hour ozone non-attainment area from "moderate" to "serious". That action precipitated the requirement to establish a Photochemical Assessment Monitoring Station (PAMS) program. This USEPA funded program involves collecting low-level (3,500 feet) upper-air meteorological measurements utilizing an upper-air radar wind profiler, ten meter wind speed and direction, atmospheric temperature, relative humidity, total solar and sky radiation, barometric pressure, carbonyl sampling, speciated hydrocarbon sampling (72 compounds), and oxides of nitrogen and ozone measurements. Of the three different types of PAMS sites, the APCD will initially be required to install a Type II site on the south coast of Santa Barbara County. The objective of a Type II site is to monitor for maximum ozone precursor emissions. The APCD will be analyzing a variety of existing historical data to determine the best monitoring location to address the PAMS Type II site objective and make a recommendation for USEPA approval. If possible, an existing south county site will be utilized.

In addition to the APCD's PAMS program, the ARB will be conducting $PM_{2.5}$ monitoring at their downtown Santa Barbara and Santa Maria sites beginning in 1999. A third sampler is to be installed and operated near the San Rafael Wilderness by the federal land manager in around the year 2000. The two ARB sites were chosen by the ARB, with APCD concurrence, because it was determined by both agencies that they best addressed the $PM_{2.5}$ monitoring objectives.

With the upcoming promulgation of regional haze regulations, the USEPA is also in the process of drafting guidance on regional haze or visibility monitoring to be instituted under the Interagency Monitoring of Protected Visual Environments (IMPROVE) program. An IMPROVE

site is scheduled to be co-located with the $PM_{2.5}$ site located near the San Rafael Wilderness. The $PM_{2.5}$ monitoring regulations in 40 CFR Part 58 allow the use of the IMPROVE protocol for the purpose of characterizing background or transported levels of $PM_{2.5}$.

2.4 AIR QUALITY OVERVIEW

This section provides an explanation of where each pollutant comes from, how it affects human health, and whether state and federal standards are being met.

2.4.1 OZONE

Ozone is formed in the atmosphere through a series of chemical reactions involving oxides of nitrogen (NOx), reactive organic gases (ROG), and sunlight occurring over a period of several hours. The major source of NOx in the county is combustion of fossil fuels in automobiles and other mobile sources, the petroleum industry, and channel shipping. ROG sources include natural seeps of oil and gas, use of solvents in paints, consumer and industrial products, automobiles, natural vegetation, and the petroleum industry. Since ozone is not emitted directly into the atmosphere, but is formed as a result of chemical reactions in the atmosphere, it is classified as a "secondary" pollutant and is considered "regional" because it occurs over a wider area than that in which the pollutants are emitted. Because this ozone-forming reaction takes time, peak ozone levels are often found several miles or more downwind of major source areas. This is particularly true when winds are persistent from one direction.

The health effects of ozone focus on the respiratory tract. Asthma, bronchitis and other respiratory disorders are worsened by high ozone concentrations. Eye irritation, nausea, headaches, coughing and dizziness are other symptoms of ozone exposure. Ozone also interferes with photosynthesis, thereby damaging ornamental plants, natural vegetation, and agricultural crops.

Figure 2-3 presents the number of state (1-hour) and federal (1-hour and 8-hour) ozone exceedances measured in the county from 1988 through 1997 for all monitoring stations in continuous operation during the last 10 years. As seen in the figure, both federal and state ozone standards have been

exceeded in recent years. In fact, the entire South Central Coast Air Basin encompassing San Luis Obispo, Santa Barbara, and Ventura Counties has been designated nonattainment for the state ozone standard. Santa Barbara County experiences between 10 and 42 days per year on which the state ozone standard is exceeded and 1 to 9 days per year on which the federal 1-hour standard is exceeded. Figure 2-3 also summarizes the number of exceedances of the new federal 8-hour ozone standard which is shown to be more protective of public health than the existing federal 1-hour standard, but slightly less protective of public health than the state 1-hour ozone standard.

The most striking feature of Figure 2-3 is the dramatic drop in ozone exceedances during 1997. In fact, 1997 was the cleanest year on record in Santa Barbara County. A more detailed discussion of ozone air quality in Santa Barbara County is provided in Section 2.5.1.

2.4.2 CARBON MONOXIDE

Carbon monoxide is formed primarily by the incomplete combustion of fossil fuels for transportation, energy, and heat. Relatively low concentrations of this colorless, odorless gas can delay reaction time, impair visual sensitivity in the dark, affect people's ability to estimate time intervals, and result in headaches and fatigue. Substantially higher concentrations can cause loss of consciousness and death.

Although Santa Barbara County complies with the state and federal 1-hour carbon monoxide standards, Figure 2-4 shows that the levels measured in downtown Santa Barbara have historically approached the state standard of 20 ppm. High values are generally measured during winter when dispersion is limited by morning surface inversions. Summer values are much lower due to increased mixing. At one time the county was considered out of attainment for the state and federal 8-hour CO standard (9 ppm). However, improvement has been steady, probably due to cleaner cars, as the last recorded exceedance occurred in 1985 (Figure 2-4).

2.4.3 NITROGEN DIOXIDE

Nitric oxide (NO) is formed during the combustion of fossil fuels for transportation, energy, and heat. NO then reacts with oxygen to form nitrogen dioxide (NO_2). NO_2 and NO are collectively referred to

as nitrogen oxides, or NO_x. Low levels of nitrogen dioxide can irritate the nose and eyes, while higher concentrations may exacerbate bronchitis or pneumonia. The reaction of nitrogen dioxide with water forms nitric acid that is a constituent of acid rain. In addition, nitrogen oxides are a precursor to the formation of ozone pollution.

Santa Barbara County complies with all state and federal nitrogen dioxide standards. The highest nitrogen dioxide values are generally measured in urbanized areas with heavy traffic. Figure 2-5 presents the maximum recorded 1-hour nitrogen dioxide values in downtown Santa Barbara. There have been no exceedances of the 1-hour standard during the past 15 years. Figure 2-6 shows the annual average nitrogen dioxide concentrations measured downtown which are well below the federal standard.

2.4.4 SULFUR DIOXIDE

Sulfur dioxide is a gas produced primarily from the combustion of fuels containing sulfur. When combined with moisture, the gas converts into sulfuric acid which, if inhaled, can cause lung irritation and is also a constituent of acid rain. Sulfur dioxide is especially harmful when combined with particles small enough to enter the lung tissue.

Santa Barbara County complies with all sulfur dioxide standards. As depicted in Figures 2-7, 2-8, 2-9, and 2-10, there have been no exceedances of the state or federal 1-hour, 3-hour, 24-hour or annual sulfur dioxide standards over the past 15 years.

2.4.5 PM_{10}

PM_{10} is particulate matter with an aerodynamic diameter of 10 microns or less. PM_{10} is generated by a wide variety of sources including, wind blown dust, wildfires, dirt roads, construction sites, internal combustion engines and agriculture. Particulate matter is a respiratory irritant. Large particles are effectively filtered in the upper respiratory tract. However, small particles (under 10 microns) can cause serious health effects. The chemical makeup of the particles is an important factor in determining the health effect.

PM_{10} has been measured consistently at both SLAMS and PSD stations since 1986 with measurements at the Santa Maria Library SLAMS site extending into 1985. Figure 2-11 presents the maximum 24-hour average concentration measured each year and the annual geometric mean for the Santa Barbara and Santa Maria SLAMS sites. As evidenced by the figure, both the state 24-hour and annual PM_{10} standards are violated in the county. However, the county is in compliance with the federal 24-hour PM_{10} standard. Figure 2-12 presents the annual arithmetic mean PM_{10} concentrations measured in Santa Maria which generally records the highest annual values. As shown from this figure, Santa Barbara County complies with the federal annual PM_{10} standard.

Due to violations of the state standard, the APCD has undertaken a special study to investigate the source contributions and chemical and physical characteristics of PM_{10} in the county. Section 2.5.2 discusses the study in greater detail. In addition, Section 2.5.3 will discuss EPA's revisions to the federal particulate matter standards.

2.4.6 LEAD

Lead is a heavy metal that occurs as a lead oxide aerosol or dust. Primary sources of this pollutant are the combustion of lead containing fuels, lead processing, and the manufacturing of lead products. Lead is a highly toxic compound and can accumulate in body organs and cause impairment of the nervous system, bones, and kidneys. Anemia is the most common result from lead exposure in adults.

Santa Barbara County complies with the state and federal lead standards. Figure 2-13 presents the maximum measured 30-day average concentrations of lead in the county. The figure shows that since 1980, with the phasing out of leaded gasoline, there has been a dramatic reduction in lead concentrations. Since the federal standard is less restrictive than the state standard, Santa Barbara County also complies with the federal standard.

2.4.7 SULFATES

Sulfates are particles that are formed in moist air. The primary source of sulfate is the combustion of fuels containing sulfur. The health effects of sulfates include aggravation of respiratory diseases, reduced lung function, eye irritation, and increased mortality. Sulfates are also a corrosive agent.

Although Santa Barbara County currently complies with the state sulfate standard, exceedances occurred in 1980 and 1984. Figure 2-14 presents the maximum measured 24-hour sulfate concentrations in the county since 1980. Since the last measured exceedance in 1984, there has been a general decrease in concentrations in recent years.

2.4.8 HYDROGEN SULFIDE

Hydrogen sulfide is an odorous, toxic gas that can be smelled at very low concentrations. It is produced during the decay of organic material and is found naturally in petroleum. The principle health effects, depending on exposure and susceptibility, are discomfort, nausea, headaches, allergic reactions, and loss of appetite. Higher concentrations can damage the nervous system and be fatal. Historically, a portion of the North County violated the state hydrogen sulfide standard and was designated as "nonattainment" for that standard. However, recent monitoring data has shown a marked decrease in the number of hydrogen sulfide exceedances in the area prompting the California Air Resources Board to redesignate the area to "attainment" on November 18, 1993.

2.4.9 VINYL CHLORIDE

Vinyl chloride is produced by the manufacture and decomposition of plastics and polyvinyl chloride (PVC) products. It is currently not being monitored in the county because there are no facilities in the county that are manufacturing products or accepting wastes that emit vinyl chloride. In the past, the county did have one site that accepted such wastes (Casmalia Resources hazardous waste landfill), and ambient air was monitored for vinyl chloride. These data indicated concentrations of vinyl chloride well below the state air quality standard.

Vinyl chloride can cause liver damage and is suspected of causing cancer. At very high concentrations, dizziness and disorientation have also been documented.

2.4.10 VISIBILITY REDUCING PARTICLES

The ARB has established a standard for visibility reducing particles to monitor and protect a region's visual resources. The standard applies only when the relative humidity is less than 70 percent because water vapor in the air can also significantly reduce visibility. Currently, Santa Barbara County is unclassified for visibility reducing particles because the appropriate data to make a determination are not available. The ARB plans to begin collecting the necessary measurements at various locations around the state over the next several years. When the data become available, the visibility reducing particle standard will be addressed.

2.4.11 REGIONAL HAZE

Regional haze is caused by numerous sources of fine particulate pollution over a broad area impacting visibility. EPA is currently in the process of promulgating revisions to the 1980 visibility regulations as part of the new Regional Haze Program. The revised program would apply to all states as opposed to the current regulations which apply only to areas that contain Class I areas (designated wilderness areas) and would require new monitoring, planning and emission reduction programs. It is anticipated that EPA will finalize the Regional Haze Program in the Spring of 1999 with potential future requirements for Santa Barbara County.

2.4.12 TOXIC AIR CONTAMINANTS

In recent years, our awareness of specific, highly toxic and cancer causing pollutants has increased. The effects of these pollutants are generally limited to those people in the immediate vicinity of the emission source. These pollutants are called Toxic Air Contaminants (TACs) by the California Air Resources Board, and Hazardous Air Pollutants (HAPs) by the Environmental Protection Agency. Many of these compounds can cause cancer (i.e. are carcinogens) and many can cause reproductive harm or other

health effects. Cancer is usually associated with long term exposure (years) while the other health effects may be associated with short term exposure (hours or minutes).

Several state and federal laws have been passed to further our understanding of toxic air pollutants and to reduce the health risk from these substances to the public. Under the state Air Toxic "Hot Spots" Information and Assessment Act of 1987 (AB 2588), the APCD has quantified and assessed the health risks associated with public exposure to toxics from individual sources in Santa Barbara County. Sources included in the Air Toxic “Hot Spots” program include those that manufacture, formulate, use, or release chemicals listed under AB 2588. Mobile sources, area sources (e.g., agricultural burns, barbeques), Outer Continental Shelf platforms and sources that apply pesticides are exempt from AB 2588. Sources with cancer risks greater than 10 per million and noncancer hazard indices (the ratio of exposure level to acceptable exposure level) greater than 1 will be required to notify businesses and residents that are exposed to these risks. In addition, some sources will be required to reduce the health risk posed by their operations.

State legislation (AB 2728, 1992) integrates the federal air toxics program into California's program. The bill clarifies the state's authority to implement the federal program. It also adds all federally classified hazardous air pollutants to the state list of toxic air contaminants and adopts the federal emission standards as state Air Toxic Control Measures (ATCM). Local districts will be required to adopt these ATCMs or develop rules at least as stringent as the federal standards.

Certain provisions of the federal Clean Air Act Amendments of 1990 are also directed at reducing the public's exposure to hazardous air pollutants. Title III (Air Toxics) and Title V (Permitting) are designed to account for and reduce the public health risk associated with 189 specific compounds. The general approach of the federal regulation is to set industry-specific emission standards to be implemented through the permit process.

Although this Clean Air Plan does not directly address the control of toxic and hazardous air pollutants, it will indirectly account for the reduction of certain toxic emissions that are also reactive organic gases.

2.5 DISCUSSION OF POLLUTANTS THAT VIOLATE STANDARDS

As discussed in the air quality overview, Santa Barbara County violates the state PM_{10} standard and has historically violated both the state and federal ozone standards. The following sections provide a more in-depth investigation of these pollutants.

2.5.1 OZONE

Ozone has been monitored in the county for over 20 years. Data collected at these stations, in conjunction with the various air quality studies performed in the region, provide valuable insight into the county's ozone problem. The following sections use this information to discuss peak ozone levels, the geographical extent of ozone exceedances in the county, and the area's ozone classification.

2.5.1.1 Peak 1-hour Ozone Levels

Table 2-3 summarizes the four highest ozone values recorded in Santa Barbara County from 1987 through 1989 at all available monitoring locations. According to USEPA policy, the 4th highest 1-hour ozone concentration measured at a particular monitoring station constitutes the desgn value for that station. These design values were used to classify the county as a "moderate" nonattainment area pursuant to the Federal Clean Air Act Amendments of 1990 as discussed in section 2.5.1.3. As seen in the table, the maximum recorded concentrations range from 0.12 to 0.22 ppm. The highest episodic concentrations recorded over the three year period are 0.22 ppm (April 7, 1989, at Santa Barbara), 0.21 ppm (March 8, 1989, At GTC near Gaviota), 0.20 ppm (April 8, 1989, at Gaviota West), and 0.17 ppm (October 5, 1987, at several locations along the coast). It is interesting to note that there were three widespread episodes that accounted for a majority of the highest ozone values (October 5, 1987, March 8, 1989, and April 7,8,9, 1989). Analysis of these data suggests that some of the pollution recorded on these days originated outside the county.

Table 2-4 presents the design value summary for 1994 through 1996 which was used to determine whether Santa Barbara County had attained the federal 1-hour ozone standard by the statutory attainment date of November 15, 1996. This table shows that both peak ozone concentrations and

design value concentrations have declined during the 1990s. However, 3 sites continued to violate the federal 1-hour standard prompting EPA to reclassify Santa Barbara County to a "serious" nonattainment area for purposes of the federal 1-hour ozone standard.

2.5.1.2 1-hour Ozone Standard Exceedances

The preceding section discussed peak ozone concentrations measured around the county. Another important aspect to the ozone problem is the geographical extent of the exceedances and the associated meteorology. This type of analysis can provide useful information on how ozone concentrations vary throughout the county and where potential "hot spots" may be.

Figures 2-15 and 2-16 present ozone exceedance data throughout the county for selected SLAMS and PSD stations, respectively. The majority of the SLAMS stations have been in operation since 1980, while the PSD stations have been installed more recently. Therefore, the figures show SLAMS data from the period 1980 to 1997, and PSD data from 1988 to 1997.

Figure 2-15 shows the variability of ozone standard exceedances at the SLAMS stations in the county. Stations located in the South Coast area experience a greater number of exceedances compared to North County, where the Santa Ynez station generally measures a higher number of exceedances than other North County sites.

Figure 2-16 shows selected PSD stations around the county. This figure reveals that there are areas in the county that experience a greater number of ozone standard exceedances than indicated by the SLAMS stations. For example, Las Flores Canyon - Site 1, and Paradise Road experience from 3 to 24 state ozone standard exceedances and up to 6 federal standard exceedances per year.

Figure 2-17 presents a geographical summary distribution of state and federal ozone standard exceedances recorded from 1988 through 1997. This figure clearly shows the geographic variability of ozone exceedances in the county. In general, areas of South County experience less healthful air quality than areas to the north and west. However, Paradise Road (at the eastern end of the Santa Ynez Valley) experiences a significant number of days with unhealthful air quality.

To gain a better understanding of ozone exceedances across the county, the APCD performed a study entitled, "Selection, Classification, and Analysis of Ozone Violations in Santa Barbara County" (SBCAPCD, 1990). The primary focus of the study was to assess the geographical and meteorological patterns associated with ozone standard exceedances.

Eighteen ozone exceedances were grouped into five categories based on the geographical extent of the observed exceedance: Countywide, Paradise Road, Lompoc, South County, and Carpinteria. Meteorological data during the ozone episodes were then compiled and the data analyzed. The five categories and their associated characteristics are summarized below.

Countywide exceedances (exceedances recorded on the same day throughout the county) were characterized by easterly upper-level (3,000 ft) winds during the morning, turning southerly during afternoon hours. The exceedances occurred either as high concentrations across the whole county or as discrete ozone parcels moving across the county. Many of these countywide exceedances appeared to be influenced by pollutants entering from outside the county combining with locally generated pollution.

The Paradise Road exceedances were characterized by distinct meteorological conditions. Surface winds were light westerly or northwesterly with upper-level winds (3,000 feet) out of the southeast. Days preceding the exceedance had easterly upper-level winds while on the exceedance day, the upper-level winds would switch from easterly to westerly. It is difficult to identify the origin of the pollutants contributing to these exceedances due to the complicated nature of the meteorology and topography of the area. Possible source areas include North County (Santa Maria, Lompoc, etc.), South County, Ventura, San Joaquin Valley, and the South Coast Air Basin. It is also possible, given the high frequency of exceedances at Paradise Road, that each of these areas contribute to exceedances in varying degrees on different days.

The one exceedance classified as the "Lompoc exceedance" was very localized and occurred late in the day. It is probable that the pollutants were blown into the area with the afternoon onshore (northwesterly) winds. The source(s) of the pollutants could not be identified.

South County exceedances characteristically had high ozone concentrations from Carpinteria to Point Conception. In general, concentrations to the north of the Santa Ynez mountains were considerably lower. Upper-level winds (3,000 feet) shifted from easterly to southerly on the day of the exceedance. Surface winds were generally westerly, probably preventing the pollutants from entering in to North County. It is possible that pollutants brought into the area from the south and east combined with local sources during these exceedances.

Carpinteria exceedances were similar to South County exceedances. Upper level winds were generally from the north possibly preventing the movement of pollutants into the rest of the county. The pollutants in these episodes may be locally generated or associated with emissions in Ventura County or the South Coast Air Basin.

Ozone exceedances in Santa Barbara County occur under many diverse meteorological conditions. This is an important factor when designing emission control strategies. Given the widespread nature of exceedances of the state ozone standard in the county, and given that the entire San Luis Obispo County, Santa Barbara County, and Ventura County area has been designated nonattainment for the state 1-hour ozone standard, there is little evidence to suggest that emissions from any area of the county do not contribute to some degree to the regional problem.

2.5.1.3 Area Classification for the 1-Hour Ozone Standard

Both the state and federal clean air acts set up a method for classifying areas according to severity of its ozone problem. These classifications determine regulatory requirements and target dates for attaining the ozone standards. To determine an area's classification and attainment date for the federal 1-hour ozone standard, the USEPA has developed a measure of the peak ozone levels called the "design value" which determines the severity of ozone exceedances (EPA, 1990). The ozone design value is

essentially the area's fourth highest 1-hour observed concentration at one station over a 3-year period as described in section 2.5.1.1.

Under the 1990 Federal Clean Air Act Amendments, the types of pollution controls required for each area depend on how severe its ozone problem is. Five classifications have been mandated: marginal, moderate, serious, severe, and extreme depending on the area's design value (FCAAA Section 181 (a)). Table 2-5 summarizes the five classifications under the amendments, the corresponding ozone concentration design values, and the associated attainment date that is measured from the date of the amendments (1990). Based on the information in Table 2-3, EPA originally designated Santa Barbara County as a "moderate" non-attainment area (OAQPS, 1991) with an attainment date of November 15, 1996.

As already mentioned, Table 2-4 shows that during the 1994-1996 milestone period, 3 sites in South County were in violation of the federal 1-hour ozone standard. Based on these concentrations, USEPA proposed that Santa Barbara County be reclassified as a "serious" nonattainment area. During the rulemaking process, the air quality differences between North and South County were examined for a potential change in the nonattainment area boundary (i.e., only reclassify South County as "serious"). In the final rulemaking, USEPA could not justify a boundary change with the available data but offered to work with interested parties to develop the required analyses. APCD staff will continue to work with and ARB staff on this issue, but this 1998 Clean Air Plan must address the impacts of the reclassification to a "serious" nonattainment area countywide.

2.5.1.4 New Federal 8-Hour Ozone Standard

In addition to the federal 1-hour ozone standard, the USEPA has promulgated (July 18, 1997) a new 8-hour ozone standard (0.08 ppm) that is generally more protective of public health. Compliance with the new standard is judged by taking the average of the 4th highest 8-hour concentration, each year, for a 3 year period. Table 2-6 provides an example of the 8-hour ozone design value calculation using data from 1994 through 1996 for informational purposes. As the table shows, Las Flores Canyon -

Site 1, and Paradise Road would be out of compliance (average greater than or equal to 0.085 ppm) with the new 8-hour ozone standard during this period.

The transition to the new 8-hour ozone standard will occur over the next few years. Areas must first achieve the 1-hour ozone standard before that standard is officially revoked and replaced by the new 8-hour ozone standard. EPA is proposing to officially designate attainment and nonattainment areas in the year 2000 with State Implementation Plan (SIP) revisions due within 3 years (2003). The USEPA will also set attainment dates for areas based on the SIP revisions. It is anticipated that the comprehensive emission control strategy outlined in this 1998 Clean Air Plan will provide for continued progress toward attaining the new 8-hour ozone standard.

2.5.2 PM_{10} (Particulate Matter)

As mentioned in Section 2.4.5, Santa Barbara County violates both the state PM_{10} 24-hour and annual standards. PM_{10} is produced either by direct emission of particulates from a source (primary PM_{10}), or by formation of aerosols as a result of chemical reactions in the atmosphere involving precursor pollutants (secondary PM_{10}). The sources of PM_{10} can also be categorized as natural or resulting from human activity. Based on emissions data, the largest single source of PM_{10} emissions in the county is entrained paved road dust. Other major sources include dust from construction and demolition, tilling dust (agricultural), entrained road dust from unpaved roads, natural dust and sea-salt, and particulate matter released during fuel combustion.

To investigate the county's PM_{10} problem, the APCD started a specialized sampling and analysis study in 1989 called the Santa Barbara County Particulate Matter Emission Reduction Study. The study collected and analyzed ambient samples of PM_{10} at a number of sites located throughout the county to identify chemical constituents. The study identified potential source characteristics and assessed control strategies for reducing PM_{10} concentrations. The major finds of the study include: 1) background sources (primarily sea-salt) are a major contributor to PM_{10} concentrations; 2) on average, 70% of the locally generated PM_{10} (primary) is directly emitted; 3) locally generated geological dust and motor vehicle exhaust are the most significant sources of primary PM_{10} in the county; and 4) potential control measures should concentrate on these primary sources of PM_{10}.

Although Santa Barbara County has developed an excellent data base for PM_{10} attainment, there is much additional work to be performed. Non-traditional controls (e.g., controls for fugitive dust) will have to be evaluated along with the more traditional controls. Therefore, attainment of the state PM_{10} standards may be dependent on the development of innovative control technologies and their effectiveness upon implementation. In any case, implementation of ozone control measures adopted in this 1998 Clean Air Plan, and ozone precursor (ROG and NO_x) emissions reductions required by the California Clean Air Act will result in PM_{10} air quality benefits by reducing secondary PM_{10}. Some progress is already underway, but additional steps will have to be taken to attain the state PM_{10} standards.

2.5.3 $PM_{2.5}$ (Fine Particulate Matter)

On July 18, 1997, EPA revised the primary and secondary air quality standards for particulate matter by establishing annual and 24-hour $PM_{2.5}$ standards and revising the form of the existing 24-hour PM_{10} standard. The new standards for $PM_{2.5}$ are set at 65 ug/m^3 for 24-hour and 15 ug/m^3 for an annual average.

The characteristics, sources, and potential health effects associated with larger or "coarse" particles (from 2.5 to 10 micrometers in diameter) and smaller or "fine" (smaller than 2.5 micrometers) can be very different. Coarse particulates generally come from windblown dust and dust kicked up from mobile sources. Fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. From a health perspective, fine particles are more likely to penetrate deeply into the lungs and increase respiratory symptoms and disease, decrease lung function, and alter lung tissues and structures and respiratory tract defense mechanisms.

Since $PM_{2.5}$ is not currently being monitored in Santa Barbara County (or throughout the nation), the first step in addressing the new standard is the establishment of a monitoring program which will be funded by the USEPA. Once the data have been collected and processed, USEPA will be designating

attainment and nonattainment areas (action expected between 2002 and 2005) with State Implementation Plans due starting in the year 2005.

2.6 CONCLUSIONS

Santa Barbara County has historically violated both state and federal health standards for ozone and state standards for PM_{10} and hydrogen sulfide. The county continues to violate the state 1-hour ozone standard and PM_{10} standards, but has been redesignated by the ARB as attainment for the state hydrogen sulfide standard.

For the 1994 through 1996 period, 3 sites in South County were in violation of the federal 1-hour ozone standard prompting USEPA to reclassify all of Santa Barbara County as a "serious" nonattainment area. In addition, USEPA has promulgated a new 8-hour ozone standards and revised the standards for particulate mater. These actions by USEPA will require additional monitoring and planning activities for Santa Barbara County.

While 1997 was the cleanest year on record, additional efforts are needed to continue progress toward the goal of providing clean air for the residents of Santa Barbara County by achieving attainment for all applicable state and federal ambient air quality standards.

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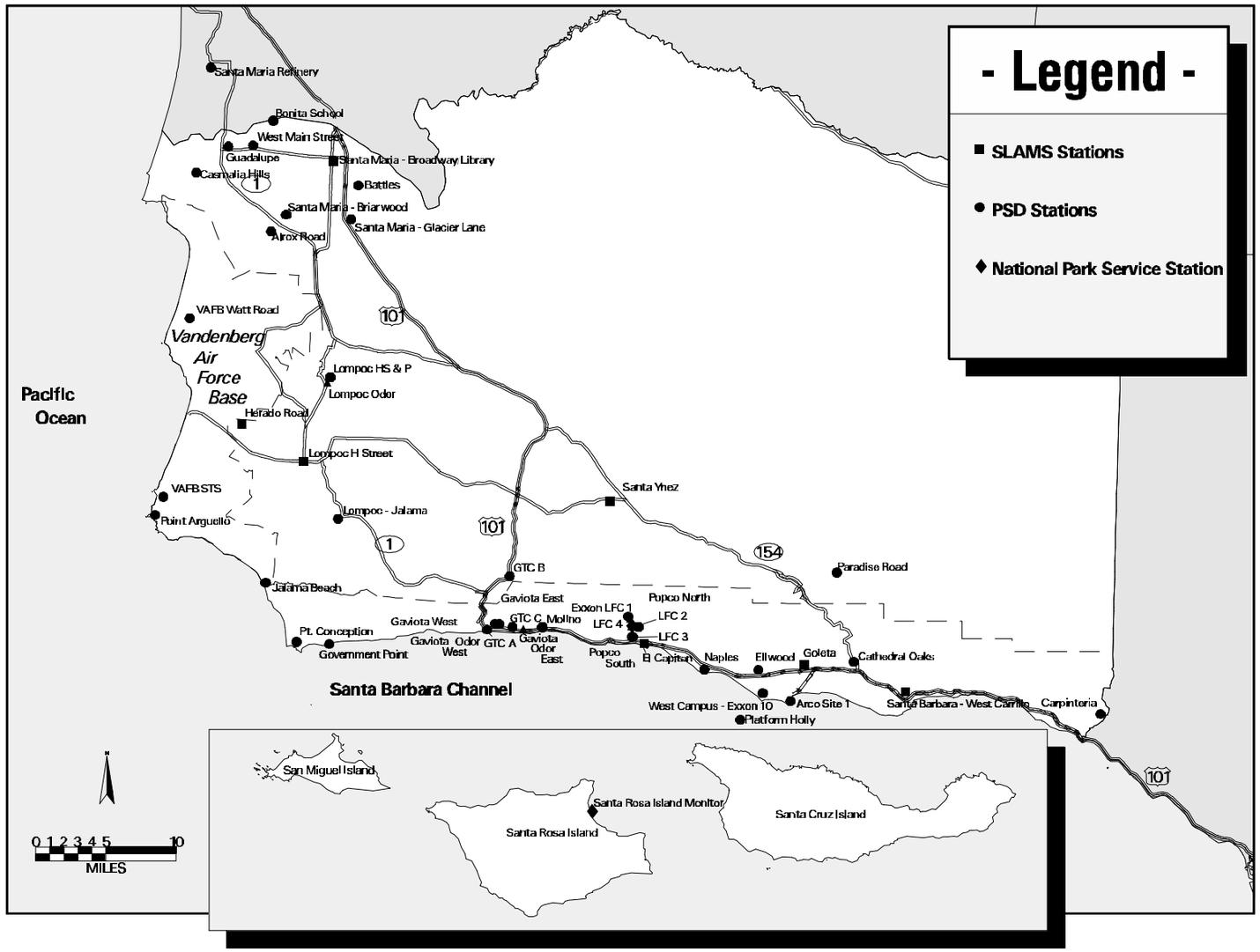
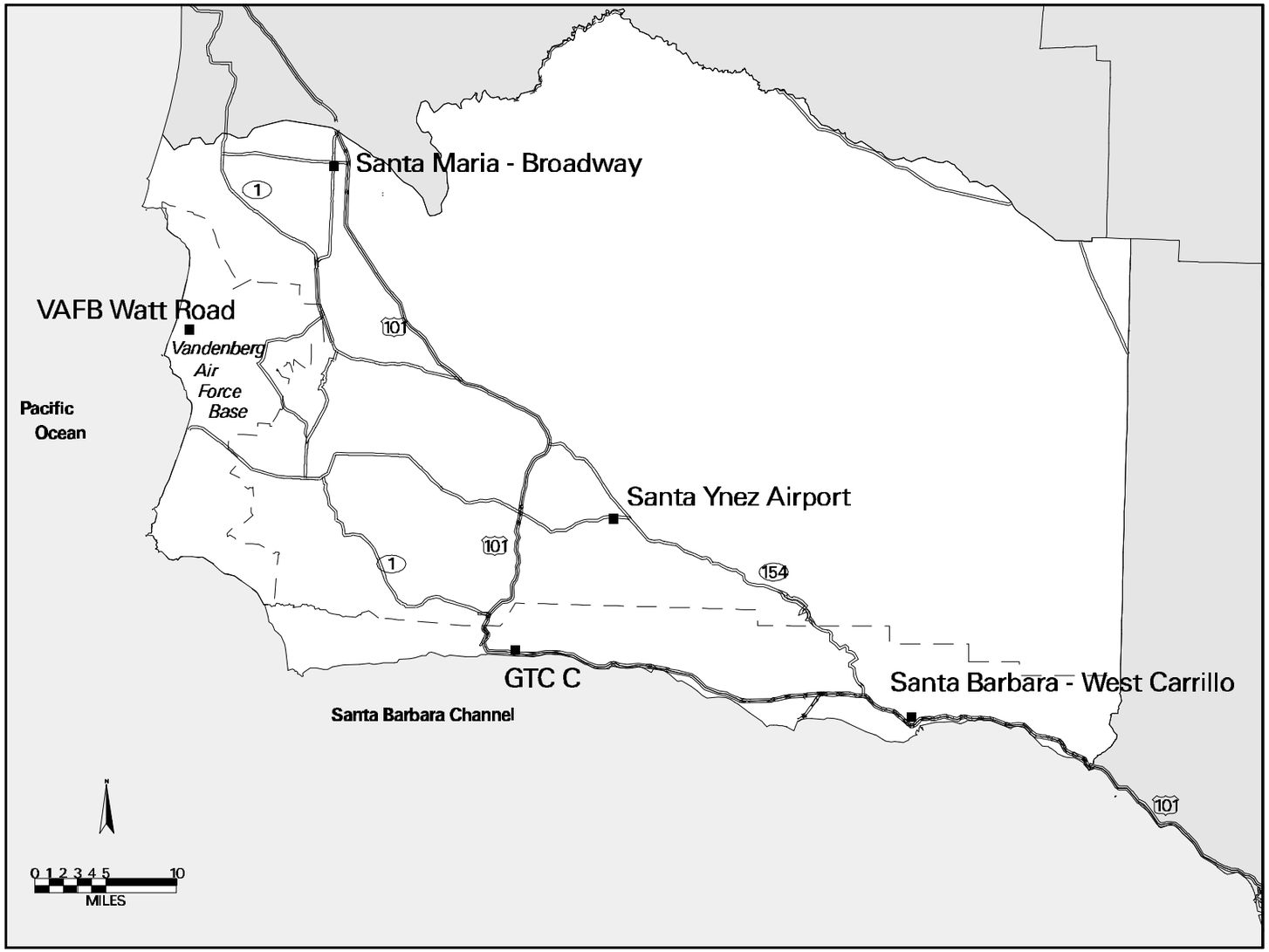
Figure 2-1
Past and Present Air Quality Monitoring Stations

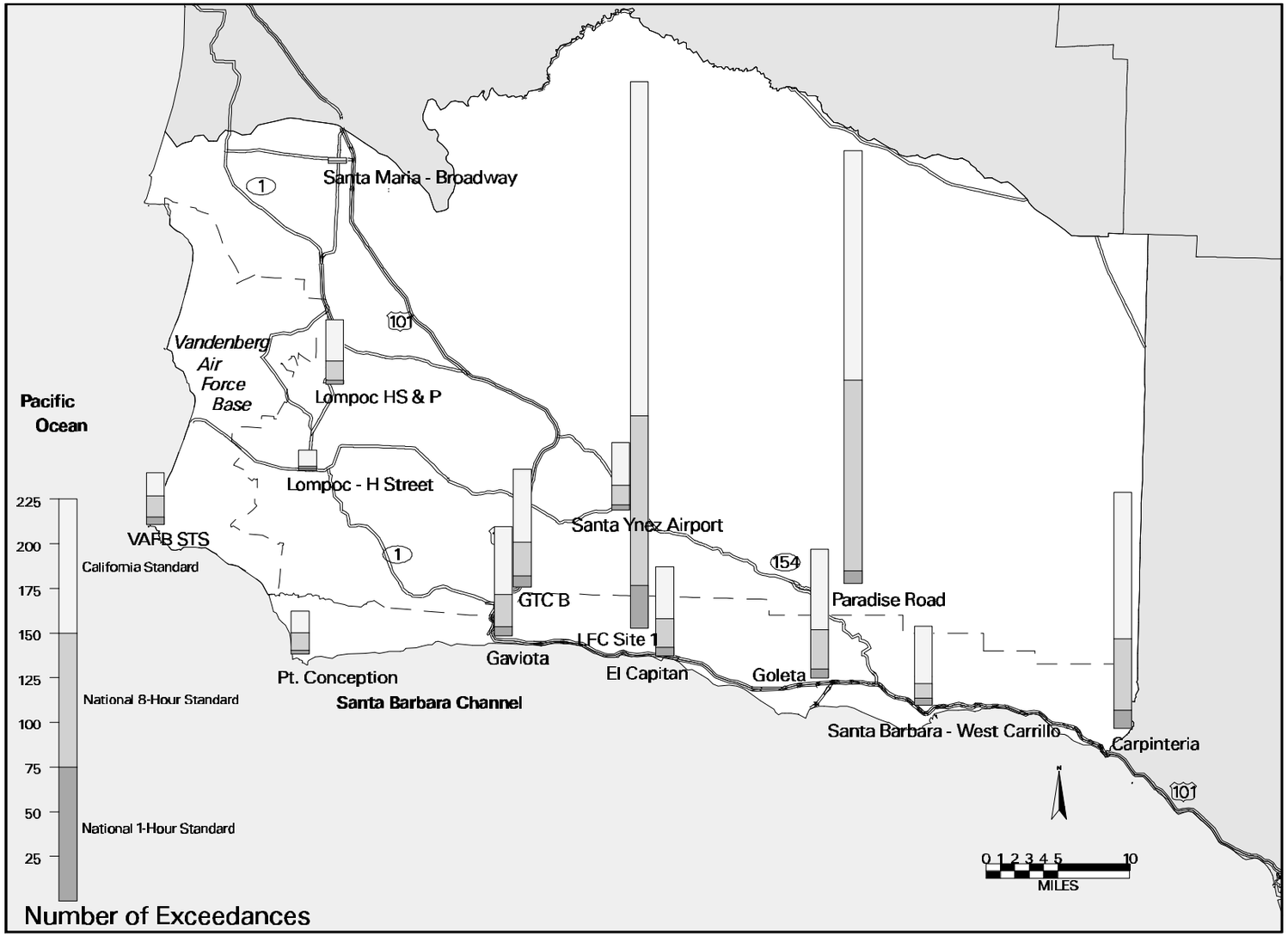


Past and Present Santa Barbara County Air Quality Monitoring Network



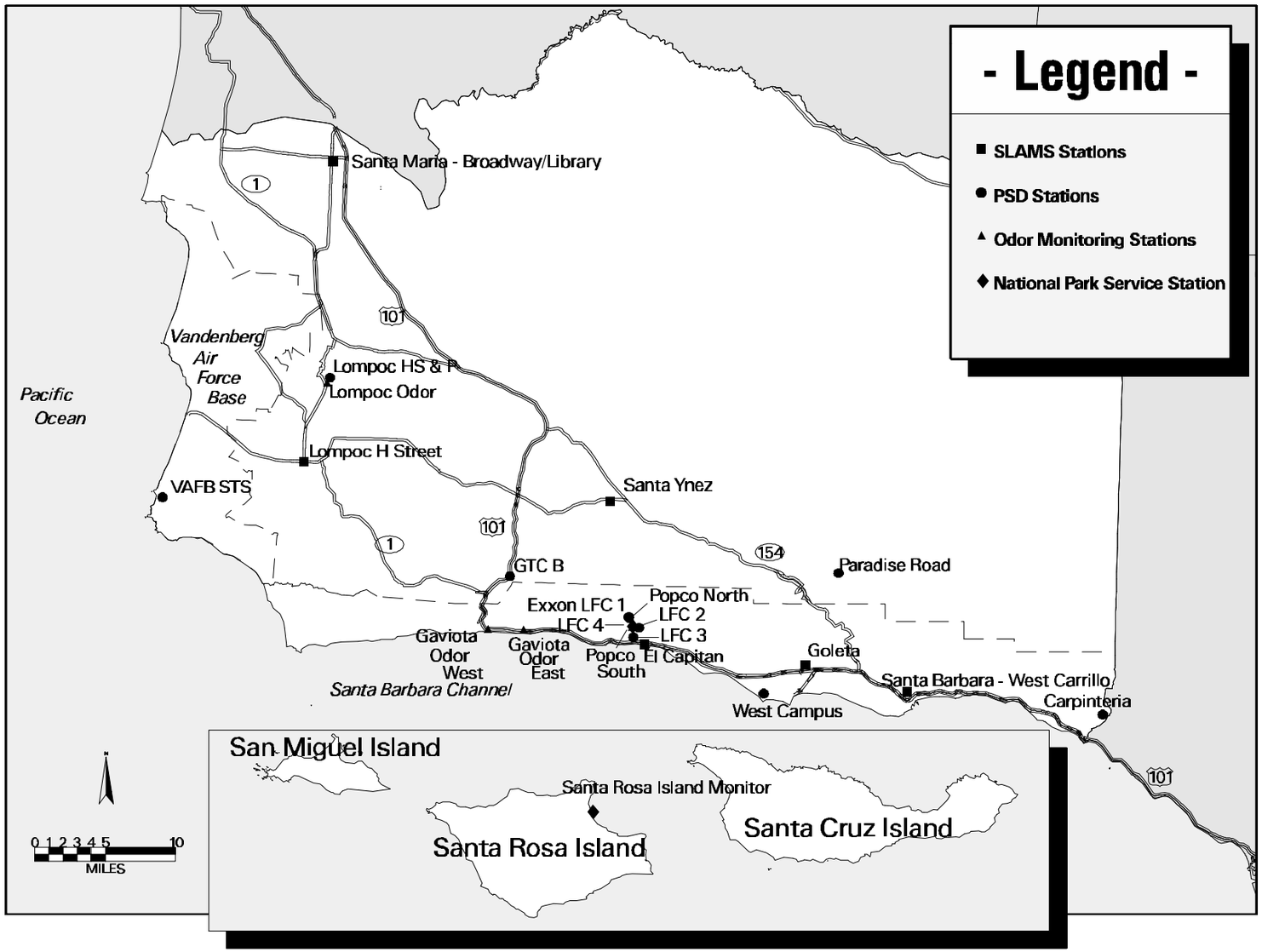
Santa Barbara County PM10 Study Monitors

Figure 2-17
Exceedances of the California and National Ozone Standards: 1988-1997



Exceedances of Ambient Air Quality Standards (1988 to 1997)

Figure 2-2
Current Air Quality Monitoring Stations



Present Santa Barbara County Air Quality Monitoring Network

Figure 2-3
Days Exceeding Ozone Standards in Santa Barbara County
1988-1997

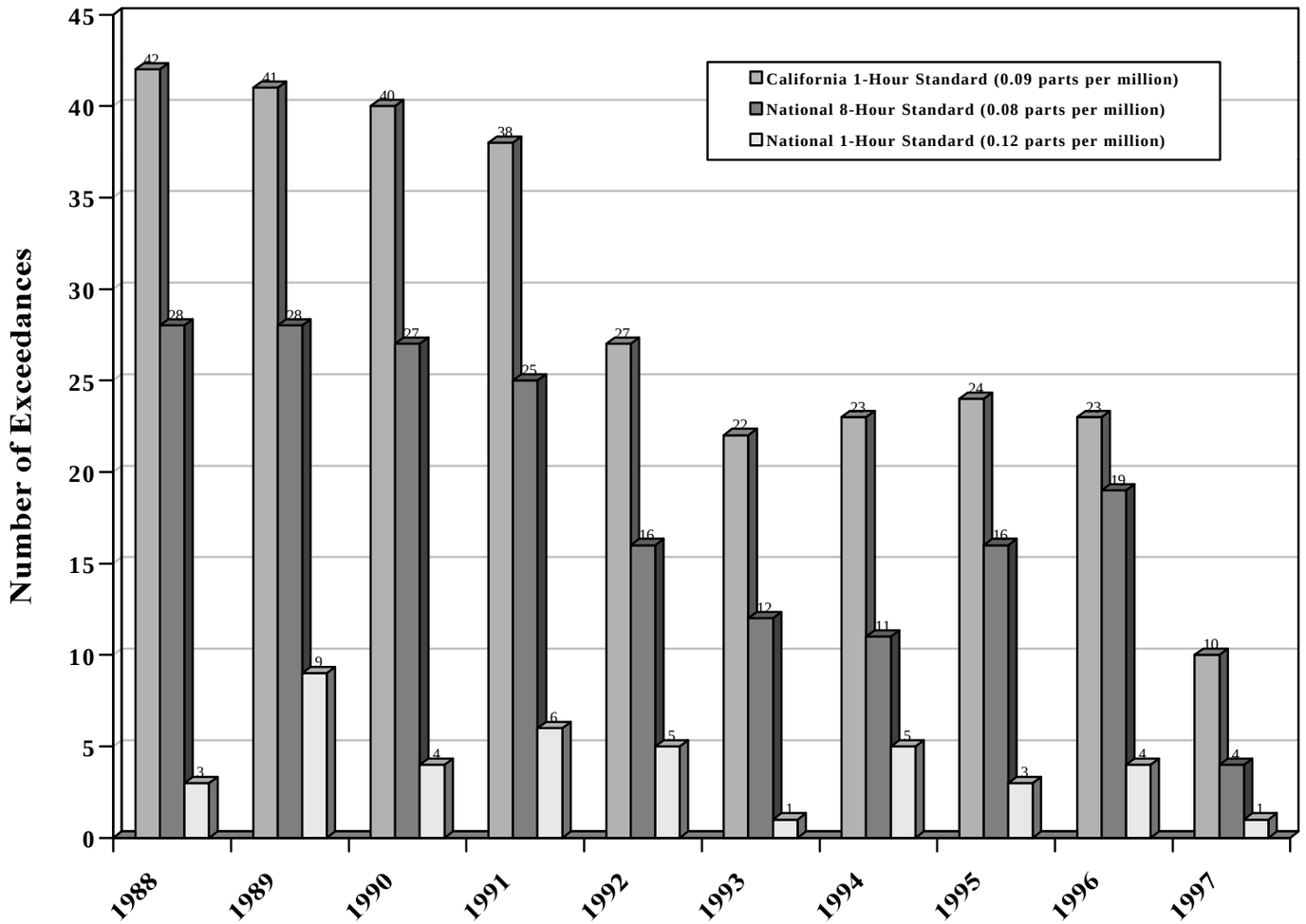


Figure 2-4

Maximum 1-Hour and 8-Hour Carbon Monoxide Concentrations At Santa Barbara 1980-1997

National Standard 35 PPM

State Standard 20 PPM

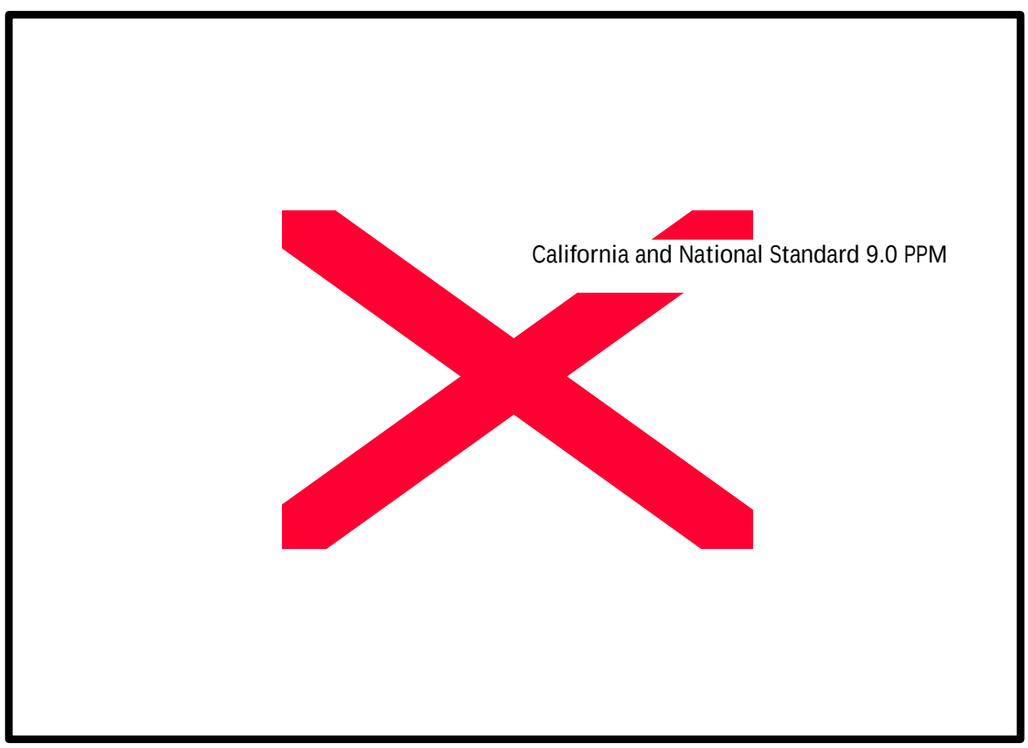


Figure 2-5
Maximum 1-Hour Nitrogen Dioxide Concentrations
At Santa Barbara 1980-1997

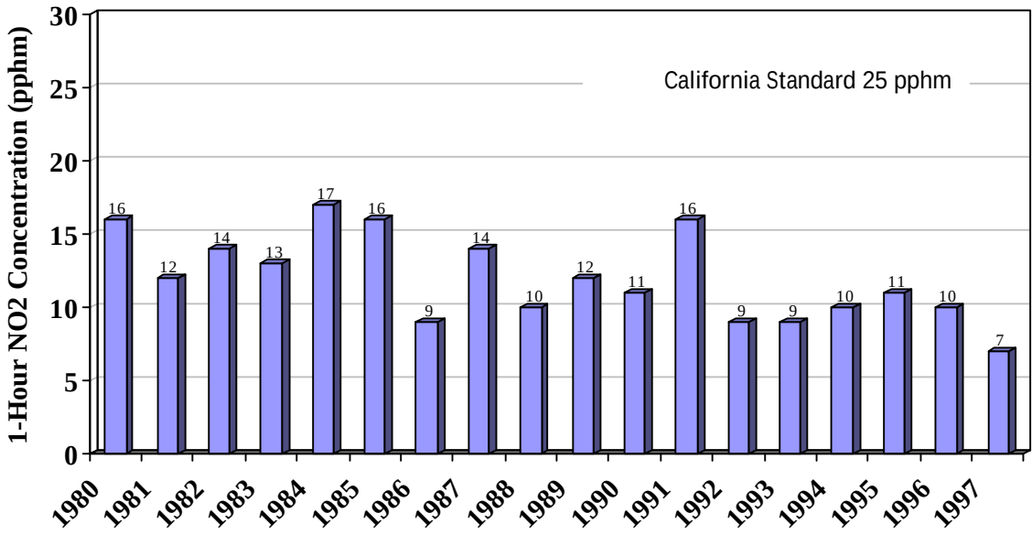


Figure 2-6
Annual Average Nitrogen Dioxide Concentrations
At Santa Barbara 1980-1997

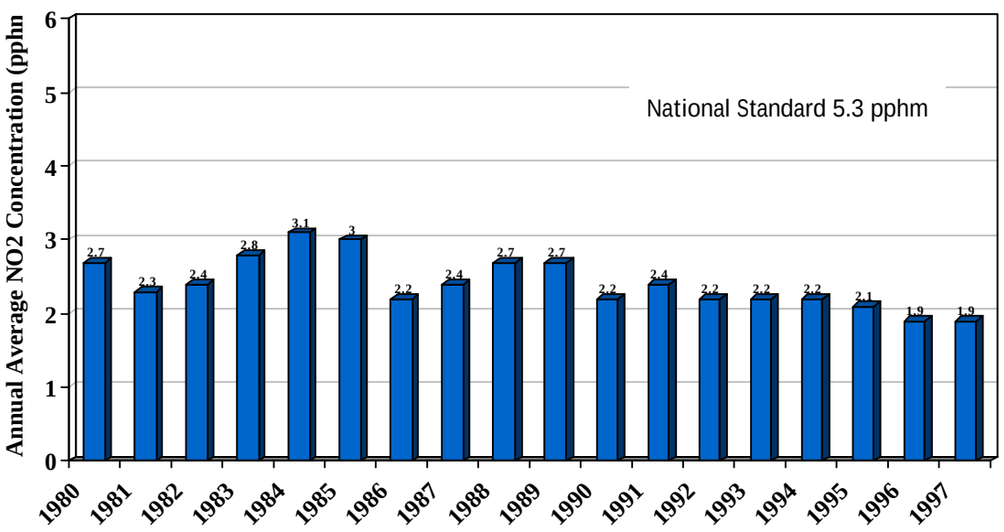


Figure 2-7
Maximum 1-Hour Sulfur Dioxide (SO_2) Concentrations
At Santa Maria 1980-1997

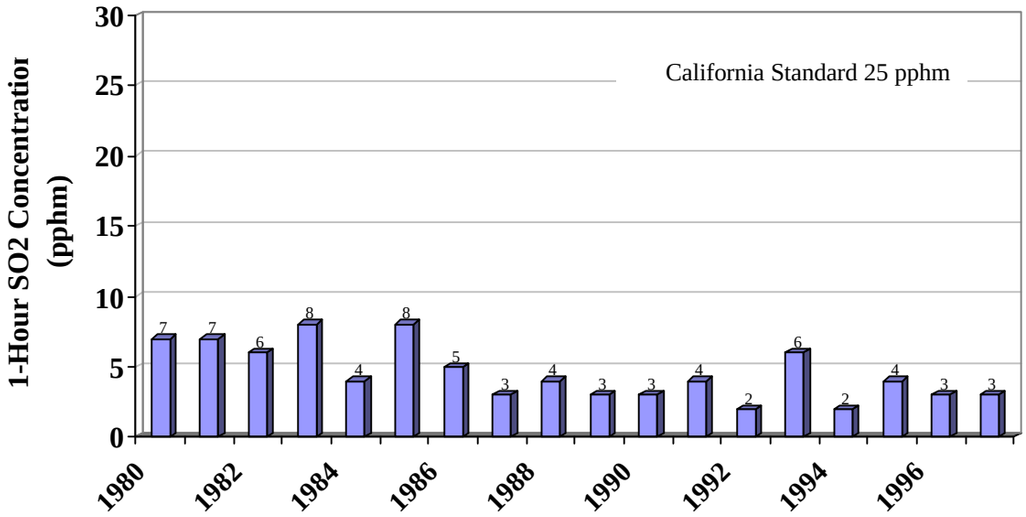


Figure 2-8
Maximum 3-Hour Sulfur Dioxide (SO_2) Concentrations
At Santa Maria 1980-1997

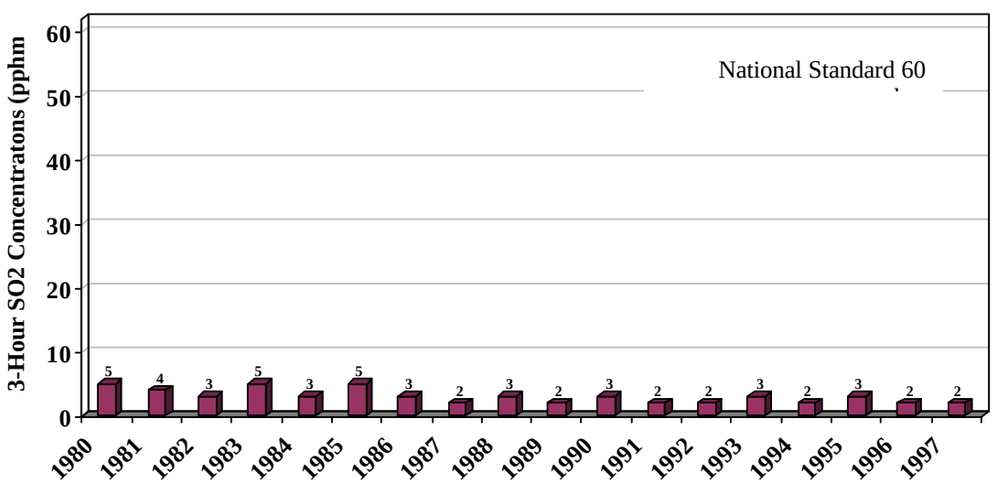


Figure 2-9
Maximum 24-Hour Sulfur Dioxide (SO_2) Concentrations
At Santa Maria 1980-1997

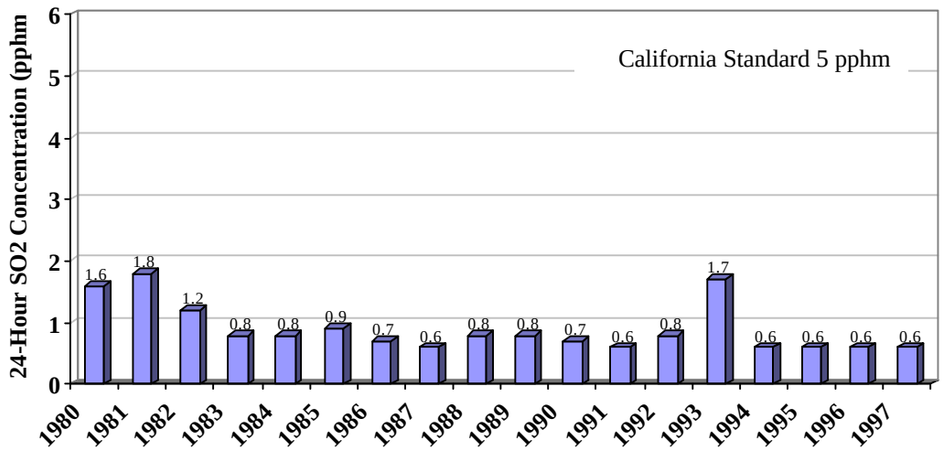


Figure 2-10
Annual Average Sulfur Dioxide (SO_2) Concentrations
At Santa Maria 1980-1997

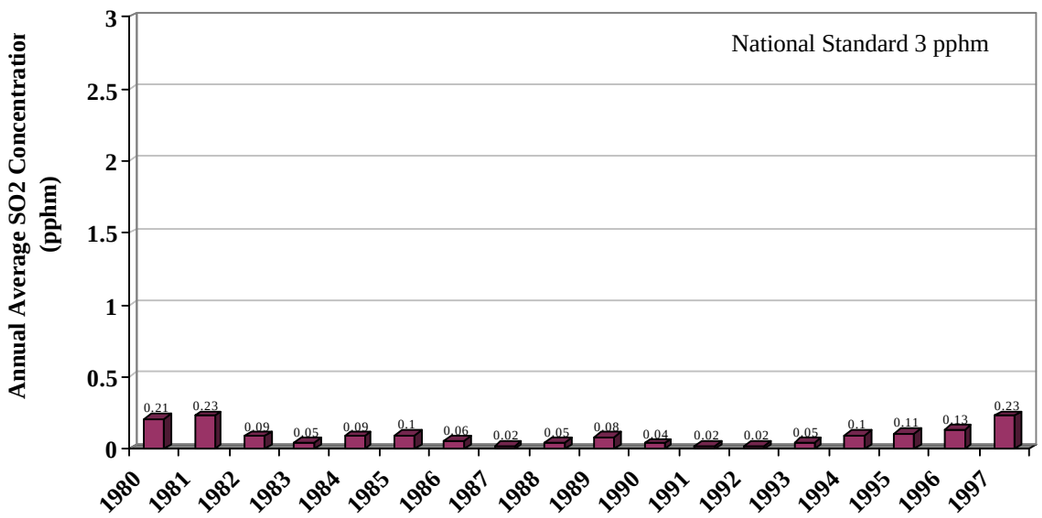
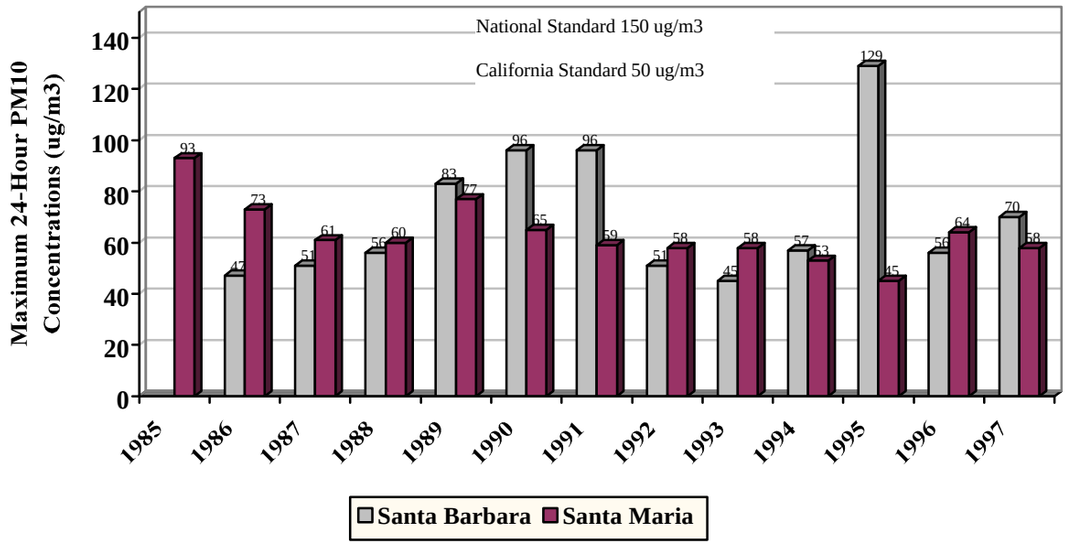


Figure 2-11
Maximum 24-Hour Average and
Annual Geometric Mean PM_{10} Concentrations
For Santa Barbara and Santa Maria 1985-1997



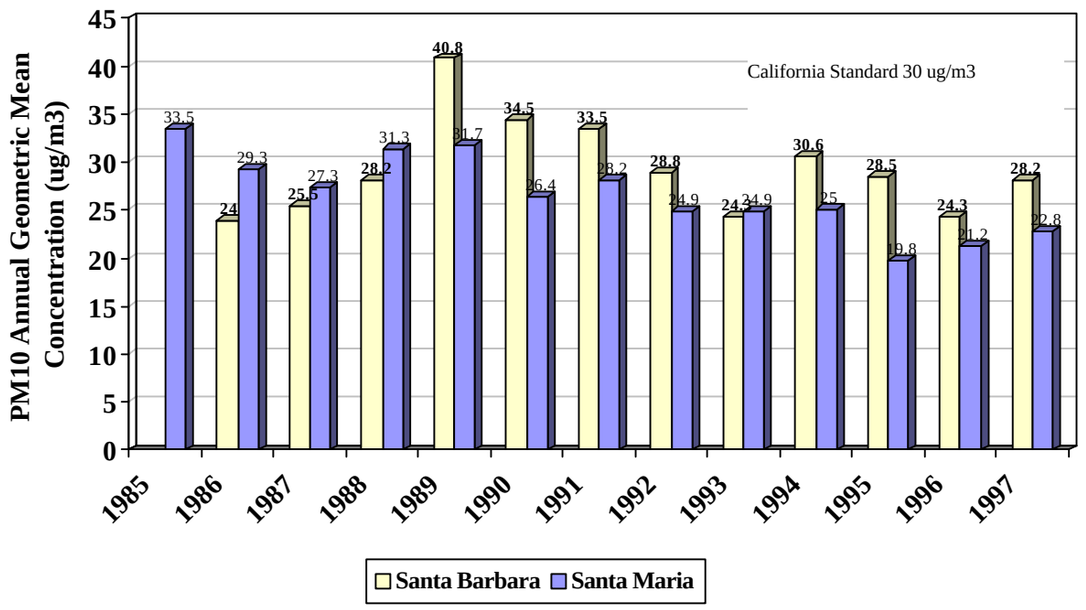


Figure 2-12

Annual Arithmetic Mean PM_{10} Concentrations
At Santa Maria 1984-1997

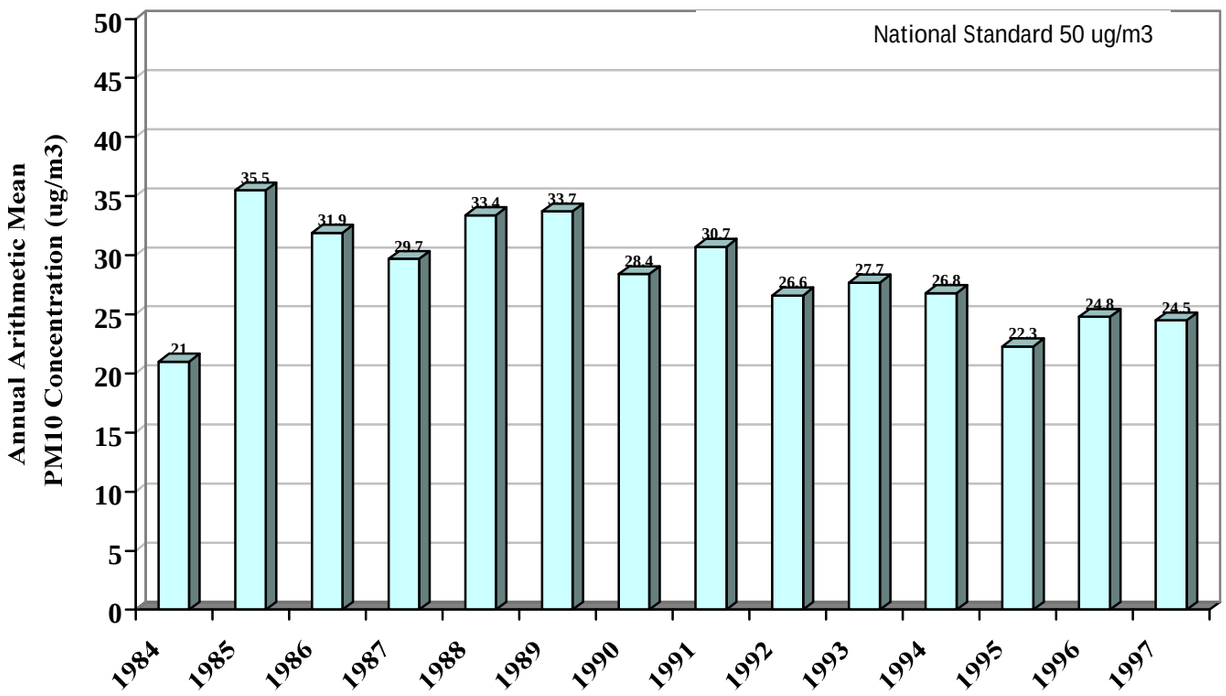
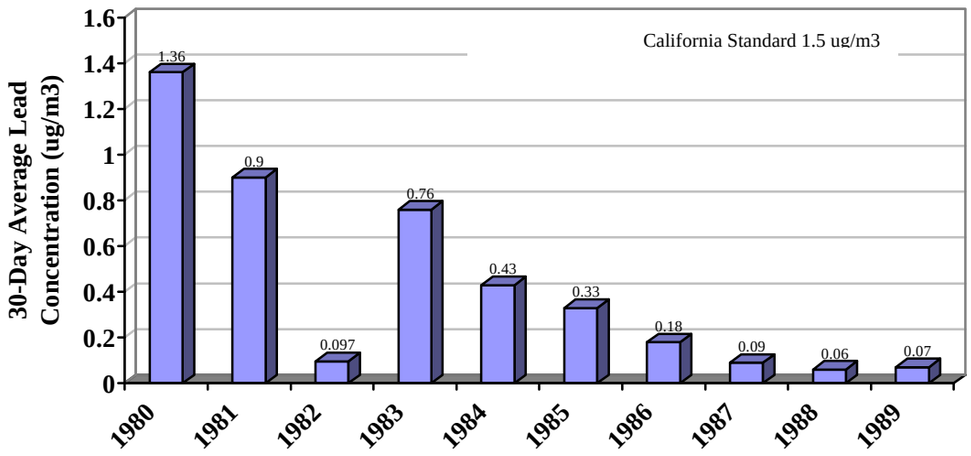
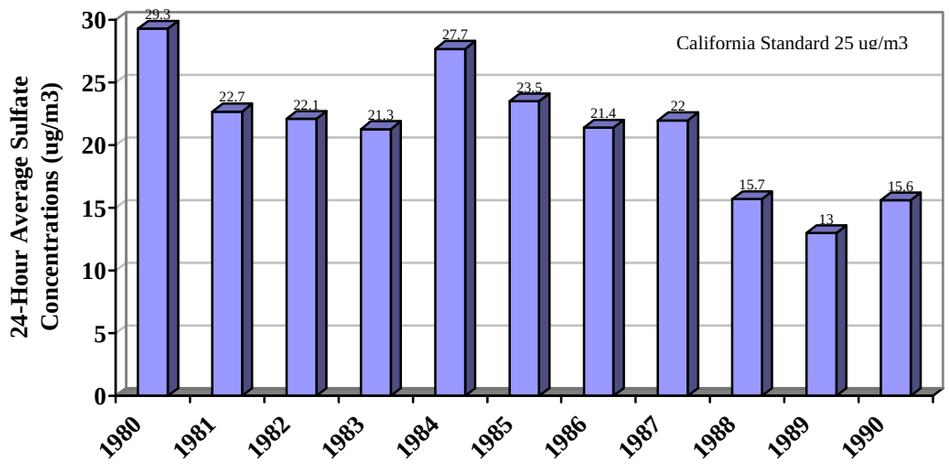


Figure 2-13
Maximum 30-day Average Lead Concentrations
At Santa Barbara 1980-1989



No lead analysis performed after 1989.

Figure 2-14
Maximum 24-Hour Sulfate Concentrations
At Santa Barbara 1980-1990



No sulfate analysis performed after 1990.

Figure 2-15
Station-by-Station Ozone Standard Exceedances
SLAMS Stations 1980-1997

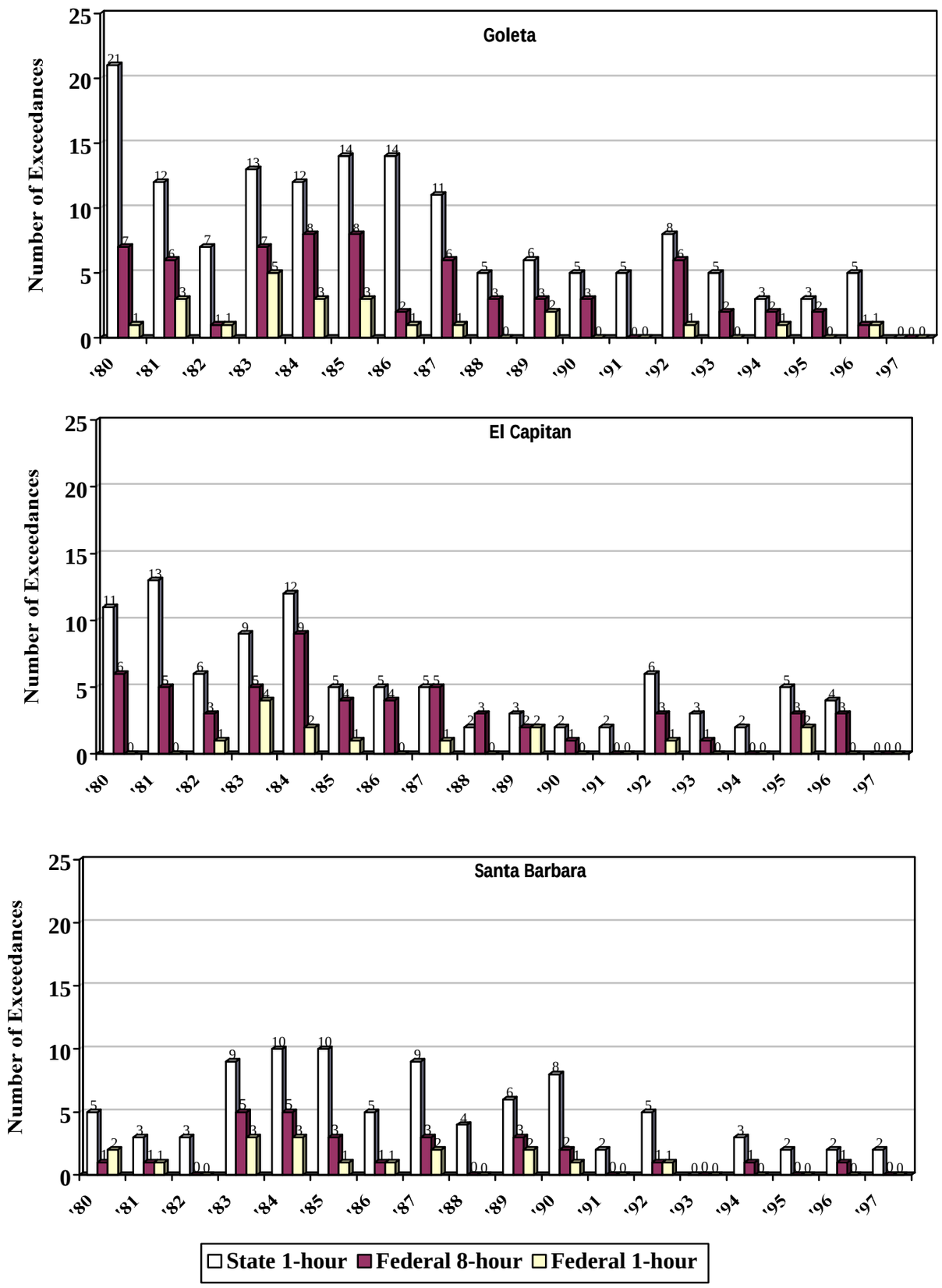


Figure 2-15 continued
Station-by-Station Ozone Standard Exceedances
SLAMS Stations 1980-1997

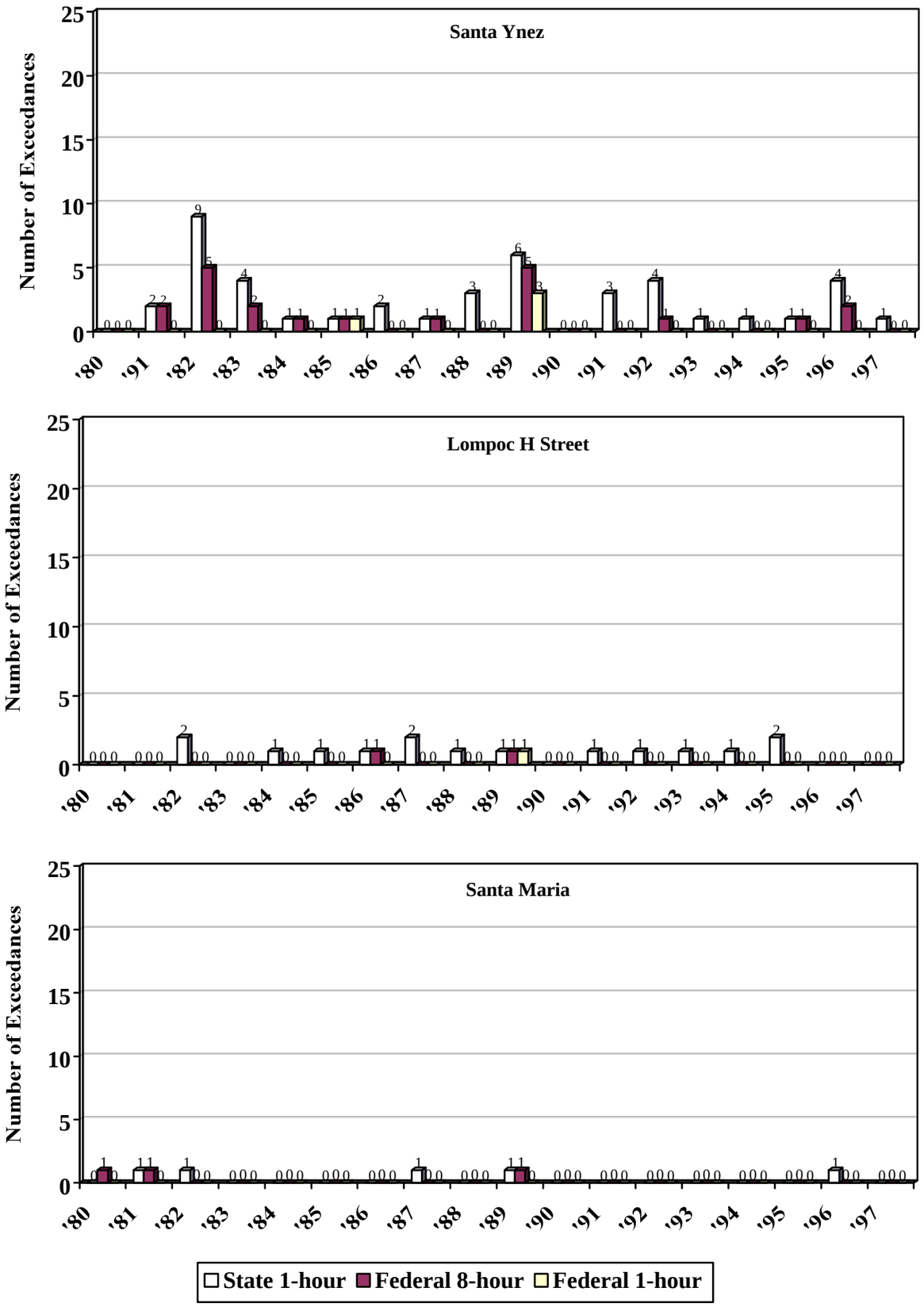


Figure 2-16
Station-by-Station Ozone Standard Exceedances
PSD Stations 1988-1997

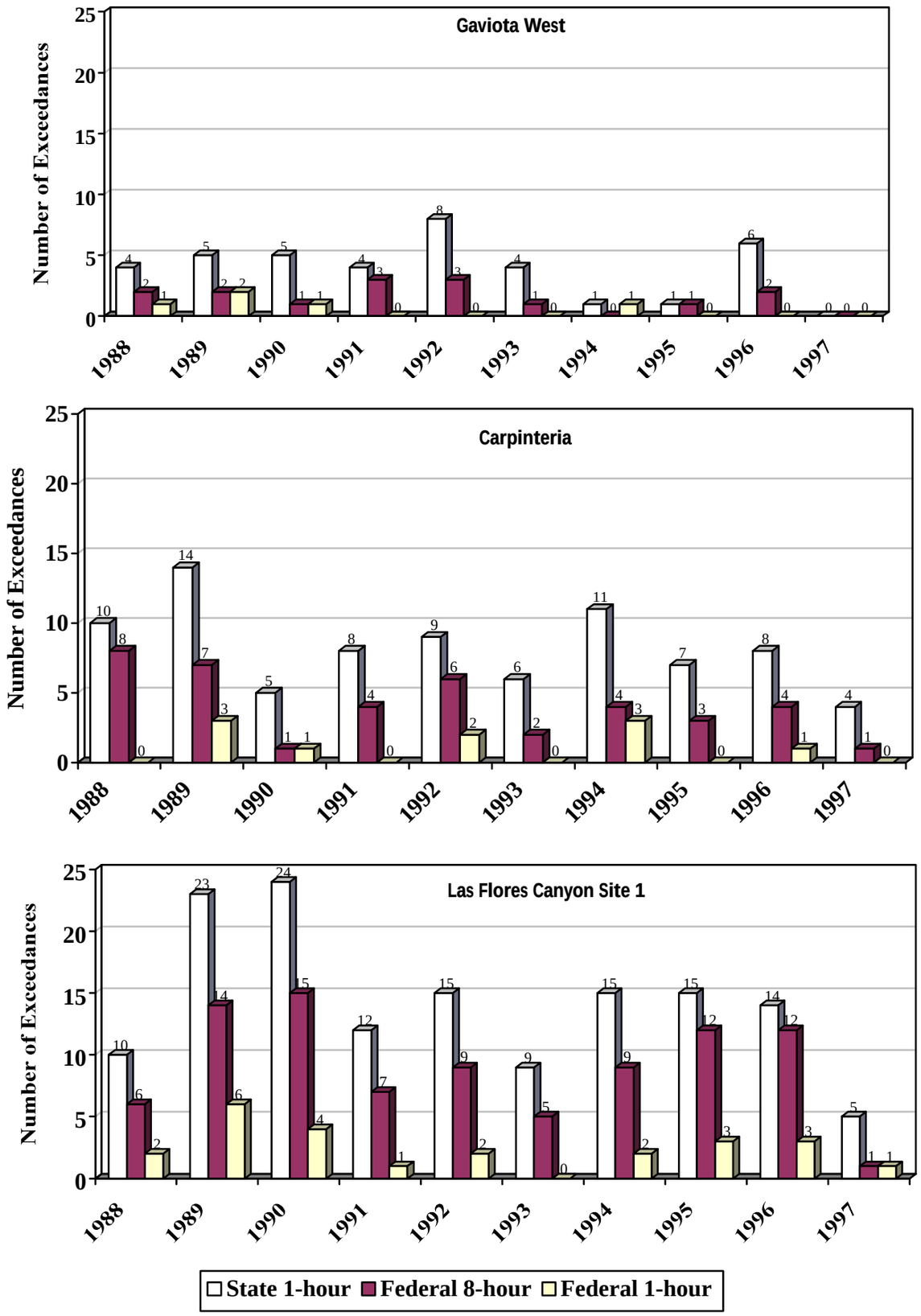


Figure 2-16 continued
Station-by-Station Ozone Standard Exceedances
PSD Stations 1988-1997

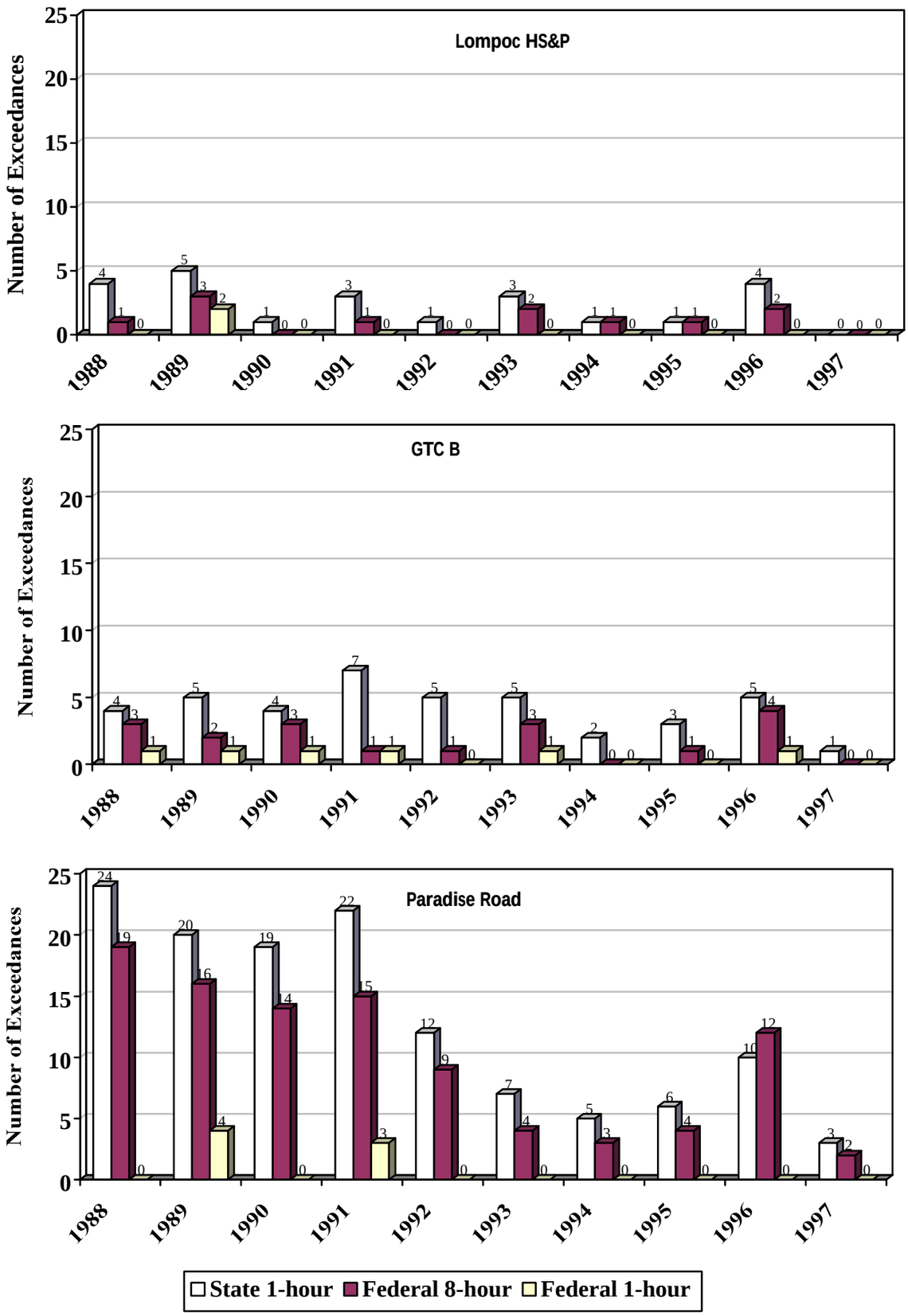


Table 2-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	Primary[2, 4]	Secondary[2, 5]
Ozone	1 Hour[8]	0.09 ppm (180 ug/m^3)	0.12 ppm (235 ug/m^3)	Same as Primary Std.
	8 Hour		0.08 ppm (157 ug/m^3)	Same as Primary Std.
Carbon Monoxide	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	Same as Primary Stds.
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide	Annual Average	--	0.053 ppm (100 ug/m^3)	Same as Primary Stds.
	1 Hour	0.25 ppm (470 ug/m^3)	--	
Sulfur Dioxide	Annual Average		80 ug/m^3 (0.03 ppm)	
	24 Hour	0.04 ppm[6] 105 ug/m^3)	365 ug/m^3 (0.14 ppm)	--
	3 Hour	--		1,300 ug/m^3 (0.5 ppm)
	1 Hour	0.25 ppm (655 ug/m^3)		--
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 ug/m^3	--	--
	24 Hour	50 ug/m^3	150 ug/m^3	Same as Primary Stds.
	Annual Arithmetic Mean	--	50 ug/m^3	
Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean		0.03 ppm 80 ug/m^3	
	24 Hour		0.14 ppm 365 ug/m^3	
	3 Hour			0.50 ppm 1300 ug/m^3
Sulfates	24 Hour	25 ug/m^3		--
Lead	30 Day Average	1.5 ug/m^3	--	--
	Calendar Quarter	--	1.5 ug/m^3	Same as Primary Std.
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m^3)		--
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 ug/m^3)		--
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility[7] to less than 10 miles when the relative humidity is less than 70%		--

Table 2-1 (Concluded)

NOTES:

1. California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The sulfur dioxide (24-hour), sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded.

2. National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a 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.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based upon a reference temperature of 25º C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25º 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.

4. 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 that state's implementation plan is approved by the USEPA.

5. 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 USEPA.

6. At locations where the state standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

7. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range when relative humidity is less than 70 percent.

8. Once the federal 1-hour ozone standard is attained, it will be revoked and replaced by the 8-hour standard.

TABLE 2-2
AIR QUALITY MONITORING STATIONS - OPERATIONAL STATUS AND PARAMETERS MEASURED

	SITE	TYPE	START	END	PARAMETERS													
					O_3	NO_2	SO_2	CO	THC	H_2S	TSP	PM_{10}	ROC	WS	VWS	WD	AMT	TRS
N 1	Santa Maria Refinery	PSD	2-1-87	10-31-92			■							■		■		
N 2	Bonita School Road	PSD	2-1-87	10-31-92			■							■		■		
N 3	West Main Street	PSD	2-1-87	11-1-89			■							■		■		
N 4	Guadalupe	PSD	2-1-87	11-1-89			■							■		■		
N 5	Casmalia Hills	PSD	2-1-87	10-31-92			■							■		■		
N 6	Santa Maria (SM)																	
	Values for SM																	
	include these sites																	
	Main Street	SLAMS	Pre-1980	10-81	■		■							■		■		
	McClelland	SLAMS	01-82	09-87	■		■											
	Broadway	SLAMS	09-87	*	■	■	■					■						
N 7	Battles	PSD	09-85	11-30-95	■	■			■	■			■	■	■	■	■	
N 8	Santa Maria - Briarwood	ERF	3-1-79	12-31-90			■				■							
N 9	Santa Maria - Glacier Ln.	ERF	3-1-79	12-31-90		■	■			■								
N 10	Airox Road	PSD	09-86	11-87	■	■	■		■		■	■	■	■	■	■	■	
N 11	Watt Road	SLAMS	01-83	05-88	■	■	■	■			■			■		■		
	VAFB Watt Road	PSD	05-01-92	3-1-97	■	■	■	■	■			■	■	■	■	■	■	
N 12	Lompoc HS & P	PSD	09-85	*	■	■	■		■				■	■	■	■	■	
N 13	Lompoc HS & P Odor	PSD	1-1-88	*						■				■		■	■	■
N 14	Herado Road	SLAMS	03-82	10-86	■	■	■	■			■			■		■		
N 15	Lompoc (LOM)																	
	Values for LOM																	
	include these sites				■		■				■			■		■		
	Lompoc - G Street	SLAMS	07-80	04-83	■	■	■	■			■	■		■		■		
	Lompoc - H Street	SLAMS	06-83	*														
N 16	VAFB STS	PSD	02-87	*	■	■	■	■	■		■	■	■	■	■	■	■	
N 17	Point Arguello	PSD	09-85	11-30-95	■	■			■		■		■	■	■	■	■	
N 18	Lompoc - Jalama	ERF	3-1-79	12-31-90			■				■			■		■		
S 19	Jalama Beach	PSD	11-85	11-30-95	■	■	■		■		■	■	■	■	■	■	■	
S 20	Pt. Conception	PSD	12-86	3-31-98	■	■	■				■	■		■	■	■	■	
S 21	Government Pt.	PSD	02-85	01-31-92	■	■	■	■	■		■	■	■	■	■	■	■	
N 22	GTC B	PSD	06-87	*	■	■								■	■	■	■	
S 23	Gaviota West	PSD	09-84	3-31-98	■	■	■		■		■	■	■	■	■	■	■	
S 24	Gaviota Odor West	PSD	7-1-88	*						■				■		■	■	■
S 25	GTC A	PSD	09-85	11-30-95	■	■	■				■	■		■	■	■	■	
S 26	Gaviota East	PSD	12-87	3-31-98	■	■	■		■		■	■	■	■	■	■	■	
S 27	GTC C	PSD	06-87	4-30-98	■	■	■		■		■	■	■	■	■	■	■	
S 28	Gaviota Odor East	PSD	7-1-88	*						■				■		■	■	■
S 29	Molino	PSD	04-84	06-87	■	■	■		■		■	■	■	■	■	■	■	
N 30	Santa Ynez Airport	SLAMS	09-80	*	■									■	■	■	■	

TABLE 2-2
AIR QUALITY MONITORING STATIONS – OPERATIONAL STATUS AND PARAMETERS MEASURED

	SITE	TYPE	START	END	PARAMETERS													
					O_3	NO_2	SO_2	CO	THC	H_2S	TSP	PM_{10}	ROC	WS	VWS	WD	AMT	TRS
	Las Flores Canyon (LFC)																	
	Values for LFC																	
	include these sites																	
S 31	LFC Site 1	PSD	01-88	*	■	■	■	■	■			■	■	■		■	■	
S 32	LFC Site 2	PSD	4-1-88	*		■	■					■		■		■	■	
S 33	LFC Site 3	PSD	1-15-88	*		■	■					■		■		■	■	
S 34	ARCO Site 4	PSD	07-86	08-87	■	■	■		■		■	■	■	■	■	■	■	
	LFC Site 4	PSD	1-1-88	*										■	■	■	■	
S 35	Popco (POP)																	
	Values for POP																	
	include these sites									■								
	Popco North	PSD	06-01-91	*						■								■
	Popco South	PSD	06-01-91	*										■		■	■	
	Popco Met	PSD	06-01-91	02-28-93	■	■	■		■	■		■		■	■	■	■	■
S 36	El Capitan	PSD/SLAMS	Pre-1980	*														
S 37	Naples	PSD	6-1-87	3-91					■		■	■	■	■	■	■	■	
S 38	Ellwood	PSD	09-85	10-31-92										■		■		
S 39	West Campus (WC)																	
	Values for WC																■	
	include these sites				■	■	■		■		■	■	■		■		■	
	ARCO Site 2	PSD	12-85	10-87	■	■	■		■	■	■	■	■	■	■	■	■	
	Exxon Site 10	PSD	06-88	7-98					■					■		■		
	Venoco WC	PSD	8-98	*	■	■	■		■	■	■	■	■	■	■	■	■	
S 40	Ocean Road (ARCO, Site 1)	PSD	11-85	10-87	■	■	■	■			■			■		■		
S 41	Goleta	SLAMS	Pre-1980	*							■			■		■		
S 42	Cathedral Oaks	SLAMS	Pre-1980	10-82	■													
N 43	Paradise Road	PSD	01-86	*	■	■								■	■	■	■	
S 44	Santa Barbara (SB)																	
	Values for SB																	
	include these sites				■	■	■	■	■		■			■		■		
	State Street	SLAMS	Pre-1980	01-83	■	■	■	■	■		■							
	Canon Perdido	SLAMS	02-83	06-88	■	■	■	■			■	■		■		■	■	
	West Carrillo	SLAMS	06-88	*	■	■								■	■	■	■	
S 45	Carpinteria	PSD	09-85	*										■	■	■	■	
S 46	ARCO - Platform Holly	PSD	8-1-86	11-1-87														

PARAMETERS

O_3	Ozone
NO_2	Nitrogen Dioxide
SO_2	Sulfur Dioxide
CO	Carbon Monoxide
THC	Total Hydrocarbon
H_2S	Hydrogen Sulfide
TSP	Total Suspended Particulate

PARAMETERS

PM_{10}	Particulate Matter (less than 10. microns)
ROC	Reactive Organic Compounds
WS	Wind Speed
VWS	Verticle Wind Speed
WD	Wind Direction
AMT	Ambient Temperature
TRS	Total Reduced Sulfur

*	- still in operation as of January 1999
S	- station located in south county
N	- station located in north county
SLAMS	- state and local air quality monitoring station
PSD	- prevention of significant deterioration station
ERF	- Environmental Research Foundation

Table 2-3
Design Value Report for Monitoring Stations in Santa Barbara County
Federal 1-Hour Ozone Standard
1987-1989

Station Name	1st (Date:Hr)	2nd (Date:Hr)	3rd (Date:Hr)	4th (Date:Hr)
PSD STATIONS (ppb)				
Carpinteria	169 (4/7/89:15)	168 (4/8/89:15)	141 (7/6/89:15)	140 (10/5/87:16)*
Gaviota East	192 (4/8/89:13)	163 (4/7/89:16)	123 (9/4/88:13)	114 (4/9/88:14)
Gaviota West	201 (4/8/89:13)	172 (10/5/87:14)	165 (4/7/89:16)	130 (9/4/88:13)*
Jalama Beach	182 (4/8/89:17)	170 (10/5/87:15)	151 (3/8/89:15)	136 (4/7/89:15)*
Pt. Conception	201 (4/8/89:16)	156 (10/5/87:13)	137 (4/7/89:14)	108 (4/9/89:0)
GTC A	194 (4/7/89:15)	191 (4/8/89:14)	163 (10/5/87:16)	116 (10/4/87:16)
GTC B	210 (3/8/89:15)	125 (9/6/88:15)	124 (10/5/87:13)	122 (2/26/88:13)
GTC C	187 (4/8/89:13)	171 (4/7/89:16)	156 (10/5/87:14)	125 (9/4/88:13)*
Battles	125 (4/8/89:17)	122 (10/5/87:14)	093 (4/9/89:11)	092 (3/31/87:15)
Lompoc HS&P	170 (3/8/89:15)	143 (4/8/89:17)	121 (4/9/89:0)	121 (4/11/88:0)
Paradise Road	164 (5/6/89:16)	144 (4/8/89:14)	137 (3/8/89:17)	131 (8/6/87:11)*
Pt. Arguello	174 (4/8/89:16)	159 (10/5/87:12)	155 (4/7/89:13)	122 (4/9/89:0)
Exxon 10	209 (4/7/89:17)	165 (4/8/89:16)	122 (3/8/89:15)	108 (10/1/89:13)
VAFB STS Power Plant	162 (4/7/89:13)	150 (4/8/89:14)	113 (3/8/89:15)	093 (4/9/89:0)
SLAMS STATIONS (pphm)				
El Capitan	19 (4/7/89:16)	17 (10/5/87:16)	16 (4/8/89:16)	12 (10/4/87:14)
Goleta	15 (4/8/89:12)	15 (10/5/87:14)	14 (4/7/89:13)	12 (11/5/88:13)
Lompoc-H Street	16 (3/8/89:15)	11 (3/3/87:13)	10 (2/26/88:15)	10 (3/31/87:15)
Santa Barbara	22 (4/7/89:14)	14 (4/8/89:12)	13 (10/5/87:14)	13 (4/14/87:13)*
Santa Maria	12 (4/8/89:15)	10 (10/5/87:14)	08 (2/24/88:13)	08 (4/10/88:17)
Santa Ynez	15 (3/8/89:15)	14 (4/8/89:14)	13 (5/6/89:15)	11 (7/17/88:13)
Watt Rd VAFB	15 (10/5/87:13)	11 (3/29/87:15)	11 (3/31/87:15)	10 (10/4/87:11)

*Violates the federal 1-hour ozone standard.

Table 2-4

Design Value Report for Monitoring Stations in Santa Barbara County
Federal 1-Hour Ozone Standard
1994-1996

Station Name	1st (Date:Hr)	2nd (Date:Hr)	3rd (Date:Hr)	4th (Date:Hr)
PSD STATIONS (ppb)				
Carpinteria	134 09/16/94:13	129 08/13/94:13	128 05/01/96:14	128 06/24/94:13*
Gaviota East	133 08/12/94:15	116 05/11/96:14	114 05/01/96:15	111 08/14/96:16
Gaviota West	127 08/12/94:15	119 05/01/16:15	118 05/11/96:14	110 08/14/96:16
Pt. Conception	107 09/06/95:13	103 05/01/96:15	103 10/02/95:17	84 11/23/95 :13
GTC B	127 08/14/96:16	122 08/12/94:14	105 05/11/96:14	103 05/01/96:12
GTC C	134 08/12/94:15	132 05/01/96:15	130 05/11/96:14	125 09/06/95:14*
Lompoc HS&P	108 04/29/96:14	103 06/30/96:19	102 08/30/96:14	99 11/20/95:15
Paradise Road	116 06/27/95:13	114 07/08/95:15	113 06/06/96:12	110 08/14/96:15
Exxon 1	143 10/04/95:15	142 08/12/94:16	134 05/12/96:17	130 05/01/96:15*
Exxon 10	124 10/04/95:15	122 09/06/95:15	110 05/11/96:16	102 10/02/95:13
VAFB STS Power Plant	111 10/02/95:16	97 05/11/96:20	95 06/30/96:22	93 05/01/96:13
SLAMS STATIONS (ppb)				
El Capitan	135 10/04/95:14	130 09/06/95:14	120 05/01/96:17	118 04/30/96:15
Goleta	127 08/13/94:13	126 05/01/96:13	123 05/11/96:16	119 10/04/95:16
Lompoc H Street	100 11/20/95:15	99 09/06/95:16	96 08/13/94:15	93 07/16/95:12
Santa Barbara	123 05/01/96:14	119 08/12/94:13	118 10/03/95:14	107 05/11/96:16
Santa Maria	103 06/30/96:17	92 04/29/96:13	78 05/11/96:14	74 08/14/94:15
Santa Ynez	101 07/07/95:12	101 08/31/96:12	99 08/30/96:12	98 08/14/96:12
Santa Rosa Island	99 05/01/96:17	96 04/29/96:16	93 05/11/96:12	87 08/30/96:17

* Violates the federal 1-hour ozone standard.

Table 2-5

1990 Clean Air Act Amendment Attainment Target Dates

AREA CLASS	DESIGN VALUE*	ATTAINMENT TARGET DATE
Marginal	0.121 up to 0.138	3 years after enactment (1993)
Moderate	0.138 up to 0.160	6 years after enactment (1996)
Serious**	0.160 up to 0.180	9 years after enactment (1999)
Severe	0.180 up to 0.280	15 years after enactment (2005)
Extreme	0.280 and above	20 years after enactment (2010)

* The design value is measured in parts per million (ppm).
** This is Santa Barbara County's current classification.

Table 2-6

Design Value Report for Monitoring Stations in Santa Barbara County
Federal 8-Hour Ozone Standard
1994-1996

Station Name	1994 4th High	1995 4th High	1996 4th High	Average
PSD STATIONS (ppb)				
Carpinteria	86 09/15/94:11	82 10/03/95:10	86 05/11/96:11	84
Gaviota East	79 10/31/94:10	72 03/31/95:18	79 04/30/96:11	76
Gaviota West	76 09/15/94:10	65 03/31/95:19	83 08/14/96:12	74
Pt. Conception	67 08/13/94:13	71 10/19/95:00	69 05/11/96:18	69
GTC B	68 08/06/94:11	74 07/15/95:15	85 05/11/96:12	75
GTC C	80 09/15/94:09	79 10/02/95:09	83 05/11/96:10	80
Lompoc HS&P	69 06/09/94:10	72 07/30/95:11	80 08/30/96:09	73
Paradise Road	82 09/16/94:10	85 08/03/95:11	94 04/29/96:14	87*
Exxon 1	94 06/23/94:13	91 07/14/95:11	98 06/30/96:10	94*
Exxon 10	71 08/14/94:09	75 11/20/95:10	71 08/30/96:10	72
VAFB STS Power Plant	66 10/23/94:10	75 11/20/95:12	76 05/11/96:13	72
SLAMS STATIONS (ppb)				
El Capitan	72 10/23/94:10	84 11/20/95:11	80 04/29/96:12	78
Goleta	77 08/14/94:09	79 10/03/95:09	78 06/30/96:10	78
Lompoc H Street	60 09/15/94:10	64 03/31/95:13	67 06/30/96:12	63
Santa Barbara	62 07/10/94:09	69 09/16/95:09	72 05/12/96:09	67
Santa Maria	53 09/15/94:09	55 10/19/95:11	63 05/11/96:11	57
Santa Ynez	76 06/09/94:09	77 06/23/95:10	83 04/29/96:11	78

*Violates the federal 8-hour ozone standard.

CHAPTER 3

EMISSION INVENTORY

3. EMISSION INVENTORY

3.1 INTRODUCTION

This chapter describes the baseline emission inventories used in the development of this 1998 Clean Air Plan (1998 CAP). Emission inventories are estimates of the amounts and types of pollutants emitted from a variety of sources including motor vehicles, industrial facilities, coating application, consumer product usage and natural sources. Emission inventories are used to: describe and compare contributions from air pollution sources, evaluate control measures, schedule rule adoptions, forecast future pollution, perform air quality modeling, and prepare clean air plans.

The emission inventories are divided into two geographical regions: ***Santa Barbara County*** and the ***Outer Continental Shelf (OCS).*** The Santa Barbara County emission inventory encompasses all on-shore sources of air pollution in Santa Barbara County and in the State Tidelands (within three miles of the shoreline). This constitutes the ozone nonattainment area subject to federal Rate-of-Progress requirements (Rate-of-Progress is discussed in Chapter 9). The OCS emission inventory includes pollution sources from three to twenty five miles offshore of Santa Barbara County.

This chapter presents both the 1990 Base-Year Annual Emission Inventory for Santa Barbara County only, as required by the Federal Clean Air Act Amendments of 1990 (FCAAA) and the 1996 Annual Emission Inventory for both Santa Barbara County and the OCS (Both of these inventories are listed in Tables 3-1, 3-2, and 3-3, and displayed in Figures 3-1 to 3-3).

The 1996 Annual Emission Inventory is our most current data available and utilizes the most reliable emission estimation techniques. A modified version of the 1996 Annual Emission Inventory, known as a “Planning Emission Inventory”, will be used as the baseline to forecast emissions for the years 1999 and 2005. Please refer to Chapter 6 for the discussion on the 1996 Planning Emission Inventory and the forecasting of future emissions.

A Planning Emission Inventory (PEI) is essentially a modified subset of an Annual Emission Inventory (AEI). The PEI basically differs from an AEI in four ways. First, an AEI contains the ozone precursor pollutants of ROG, NOx, and CO. It is also comprised of the pollutants of SOx and PM. The PEI only contains the three ozone precursor pollutants (ROG, NOx and CO). Second, the creation of the PEI involves adjusting the AEI to account for seasonal variation because most exceedances of the federal 1-hour ozone standard occur during the April to October ozone season. Third, the emissions from natural sources such as biogenics, oil and gas seeps, and wildfires that are in the AEI are excluded from the PEI since they are not currently regulated through implementation of emission control measures. And lastly, the annual emissions in the AEI are converted to daily emissions in the PEI.

Besides being used to develop the PEI and forecast future inventories, the 1996 AEI was also used to update 1990 Base-Year AEI. Updating of the 1990 Base-Year AEI is consistent with the policy of the California Air Resources Board. The 1990 Base-Year AEI has been revised to incorporate the most reliable emission factors, emission calculation methods, and estimation techniques to make it as accurate as the 1996 AEI. Additional adjustments were made to the 1990 Base-Year AEI to incorporate the revised definition of reactive organic gases, which now excludes ethane, acetone and perchloroethylene.

The 1994 Clean Air Plan (1994 CAP) also used the 1990 Base-Year AEI. However, the adjustments already mentioned and further detailed in Section 3.5 make the 1990 Base-Year AEI in the 1998 CAP distinctly different from the version used in the 1994 CAP.

The 1990 Base-Year AEI is an important element in this plan. A modified version of it known as a "1990 Base-Year Rate-of-Progress Emission Inventory" will be used as the reference point or *base-year* to determine emission reductions in relation to the target level of 1999 emissions. This will demonstrate our compliance with federal Rate-of-Progress requirements. The 1990 Base-Year Rate-of-Progress Emission Inventory is similar to the Planning Inventory, with the exception that only reactive organic gases (ROG) are taken into account. Please refer to Chapter 9 for a detailed discussion of the Rate-of-Progress requirements.

Both the 1990 and 1996 emission inventories are comprised of specific pollutants and display a three-tiered hierarchy. Section 3.2 discusses the pollutants and Section 3.3 describe the hierarchy used in these inventories. Section 3.4 discusses the 1996 AEI and Section 3.5 details the 1990 Base-Year AEI.

3.2 POLLUTANTS

The Annual Emission Inventory includes the pollutants contributing to ozone formation, referred to as *ozone precursors*. These pollutants are reactive organic gases (ROG), oxides of nitrogen (NO_x), and carbon monoxide (CO). The definition of ROG used in this plan is equivalent to the USEPA's definition of Volatile Organic Compounds (VOC), and does not include ethane, acetone or perchloroethylene as reactive organic chemical species. Other primary pollutants (those emitted directly into the atmosphere) presented in the Annual Emission Inventory are particulate matter (PM) and oxides of sulfur (SO_x).

3.3 EMISSION INVENTORY HIERARCHY

The emission inventory data structure in this chapter is presented by using a new tiered hierarchy to categorize all of the air pollution sources. This hierarchy, which was revised in 1994 by the California Air Resources Board (ARB), consists of four main divisions in the first tier. These divisions are: ***Stationary Sources*** (individual facilities and aggregated point sources); ***Area-Wide Sources*** (geographically dispersed area sources), ***Mobile Sources*** (both on-road vehicles and off-road sources) and ***Natural Sources*** (non-anthropogenic, i.e., not man-made). In the second tier, each of the four divisions is sub-divided into ***major source categories***. The third tier divides the major source categories into ***summary categories***. Please refer to Appendix A for a comprehensive listing of the entire emission inventory.

In the 1994 CAP, the emission inventory hierarchy was comprised of only two main divisions: Stationary Sources and Mobile Sources. The division of Area-Wide Sources in this 1998 CAP was contained as part of the Stationary Sources in the 1994 CAP. Also, emissions from Natural Sources were previously contained in the Stationary Sources division, Miscellaneous Processes

major source category in the 1994 CAP. In the 1998 CAP, they are contained in a separate emission inventory division, Natural Sources. Other notable differences from the 1994 CAP to the 1998 CAP include the following:

- Waste Burning was changed from a major source category to a summary category.
- Landfill Gas emissions and Incineration emissions are now contained within a new major source category, Waste Disposal.

The following four sub-sections will take a closer look at each of the emission inventory divisions individually. The first is Stationary Sources, followed by Area-Wide Sources, Mobile Sources, and finally Natural Sources.

3.3.1 STATIONARY SOURCES

The ***Stationary Sources*** emission inventory division is comprised of five major source categories:

1) Fuel Combustion,
2) Waste Disposal,
3) Cleaning and Surface Coatings,
4) Petroleum Production and Marketing, and
5) Industrial Processes.

The specific summary categories and sources of emissions associated with these major categories are identified and described below.

3.3.1.1 FUEL COMBUSTION

This major source category contains emissions produced by stationary fossil fuel combustion equipment such as boilers and engines. Fuel combustion is the greatest source of NO_x and CO emissions within the Stationary Sources division. Emissions in the Fuel Combustion major source category are produced in the following seven summary categories:

1. Electric Utilities: Diesel and natural gas turbines used at electrical generation facilities.
2. Cogeneration: Natural gas combustion used in the production of electrical energy and useful thermal energy.
3. Oil and Gas Production: Stationary internal combustion engines, boilers, process heaters, turbines, steam generators and drilling rigs at facilities engaged in the extraction and processing of petroleum products for shipment, using fuels such as natural gas, distillate oil, and liquefied petroleum gas (LPG). Most of the emissions in this subcategory are produced from natural gas fired internal combustion engines used in oil production operations.
4. Petroleum Refining: Natural gas, distillate and residual oil burning equipment such as boilers and process heaters located at refineries.
5. Manufacturing and Industrial: The same type of equipment as listed under Oil and Gas Production, but used in other industrial and manufacturing activities such as: sand, rock, and gravel processing; concrete and asphalt production; mineral processing; and surgical appliance manufacturing.
6. Food and Agricultural Processing: Diesel fired internal combustion engines used for agricultural irrigation, natural gas fired boilers, oil fired boilers, and process heaters at food processing and feed preparation facilities, and orchard heaters.
7. Service and Commercial: Fuel combustion equipment burning natural gas, distillate and residual oil and LPG, including commercial space and water heaters and small boilers and engines at non-industrial facilities.

3.3.1.2 WASTE DISPOSAL

This major source category contains emissions associated with municipal landfills and process gas incineration.

1. Landfills: Decomposition of waste material at class II landfill sites. Landfill gas emissions are the result of natural biodegradation and emissions are predominantly non-reactive organic gases.

2. Incineration: Incinerators burning process gas.

3.3.1.3 CLEANING AND SURFACE COATINGS

This major source category consists entirely of evaporative ROG emissions from solvents and coatings, in five summary categories.

1. Laundering: Use of petroleum based solvents at dry cleaning facilities.
2. Degreasing: Petroleum and synthetic solvents used to clean parts and material at industrial and commercial facilities, such as surgical appliance and semi-conductor manufacturers.
3. Coatings and Related Process Solvents: Automotive, aerospace, metal parts, furniture and wood product coatings and associated solvent and thinner use.
4. Printing: Inks, solvents and cleaning agents.
5. Other: Solvent and water-based adhesives and sealants used in various commercial and industrial applications.

3.3.1.4 PETROLEUM PRODUCTION AND MARKETING

This major source emission category includes emissions resulting from the handling of petroleum liquids and gases at petroleum extraction, processing, transport, and marketing facilities. This category is comprised primarily of ROG emissions and is the most significant source of ROG emissions in the Stationary Sources division. The emissions are produced from processes in three summary categories.

1. Oil and Gas Production: Fugitive hydrocarbon emissions from oil wells, valves and fittings, compressor seals, flanges, fixed and floating roof tanks, crude oil sumps, pits and well cellars, glycol regenerator vents, tank car and truck loading operations, and combustion emissions from flares at oil and gas extraction and processing facilities.
2. Petroleum Refining: Fugitive hydrocarbon emissions from valves, fittings, storage tanks and loading racks at asphalt refining facilities.

3. Petroleum Marketing: Fugitive hydrocarbon emissions from crude oil storage tanks affiliated with pipelines, and loading of marine vessels and tank cars and trucks with crude oil, natural gas transmission losses, refined fuel vapor losses from underground storage tanks, vehicle refueling facilities, (i.e., gas stations), and bulk fuel storage plants.

3.3.1.5 INDUSTRIAL PROCESSES

The Industrial Processes major source category pertains to industries other than the petroleum industry. Although Industrial Processes produce only a small fraction of the county's ROG and NO_x emissions, they are the most significant contributors of SO_x and PM within the Stationary Sources division. They include following summary categories.

1. Chemical: ROG emissions from fiberglass operations and plastic product manufacturing.
2. Food and Agriculture: Primarily SO_x and PM emissions from sugar beet and other agricultural processing; ROG emissions from wine fermentation and aging.
3. Mineral Processes: Substantial PM as well as other pollutant emissions from crushed rock, diatomaceous earth processing, asphaltic and cement concrete production and limestone processing.
4. Other: CO and PM emissions resulting form aerospace operations (missile launches).

3.3.2 AREA-WIDE SOURCES

The ***Area-Wide Sources*** emission inventory division is composed entirely of emissions from sources that are not subject to APCD permitting requirements. Emissions are geographically dispersed throughout the county but are aggregated into two major source emission categories:

1) Solvent Evaporation and
2) Miscellaneous Processes.

3.3.2.1 SOLVENT EVAPORATION

The Solvent Evaporation major source category consists entirely of evaporative ROG emissions from consumer product use, architectural coatings, and pesticide use. Emissions in the Solvent Evaporation major source category are produced in five summary categories.

1. Consumer Products: Solvents used in antiperspirants and deodorants, air fresheners, automotive windshield wiper fluids, bathroom cleaners, consumer engine cleaners, barbecue lighter fluid; aerosol paint and product propellants, and solvents.
2. Architectural Coatings and Related Process Solvents: Oil and water-based paints and thinners used to paint commercial and residential buildings and other structures.
3. Pesticides/Fertilizers: Pesticides used in agricultural, structural and consumer product applications.
4. Asphalt Paving: Cutback asphalt, emulsified asphalt, hot-mix asphalt, and road oils.
5. Other: Asphalt roofing.

3.3.2.2 MISCELLANEOUS PROCESSES

Large quantities of CO and PM emissions are produced by combustion and fugitive dust producing processes and are listed in ten summary categories.

1. Residential Fuel Combustion: Significant CO, PM and NO_x emissions from natural gas, distillate oil, LPG and wood combustion used for cooking, space and water heating.
2. Farming Operations: Fugitive dust PM emissions from tilling, harvest season operations and cattle feedlots.
3. Construction and Demolition: Fugitive dust PM emissions from residential, commercial and industrial building and demolition; road construction.
4. Paved Road Dust: Fugitive dust PM emissions from vehicular travel on paved roads, including freeways, major roads, and local streets.
5. Unpaved Road Dust: Fugitive dust PM emissions from vehicular travel on unpaved roads, including city and county, farm and federal land roads.
6. Fugitive Windblown Dust: Fugitive dust PM emissions from wind erosion of agricultural fields, pastures, and unpaved roads.

7. Fires: Primarily CO emissions from automobile and structural fires.
8. Waste Burning and Disposal: Burning of agricultural debris, weed abatement and range management burning, prescribed forest management burning and fire fighting training resulting in CO and PM emissions.
9. Utility Equipment: Combustion CO and ROG emissions from small horsepower two and four stroke utility engines driving chainsaws, lawn mowers, leaf blowers, portable compressors and generators used in residential and commercial applications.
10. Other: Commercial charbroiling, producing mostly PM emissions.

3.3.3 MOBILE SOURCES

The ***Mobile Sources*** emission inventory division is composed of emissions related to on-road motor vehicles and a variety of off-road vehicles and equipment, including aircraft, recreational vehicles and marine vessels. Mobile Sources consists of two major source categories: On-Road Motor Vehicles and Other Mobile Sources. The Mobile Sources emission inventory division produces most of the NO_x and CO emissions, and appreciable amounts of the ROG emissions in the county's on-shore inventory.

3.3.3.1 ON-ROAD MOTOR VEHICLES

The On-Road Motor Vehicles major source category includes gasoline and diesel light-duty passenger vehicles (automobiles), light-duty trucks (pick-up trucks) and medium-duty trucks, gasoline and diesel heavy-duty trucks, motorcycles, and heavy-duty diesel buses. The On-Road Motor Vehicles emission inventory is estimated using a group of models developed by ARB known as the Motor Vehicle Emission Inventory 7G1.0corrected (MVEI7G1.0c) model. MVEI7G1.0c is an update of the MVEI7.0G model released by ARB in October 1996 and features technical improvements and improved estimates of regional vehicular usage. The MVEI7G1.0c model merges vehicle-specific emission factors, adjusted for non-standard driving conditions, while accounting for the vehicle population by model year and vehicle activity data. The Santa Barbara County Association of Governments (SBCAG) transportation model generates this data. SBCAG coordinates with Caltrans and the ARB to estimate vehicle emissions by

vehicle class. The 1994 CAP utilized a previous version of the MVEI model, known as 7F version 1.1. In this plan, we have employed the most current emission estimation techniques available along with activity data from our county-specific transportation model and updated vehicle demographic data from the Department of Motor Vehicles (DMV). We will continue to use techniques that are the most technically sound and acceptable to both the ARB and the USEPA.

The On-Road Motor Vehicles major source category produces most of the ROG, NO_x, and CO emissions in the Mobile Sources emission inventory element, with the majority attributable to light-duty passenger vehicles. Light-duty and medium-duty trucks also generate appreciable amounts of ROG, NO_x and CO, while heavy-duty diesel trucks are significant generators of NO_x. On-road vehicle emissions include *exhaust emissions* resulting from fuel combustion (ROG, NO_x and CO), and fuel *evaporative emissions* (ROG). Evaporative emissions can occur during vehicle operation (running losses) or when the vehicle is not being operated (diurnal, hot soak and resting losses). For example, evaporative emissions occur when increasing temperatures cause the vapor in gasoline fuel tanks and fuel systems to expand, displacing ROG vapors into the atmosphere unless they are contained by an on-board vapor recovery system.

The ten On-Road Motor Vehicles summary categories are described below.

1. Light Duty Passenger: Catalytic and non-catalytic converter equipped gasoline engine and diesel engine automobiles designed primarily for transportation and having a design capacity of 12 persons or less.
2. Light Duty Trucks: Catalytic and non-catalytic converter equipped gasoline engine and diesel engine trucks rated at less than or equal to 6,000 pounds gross vehicle weight designed primarily for transportation of property but also including most Sport Utility Vehicles (SUV).
3. Medium Duty Trucks: Catalytic and non-catalytic converter equipped gasoline engine and diesel engine trucks from 6,001 to 8,500 pounds gross vehicle weight. Some larger SUV are included in this vehicle class.

4. Light Heavy Duty Gas Trucks: Catalytic and non-catalytic converter equipped gasoline engine trucks from 8,501 to 14,000 pounds gross vehicle weight.
5. Medium Heavy Duty Gas Trucks: Catalytic and non-catalytic converter equipped gasoline engine trucks from 14,001 to 33,000 pounds gross vehicle weight.
6. Light Heavy Duty Diesel Trucks: Diesel engine trucks from 8,501 to 14,000 pounds gross vehicle weight.
7. Medium Heavy Duty Diesel Trucks: Diesel engine trucks from 14,001 to 33,000 pounds gross vehicle weight.
8. Heavy Heavy Duty Diesel Trucks: Diesel engine trucks greater than 33,000 pounds gross vehicle weight.
9. Motorcycles: Non-catalytic converter equipped gasoline engines in vehicles with not more than three wheels and weighing less than 1,500 pounds.
10. Heavy Duty Diesel Urban Buses: Diesel engine buses typically used for municipal transportation.

One current issue that demands discussion is the surging popularity of Sport Utility Vehicles (SUV). The SUV that were traditionally used as work utility vehicles are now more commonly being used for personal transportation. SUV are classified as either light or medium duty trucks and are subject to less stringent emission standards than light duty automobiles (passenger vehicles). It is possible that the population of these vehicles and their emission impact is underestimated in the On-Road Motor Vehicles emission inventory, an issue ARB is currently evaluating. Any revisions to current emission estimation techniques will be included in future plans.

3.3.3.2 OTHER MOBILE SOURCES

The Other Mobile Sources major source category pertains to emission sources that do not produce their emissions on roads and highways, such as ships, boats, airplanes, trains, residential utility equipment, and construction equipment. Although the ARB has the primary responsibility for estimating the emissions from these categories, the APCD currently estimates the emissions from ships and aircraft. Virtually all emissions are related to fuel combustion in engines. Marine

vessel emissions occur in the State Tidelands and the Outer Continental Shelf, where they are a very significant source of NO_x and SO_x emissions. The seven summary categories are as follows:

1. Aircraft: Primarily CO and ROG emissions from piston and jet powered commercial, civil, and military aircraft, and agricultural crop dusting.
2. Trains: Primarily NO_x combustion emissions from locomotives on the railway line linking the Los Angeles area with the San Francisco Bay area.
3. Ships and Commercial Boats: Tankers operating in the State Tidelands, a variety of large tanker and cargo vessels traversing the Santa Barbara Channel, and crew and supply boats servicing offshore oil production platforms produce significant quantities of NO_x, SO_x and CO emissions.
4. Recreational Boats: CO and ROG emissions from gasoline and diesel powered boats.
5. Off-Road Recreational Vehicles: CO and ROG emissions from four-wheel drive all-terrain and off-road passenger vehicles, and off-road motorcycles.
6. Commercial/Industrial Mobile Equipment: Substantial CO and NO_x emissions from gasoline, diesel and LPG powered construction and industrial equipment. Light duty equipment with engines less than 175 horsepower, such as forklifts, mobile cranes, airport ground support equipment, portable generators, compressors, and pumps. Heavy-duty non-farm equipment with engines greater than or equal to 175 horsepower including construction equipment such as pavers, scrapers, loaders and mining equipment. This category also includes diesel powered refrigeration units on trucks and trailers.
7 Farm Equipment: CO and NO_x emissions from gasoline and diesel heavy duty farm equipment, including tractors, mowers, combines and other mobile agricultural equipment.

One Other Mobile Sources emission category of particular interest is related to construction equipment. This emission category is diverse in terms of equipment types and sizes, and includes gas and diesel engines in a vast horsepower range, from under 15 to over 500 horsepower. Construction equipment emissions are estimated by the ARB for the APCD, but are not contained in any single emission category. Instead, they are represented as a component of more generalized emission categories related to engine type and size, i.e. Light Duty Diesel Industrial Equipment, Light Duty Gasoline Industrial Equipment and Heavy Duty Non-Farm Equipment

(Diesel or Gasoline powered). Although construction equipment undoubtedly is a significant emission source, it is problematic to extract a definitive estimate of construction equipment emissions. A generalized, qualitative estimate can be made based on a study performed for ARB in 1992, in which statewide construction equipment emissions were allocated to the county level using construction permit valuation data obtained from the State Department of Finance. This estimate indicates NO_x emissions in the range of 450-525 tons per year, CO emissions of 350-600 tons per year and ROG emissions of 40-50 tons per year. The APCD, using construction permit data obtained from the SBCAG, also developed an estimate of construction emissions, which suggests construction NO_x emissions in the range of 300-450 tons per year. An improved construction emission estimate may be available in the future, using a model being developed by ARB for off-road emission sources. Any improvements in the estimation of construction related emissions would be included in future plan revisions.

3.3.4 NATURAL SOURCES

The ***Natural Sources*** emission inventory division consists of emissions that are non-anthropogenic, or not man-made. Emission estimates for these categories tend to be difficult to quantify with any degree of certainty. Non-anthropogenic emissions are excluded from the PEI used in Chapter 9 for federal Rate-of-Progress calculations, but they are included in the AEI for photochemical modeling and attainment demonstration purposes. There is only one major source category.

3.3.4.1 NATURAL SOURCES

There are three summary categories of Natural Sources emissions.

1. Biogenic Sources: ROG emissions from vegetation, typically estimated using a complex regional model incorporating biomass types and distribution, plant species emission factors and climate correction factors. Soil microorganisms contribute some NO_x emissions.
2. Geogenic Sources: ROG emissions from naturally occurring oil and gas seeps located off the southern coast of Santa Barbara County. Seep emissions flow out from subsurface

sources on the ocean floor, primarily in the State Tidelands and exhibit a high degree of temporal and spatial variability.

3. Wildfires: Timber, grass and brush wildfires. This is different from the planned or prescribed burn fires that are part of the Area-Wide Source division, Miscellaneous Processes major source category, Waste Burning and Disposal summary category. CO and PM are the most significant pollutants.

Now that the pollutants and hierarchy have been established, the two specific annual emission inventories, the 1996 AEI and the 1990 Base-Year AEI, will be described in the following sections. These two inventories will form the basis for determining emission reductions, forecasting future inventories, and performing Rate-of-Progress calculations.

3.4 1996 ANNUAL EMISSION INVENTORY

The 1996 AEI contains the most recent data and emission estimation methods, including utilizing the latest On-Road Motor Vehicle activity data and emission estimation models. The 1996 AEI for Santa Barbara County and the Outer Continental Shelf documents the current sources of air pollution, both in quantity and relative contribution. The 1996 AEI was used to upgrade the 1990 Base-Year Annual Emission, which is discussed in section 3.5.

Also, a modified version of the 1996 AEI, described as a Planning Emission Inventory, as mentioned earlier in this chapter, will serve as the baseline to forecast emission inventories for the years 1999 and 2005. This is discussed in Chapter 6.

The Santa Barbara County 1996 annual emissions inventory of ROG, NO_x, CO, SO_x and PM in tons per year is presented in Table 3-1. The Santa Barbara County emissions inventory represents on-shore and State Tidelands emission sources, i.e. the Santa Barbara County ozone nonattainment area, and includes Natural Sources (i.e., non-anthropogenic emissions related to oil and gas seeps, vegetation, and wildfires).

3.4.1 SANTA BARBARA COUNTY EMISSIONS

The 1996 Santa Barbara County AEI for ozone precursor pollutants is 44,460 tons per year ROG, 16,589 tons per year NO_x and 103,369 tons per year CO. Also, the inventory contains 865 tons of SO_x and 13,553 tons of PM. Figure 3-1 shows each major source's relative contribution for each pollutant during 1996. The largest sources of each pollutant and their percent of contribution are as follows:

1996 Santa Barbara County ROG Emissions: 44,460 tons

- **6% Stationary Sources: 2,838 tons**
  - 0.5% Fuel Combustion: (65% from Oil and Gas Production)
  - 0.3% Waste Disposal: (99% from Landfills)
  - 2.6% Cleaning and Surface Coatings: (44% from Coatings and Process Solvents)
  - 2.5% Petroleum Production and Marketing: (77% from Oil and Gas Production)
  - 0.1% Industrial Processes: (88% from Food and Agriculture)
- **8% Area-Wide Sources: 3,420 tons**
  - 6% Solvent Evaporation: (42% Consumer Products; and 34% Pesticides/Fertilizers)
  - 2% Miscellaneous: (43% Waste Burning and Disposal; and 27% Residential Fuel Use)
- **20% Mobile Sources: 8,907 tons**
  - 18% On-Road Motor Vehicles: (66% Light Duty Passenger; 27% Light Duty Trucks)
  - 2% Other Mobile Sources: (28% from Commercial/Industrial Mobile Equipment)
- **66% Natural Sources: 29,295 tons**
  - 51% Biogenic Sources
  - 14% Geogenic Sources
  - 1% Wildfires

1996 Santa Barbara County NO_x Emissions: 16,589 tons

- **13% Stationary Sources: 2,159 tons**
  - 13% Fuel Combustion: (52% Oil and Gas Production; 27% Food and Ag. Processing)
- **3% Area-Wide Sources: 494 tons**
  - 3% Miscellaneous: (73% from Residential Fuel Combustion)

- **78% Mobile Sources: 12,878 tons**
    - 57% On-Road Motor Vehicles: (45% Light Duty Passenger; 26% Light Duty Trucks)
    - 21% Other Mobile Sources: (38% from Commercial/Industrial Mobile Equipment)
- **6% Natural Sources: 1,058 tons**
    - 5% Biogenic Sources
    - 1% Geogenic Sources

1996 Santa Barbara County CO Emissions: 103,369 tons

- **2% Stationary Sources: 1,551 tons**
    - 1.8% Fuel Combustion: (75% from Oil and Gas Production)
    - 0.1% Petroleum Production and Marketing: (100% from Oil and Gas Production)
    - 0.1% Industrial Processes: (100% from Other Industrial Processes)
- **8% Area-Wide Sources: 7,882 tons**
    - 8% Miscellaneous: (45% from Residential Fuel Combustion; 30% from Waste Burning and Disposal; and 24% from Utility Equipment)
- **80% Mobile Sources: 82,532 tons**
    - 70% On-Road Motor Vehicles: (66% Light Duty Passenger; 27% Light Duty Trucks)
    - 10% Other Mobile Sources: (44% from Commercial/Industrial Mobile Equipment)
- **11% Natural Sources: 11,404 tons**
    - 11% Wildfires

1996 Santa Barbara County SO_x Emissions: 865 tons

- **64% Stationary Sources: 552 tons**
    - 11% Fuel Combustion: (40% from Oil and Gas Production)
    - 1% Petroleum Production and Marketing: (100% from Oil and Gas Production)
    - 52% Industrial Processes: (100% from Mineral Processes)
- **1% Area-Wide Sources: 8 tons**
    - 1% Miscellaneous: (93% from Residential Fuel Combustion)
- **35% Mobile Sources: 305 tons**
    - 15% On-Road Motor Vehicles: (37% from Heavy Heavy Duty Diesel Trucks)

20% Other Mobile Sources: (46% from Ships and Commercial Boats)

1996 Santa Barbara County PM Emissions: 13,553 tons

- **4% Stationary Sources: 554 tons**
  - 0.7% Fuel Combustion: (75% from Oil and Gas Production)
  - 0.1% Petroleum Production and Marketing: (100% from Oil and Gas Production)
  - 3.2% Industrial Processes: (100% from Other Industrial Processes)
- **78% Area-Wide Sources: 10,584 tons**
  - 78% Miscellaneous: (30% from Paved Road Dust; 20% from Construction and Demolition; 18% from Farming Operations; and 18% from Unpaved Road Dust)
- **4% Mobile Sources: 572 tons**
  - 3% On-Road Motor Vehicles: (36% Light Duty Passenger; 29% Heavy Heavy Duty Diesel Trucks)
  - 1% Other Mobile Sources: (40% from Farm Equipment; and 39% from Commercial/Industrial Mobile Equipment)
- **14% Natural Sources: 1,843 tons**
  - 14% Wildfires

In summary, the most significant impact on ROG emissions are from Natural Sources, primarily Biogenics. On-Road Motor Vehicles, particularly Light Duty Passenger and Light Duty Trucks contribute the most NO_x and CO emissions. The majority of the SOx emissions are from Mineral Processes, specifically diatomaceous earth processing, and a large portion of the PM emissions are from Road Dust, both Paved and Unpaved.

The next section will continue the discussion of the 1996 AEI, focusing specifically on the Outer Continental Shelf (OCS) sources.

3.4.2 OCS EMISSIONS

Regulatory authority of certain emissions on the Outer Continental Shelf (OCS), specifically the oil and gas platforms, was delegated to Santa Barbara County in September 1994. The 1996 OCS emission inventory is presented in Table 3-2. The OCS emissions are summarized separately

from the on-shore emission inventory for clarity. OCS emissions are used as input to air chemistry modeling as part of the county's comprehensive air pollution control strategy but are not included in Rate-of-Progress calculations per USEPA guidance, which is calculated in Chapter 9.

The 1996 OCS AEI for ozone precursor pollutants is 1,535 tons per year ROG, 8,458 tons per year NO_x and 1,512 tons per year CO. Also, the inventory contains 5,368 tons of SOx and 666 tons of PM. Figure 3-2 shows each major source's relative contribution for each pollutant during 1996. The largest sources of each pollutant and their percent of contribution are discussed below.

1996 OCS ROG Emissions: 1,535 tons

- **25% Stationary Sources: 382 tons**
  - 1% Fuel Combustion: (100% from Oil and Gas Production)
  - 1% Cleaning and Surface Coatings: (100% from Coatings and Process Solvents)
  - 23% Petroleum Production and Marketing: (100% from Oil and Gas Production)
- **30% Mobile Sources: 468 tons**
  - 30% Other Mobile Sources: (78% from Ships and Commercial Boats; and 21% from Recreational Boats)
- **45% Natural Sources: 685 tons**
  - 45% Geogenic Sources

1996 OCS NO_x Emissions: 8,458 tons

- **4% Stationary Sources: 316 tons**
  - 3.6% Fuel Combustion: (100% from Oil and Gas Production)
  - 0.4% Petroleum Production and Marketing: (100% from Oil and Gas Production)
- **96% Mobile Sources: 8,142 tons**
  - 96% Other Mobile Sources: (99% from Ships and Commercial Boats)

1996 OCS CO Emissions: 1,512 tons

- **15% Stationary Sources: 227 tons**
  - 12% Fuel Combustion: (100% from Oil and Gas Production)

3% Petroleum Production and Marketing: (100% from Oil and Gas Production)

- **85% Mobile Sources: 1,285 tons**

  85% Other Mobile Sources: (76% from Ships and Commercial Boats; and 24% from Recreational Boats)

1996 OCS SO_x Emissions: 5,368 tons

- **2% Stationary Sources: 91 tons**

  0.3% Fuel Combustion: (100% from Oil and Gas Production)

  1.7% Petroleum Production and Marketing: (100% from Oil and Gas Production)

- **98% Mobile Sources: 5,276 tons**

  98% Other Mobile Sources: (99% from Ships and Commercial Boats)

1996 OCS PM Emissions: 666 tons

- **3% Stationary Sources: 19 tons**

  2.4% Fuel Combustion: (100% from Oil and Gas Production)

  0.4% Petroleum Production and Marketing: (100% from Oil and Gas Production)

  0.2% Industrial Processes: (100% from Mineral Processes)

- **97% Mobile Sources: 647 tons**

  97% Other Mobile Sources: (99% from Ships and Commercial Boats)

In summary, almost half of the ROG emissions in the OCS are from Natural Sources, specifically offshore oil and gas seeps. Ships and Commercial Boats in transit, and Oil and Gas Production, primarily offshore platform fugitive hydrocarbons, contribute the largest remaining portions of ROG emissions to the OCS inventory. Ships and Commercial Boats also account for almost all of the NO_x, CO, SO_x, and PM emissions.

3.5 1990 BASE-YEAR ANNUAL EMISSION INVENTORY

Along with the 1996 AEI, this chapter also presents the 1990 Base-Year AEI. This 1990 inventory is important because 1990 is the inventory year that will be used to determine how we will achieve our Rate-of-Progress emission reductions requirement by 1999. However, according

to USEPA guidance, the 1990 Base-Year AEI is not to be used to calculate emission reductions, but instead, an adjusted annual inventory, or Rate-of-Progress Emission Inventory will be used. As mentioned earlier in this chapter, the 1990 Base-Year Rate-of-Progress Emission Inventory is similar to a Planning Emission Inventory, with the exception that instead of listing the ozone precursors of ROG, NO_x, and CO, only ROG is listed. The 1990 Rate-of-Progress Emission Inventory is presented in Chapter 9 will discuss how we will achieve our Rate-of-Progress requirement.

Before discussing the development of the 1990 Base-Year AEI, the adjustments that will be performed to derive a 1990 Base-Year Rate-of-Progress Emission Inventory need to be briefly mentioned. The 1990 Base-Year Rate-of-Progress Emission Inventory is similar to the Planning Emission Inventory that was explained in this chapter's introduction. The main difference between the PEI and the 1990 Base-Year Rate-of-Progress Emission Inventory is that only ROG needs to be addressed. Just like the PEI, seasonal variations are factored into the Rate-of-Progress Emission Inventory because most exceedances of the federal ozone standard occur during the April to October ozone season. Second, by definition, the 1990 Base-Year Rate-of-Progress Emission Inventory is to exclude emissions from natural sources such as biogenics, oil and gas seeps, and wildfires, since they are not regulated or controlled. Third, since the 1990 Base-Year Rate-of-Progress Emission Inventory is limited to the ozone nonattainment area defined by the USEPA, only the Santa Barbara County emission inventory region was used, thus excluding the OCS emissions.

In the interval since the 1990 Base-Year AEI was developed for the 1994 CAP, the methods used to calculate emissions for several types of emission sources have been updated. New emission estimation methodologies, improved data sources and revised emission factors have become available and are reflected in the 1996 AEI. In order to ensure consistency and comparability to the 1996 AEI, and also forecasted emissions estimates of 1999 and 2005 found in Chapter 6, it is necessary to recalculate the 1990 Base-Year emissions using the new methods, where appropriate.

Several necessary revisions, specifically emission factors, were made to update the 1990 Base-Year inventory. The emission factors for all emission inventory processes were compared between 1990 and 1996. For some emission processes, the original emission factor was revised in favor of using more recent emission factor data. For processes that didn't change the nature of their operations, but which had updated emission factors, the 1990 emissions were recalculated using new factors while retaining their original 1990 process rates. Two examples of emission categories that had this done are diesel internal combustion engines and gas stations.

In some cases, the technique or methodology used to estimate emissions for a given process has changed. Emissions from processes for which new calculation methods were introduced were recalculated using the revised methods and the 1990 process rate data. For example, significant changes have been made to the estimation of fugitive hydrocarbon emissions from oil and natural gas extraction and processing facilities. For several types of fugitive hydrocarbon emission sources, the standard method of multiplying a process rate by an emission factor has been replaced by more accurate methods that incorporate a number of additional variable input parameters. These sources include sumps, pits, wastewater tanks, well cellars; valves and fittings; pumps and compressors; loading racks; and fixed roof tanks.

For other emission categories, new sources of process data have become available for use in calculating emission estimates. This applies to a variety of Area-Wide source categories estimated by ARB, including Pesticides, Commercial & Industrial Mobile Equipment and Farm Equipment, as well as some categories estimated by the APCD, most notably the Municipal Landfills and Industrial/Commercial Combustion categories.

In still other cases, when better data was available in 1996 than in 1990, the 1996 emissions were "backcasted" to 1990 using socioeconomic and control factors specific to the particular emission category. Also, new emission categories were created in the 1996 inventory.
Finally, 1990 ROG emissions were adjusted to remove chemical species that the USEPA and ARB decided have negligible photochemical reactivity, specifically ethane, acetone and perchloroethylene. ROG emissions are calculated by applying a fraction representing the proportion of reactive chemical species to the estimated Total Organic Gas emissions. The values

for the fraction of ROG have been revised in the 1990 Base-Year inventory to reflect this new definition.

As shown in Table 3-3, the 1990 Santa Barbara County Base-Year AEI for ozone precursor pollutants is 56,128 tons per year ROG, 23,301 tons per year NO_x and 194,442 tons per year CO. Also, the inventory contains 1,243 tons of SO_x and 14,018 tons of PM. Figure 3-3 shows each major source's relative contribution for each pollutant during 1990. The largest sources of each pollutant and their percent of contribution are discussed below.

1990 Base-Year ROG Emissions: 56,128 tons

- **10% Stationary Sources: 5,754 tons**
  - 0.6% Fuel Combustion: (78% from Oil and Gas Production)
  - 0.2% Waste Disposal: (100% from Landfills)
  - 2.8% Cleaning and Surface Coatings: (52% from Coatings and Process Solvents)
  - 6.3% Petroleum Production and Marketing: (92% from Oil and Gas Production)
  - 0.1% Industrial Processes: (53% from Chemical Processes)
- **7% Area-Wide Sources: 4,028 tons**
  - 6% Solvent Evaporation: (36% from Consumer Products; and 36% from Pesticides/Fertilizers)
  - 1% Miscellaneous: (46% from Utility Equipment; 36% from Residential Fuel Use)
- **33% Mobile Sources: 18,176 tons**
  - 31% On-Road Motor Vehicles: (68% Light Duty Passenger; 26% Light Duty Trucks)
  - 2% Other Mobile Sources: (34% from Aircraft)
- **50% Natural Sources: 28,170 tons**
  - 40% Biogenic Sources
  - 9% Geogenic Sources
  - 1% Wildfires

1990 Base-Year NO_x Emissions: 23,301 tons

- **15% Stationary Sources: 3,621 tons**
  - 15% Fuel Combustion: (53% Oil and Gas Production; 27% Food and Ag. Processing)
- **2% Area-Wide Sources: 398 tons**
  - 2% Miscellaneous: (91% from Residential Fuel Combustion)
- **78% Mobile Sources: 18,209 tons**
  - 62% On-Road Motor Vehicles: (49% Light Duty Passenger; 26% Light Duty Trucks)
  - 16% Other Mobile Sources: (40% from Commercial/Industrial Mobile Equipment; and 28% from Farm Equipment)
- **5% Natural Sources: 1,073 tons**
  - 4% Biogenic Sources
  - 1% Wildfires

1990 Base-Year CO Emissions: 194,442 tons

- **<1% Stationary Sources: 886 tons**
  - 0.4% Fuel Combustion: (64% from Oil and Gas Production)
  - 0.1% Petroleum Production and Marketing: (100% from Oil and Gas Production)
  - 0.1% Industrial Processes: (85% from Other Industrial Processes)
- **3% Area-Wide Sources: 6,165 tons**
  - 3% Miscellaneous: (56% from Residential Fuel Combustion)
- **90% Mobile Sources: 174,965 tons**
  - 85% On-Road Motor Vehicles: (66% Light Duty Passenger; 28% Light Duty Trucks)
  - 5% Other Mobile Sources: (43% from Commercial/Industrial Mobile Equipment)
- **6% Natural Sources: 12,427 tons**
  - 6% Wildfires

1990 Base-Year SO_x Emissions: 1,243 tons

- **26% Stationary Sources: 330 tons**
  - 23% Fuel Combustion: (32% from Oil and Gas Production)
  - 1% Petroleum Production and Marketing: (100% from Oil and Gas Production)
  - 2% Industrial Processes: (54% from Mineral Processes)
- **1% Area-Wide Sources: 8 tons**

1% Miscellaneous: (94% from Residential Fuel Combustion)

- **73% Mobile Sources: 905 tons**
  - 33% On-Road Motor Vehicles: (50% from Light Duty Passenger)
  - 40% Other Mobile Sources: (39% from Commercial/Industrial Mobile Equipment)

1990 Base-Year PM Emissions: 14,018 tons

- **4% Stationary Sources: 583 tons**
  - 0.7% Fuel Combustion: (42% from Food and Agricultural Processing)
  - 0.1% Petroleum Production and Marketing: (100% from Oil and Gas Production)
  - 3.2% Industrial Processes: (89% from Mineral Processes)
- **76% Area-Wide Sources: 10,635 tons**
  - 76% Miscellaneous: (30% from Paved Road Dust; 24% from Construction and Demolition; 18% from Farming Operations; and 18% from Unpaved Road Dust)
- **6% Mobile Sources: 793 tons**
  - 4% On-Road Motor Vehicles: (39% from Heavy Heavy Duty Diesel Trucks; and 30% from Light Duty Passenger)
  - 2% Other Mobile Sources: (40% from Commercial/Industrial Mobile Equipment; and 29% from Farm Equipment)
- **14% Natural Sources: 2,007 tons**
  - 14% Wildfires

In summary, for the 1990 Base-Year AEI, the most significant impact on ROG emissions is from Natural Sources, primarily Biogenics. On-Road Motor Vehicles, particularly Light Duty Passenger and Light Duty Trucks contribute the most NO_x, CO, and SO_x emissions. The majority of the PM emissions are from Road Dust, both Paved and Unpaved, along with large contributions from Construction and Demolition, Farming Operations, and Wildfires.

3.6 CONCLUSION

The 1996 AEI contains the most recent data and emission estimation methods, including the latest on-road motor vehicle activity data and emission estimation models. The 1996 AEI for Santa

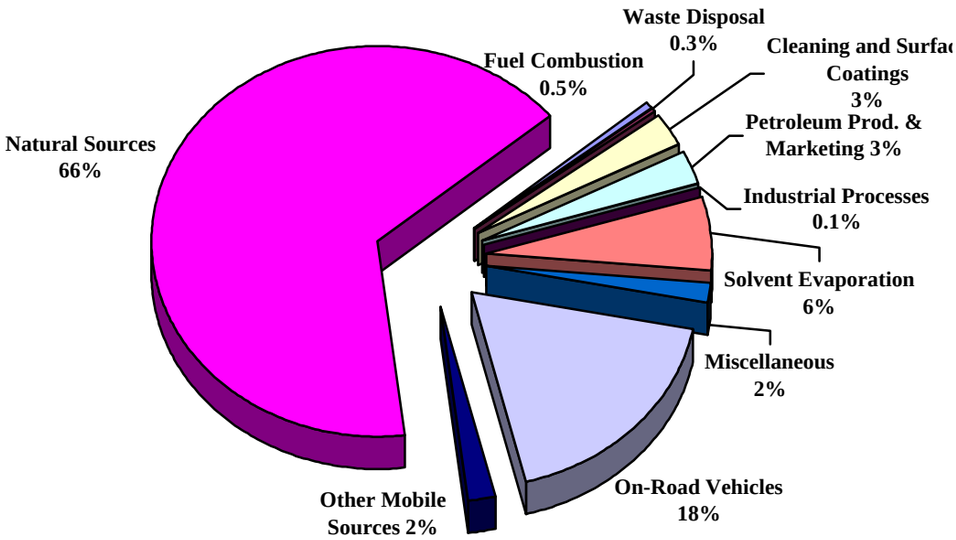
Barbara County and Outer Continental Shelf documents the current sources of air pollution, both in quantity and relative contribution. This emission inventory serves as the baseline to forecast emission inventories in 1999 and 2005. The 1996 AEI is also used to improve and contemporize the 1990 Base-Year AEI and the 1990 Base-Year Rate-of-Progress Emission Inventory that are essential elements in this 1998 CAP to meet federal Clean Air Act Rate-of-Progress requirements.

In this chapter, we have described how emission sources are categorized as either Stationary Sources, Area-Wide Sources, Mobile Sources or Natural Sources. Since the focus of this plan is attainment of the federal one-hour ozone standard, the emphasis in the 1998 CAP is on the ozone precursors: ROG, NO_x and CO. However, the 1996 AEI and 1990 Base-Year AEI provided details on all sources of air pollution, including the Natural Sources that cannot be regulated or controlled.

For additional information on the 1990 Base-Year AEI or the 1996 AEI, please refer to Appendix A. The 1996 AEI was used in the development of the 1996 Planning Emission Inventory. This inventory was used to forecast the 1999 and 2005 emission inventories that are discussed in Chapter 6. Finally, Chapter 9 focuses on presenting our Rate-of-Progress calculations along with details of the 1990, 1996, and 1999 Base-Year Rate-of-Progress Emission Inventories.

Figure 3-1
1996 Annual Emission Inventory
Santa Barbara County

ROG
44,460 Tons Per Year



NOx
16,589 Tons Per Year

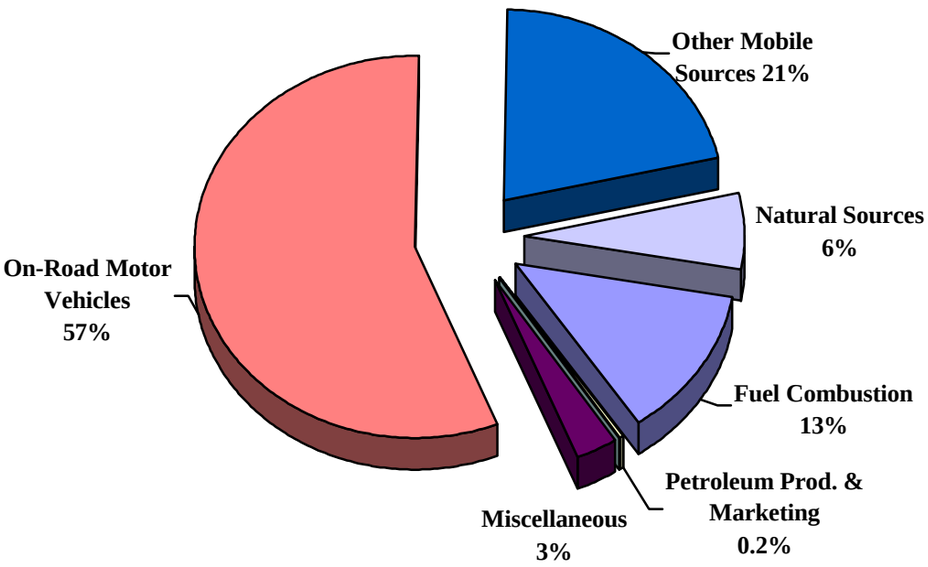
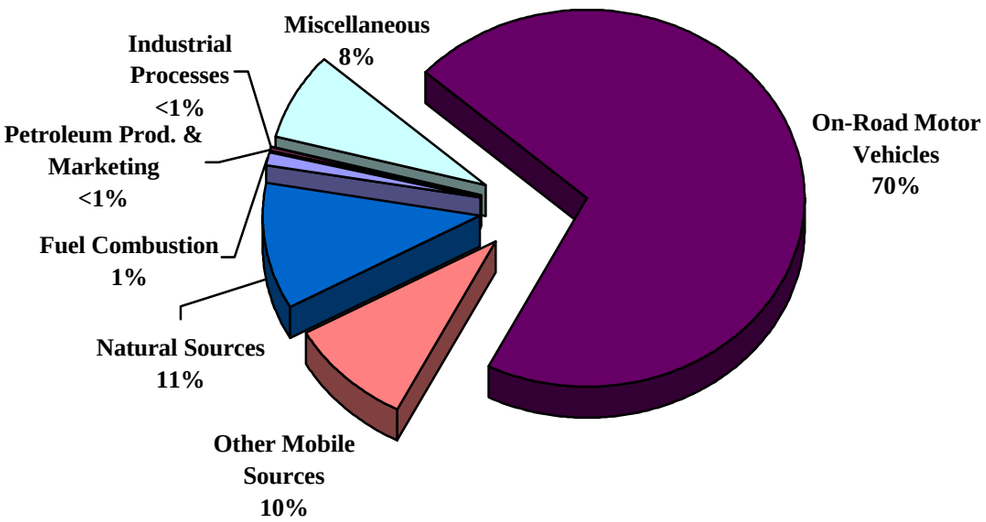


Figure 3-1 Continued
1996 Annual Emission Inventory
Santa Barbara County

CO
103,369 Tons Per Year



SOx
865 Tons Per Year

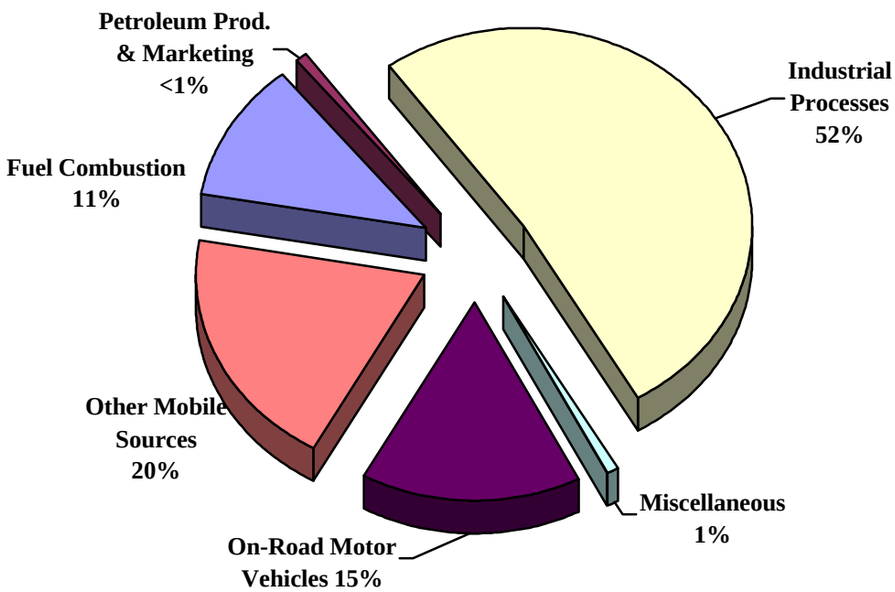


Figure 3-1 Concluded
1996 Annual Emission Inventory
Santa Barbara County

PM
13,553 Tons Per Year

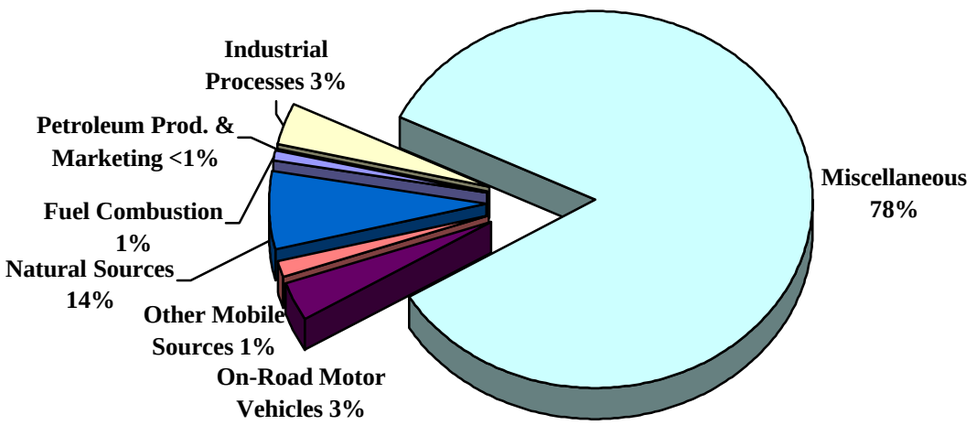
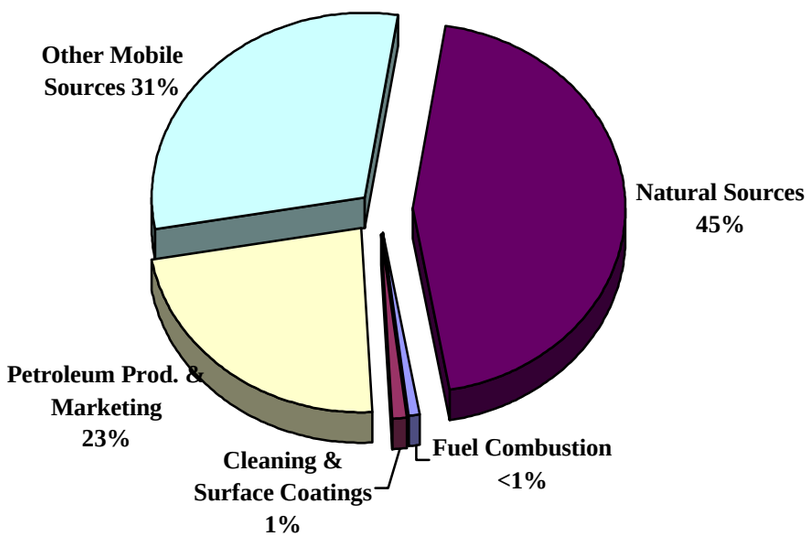


Figure 3-2
1996 Annual Emission Inventory
Outer Continental Shelf

ROG
1,535 Tons Per Year



NOx
8,458 Tons Per Year

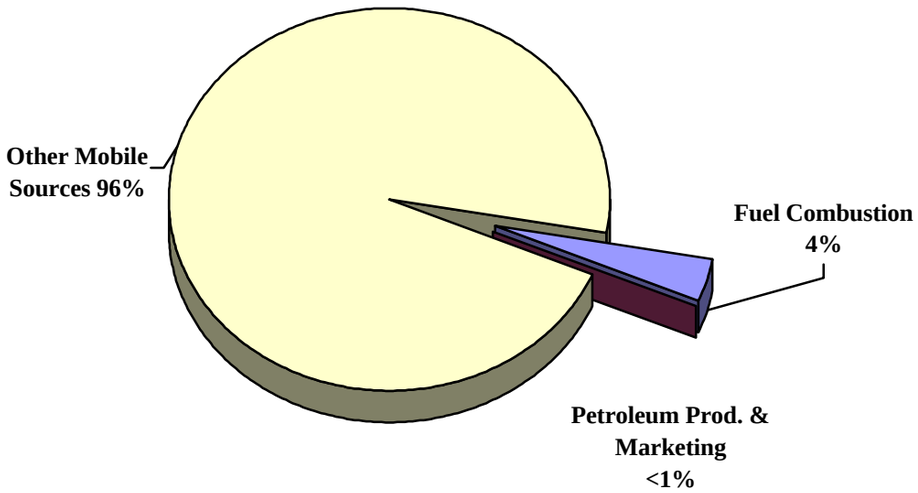
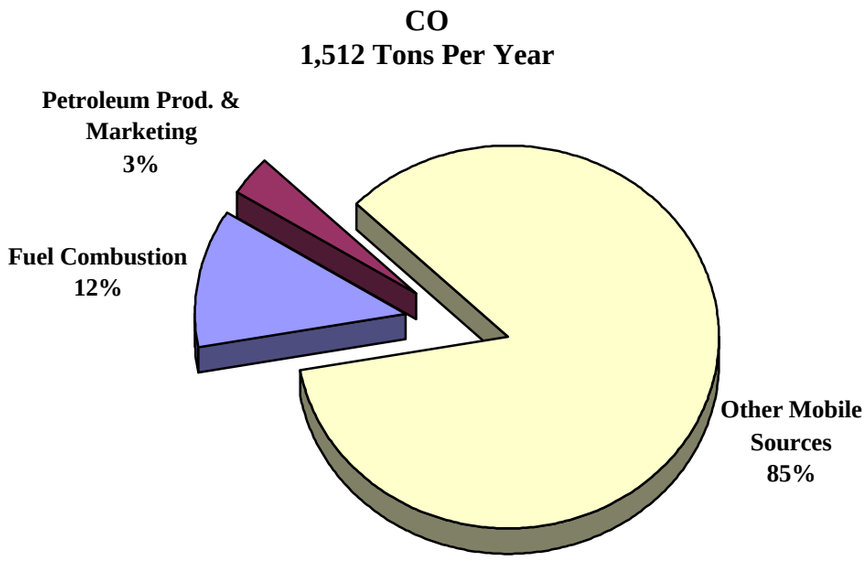


Figure 3-2 Continued
1996 Annual Emission Inventory
Outer Continental Shelf



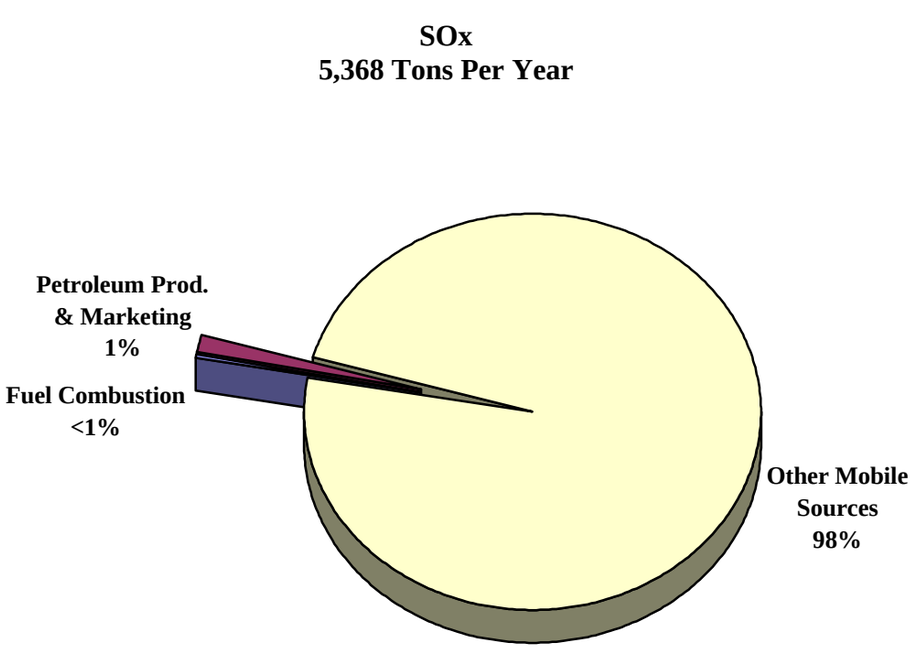


Figure 3-2 Concluded
1996 Annual Emission Inventory
Outer Continental Shelf

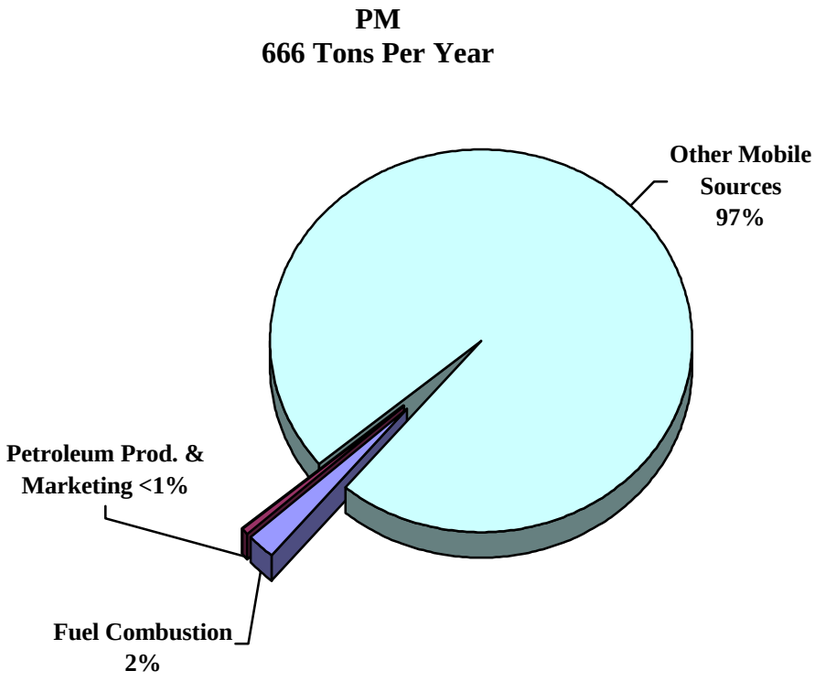
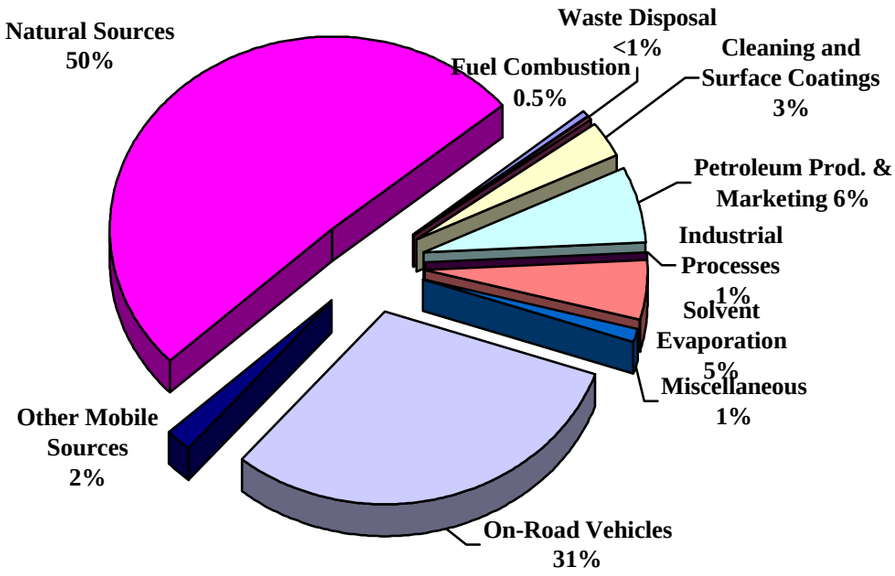


Figure 3-3
1990 Annual Base Year Emission Inventory
Santa Barbara County

ROG
56,128 Tons Per Year



NOx
23,301 Tons Per Year

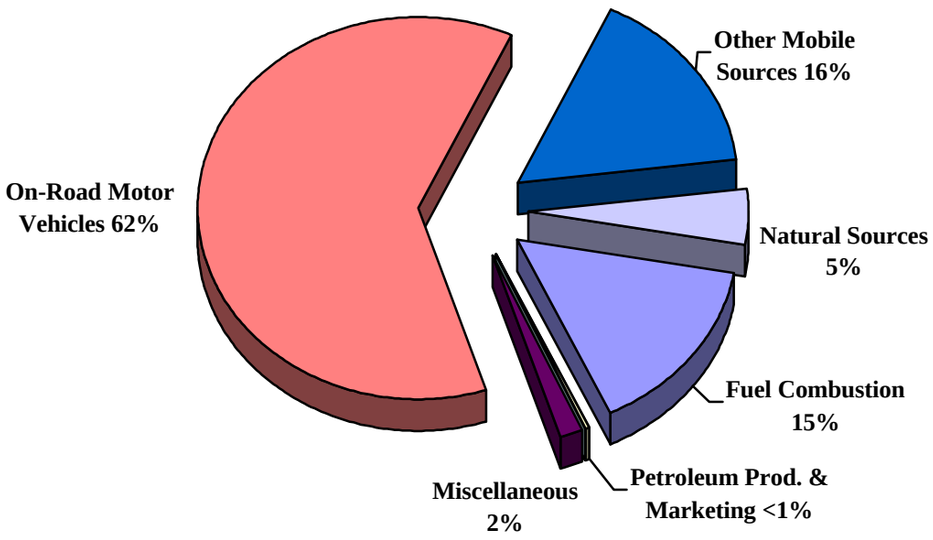
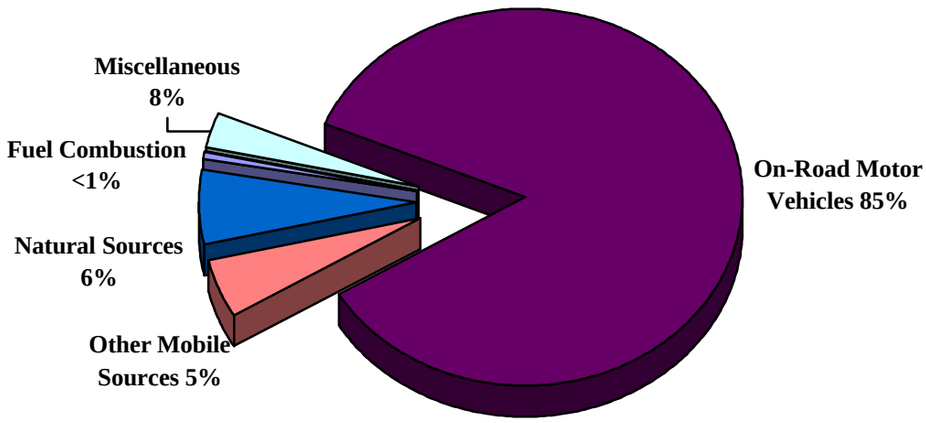


Figure 3-3 Continued
1990 Annual Base Year Emission Inventory
Santa Barbara County

CO
194,442 Tons Per Year



SOx
1,243 Tons Per Year

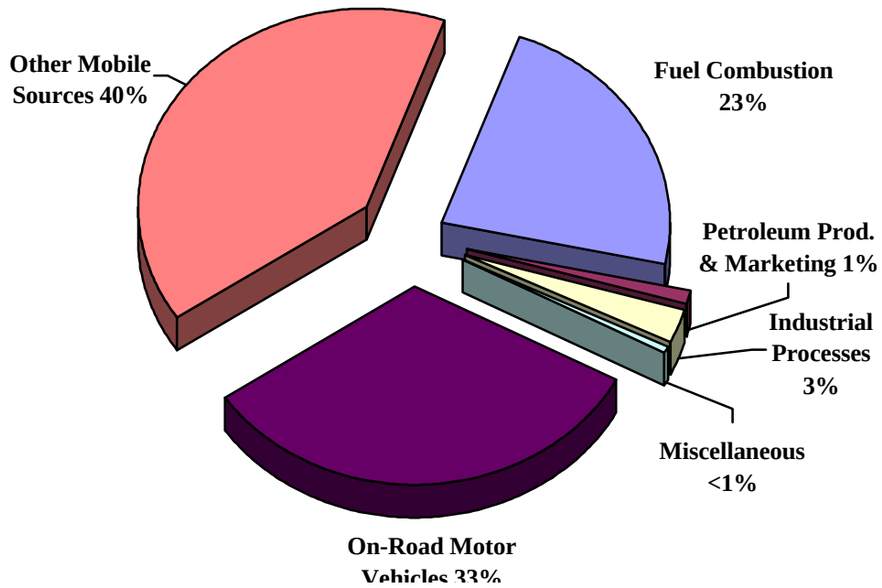


Figure 3-3 Concluded
1990 Annual Base Year Emission Inventory
Santa Barbara County

PM
14,018 Tons Per Year

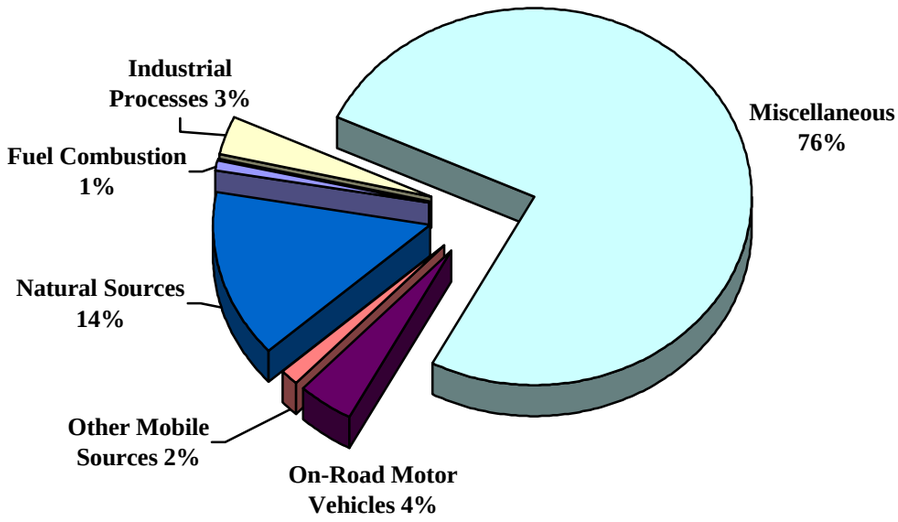


TABLE 3-1

MAJOR CATEGORY	ANNUAL EMISSIONS (TONS/YEAR) ROG	NOx	CO	SOx	PM
EMISSIONS TALLY					
FUEL COMBUSTION	208.84	2,120.47	1,327.36	97.85	99.50
WASTE DISPOSAL	152.30	0.49	0.30	0.00	0.00
CLEANING AND SURFACE COATINGS	1,248.84	0.00	0.00	0.00	0.00
PETROLEUM PRODUCTION AND MARKETING	1,187.72	35.27	122.26	7.68	12.99
INDUSTRIAL PROCESSES	40.56	2.30	100.60	446.58	441.69
SOLVENT EVAPORATION	2,717.65	0.00	0.00	0.00	0.10
MISCELLANEOUS	702.16	494.18	7,882.08	8.19	10,584.15
ON-ROAD MOTOR VEHICLES	8,117.54	9,390.81	72,509.43	133.46	388.76
OTHER MOBILE SOURCES	789.58	3,487.05	10,022.56	170.86	183.10
NATURAL SOURCES	29,295.23	1,058.08	11,403.93	0.00	1,842.89
SANTA BARBARA COUNTY EMISSION INVENTOR	**44,460.42**	**16,588.65**	**103,368.52**	**864.62**	**13,553.18**
PER CENT CONTRIBUTION					
FUEL COMBUSTION	0.5%	12.8%	1.3%	11.3%	0.7%
WASTE DISPOSAL	0.3%	0.0%	0.0%	0.0%	0.0%
CLEANING AND SURFACE COATINGS	2.8%	0.0%	0.0%	0.0%	0.0%
PETROLEUM PRODUCTION AND MARKETING	2.7%	0.2%	0.1%	0.9%	0.1%
INDUSTRIAL PROCESSES	0.1%	0.0%	0.1%	51.7%	3.3%
SOLVENT EVAPORATION	6.1%	0.0%	0.0%	0.0%	0.0%
MISCELLANEOUS	1.6%	3.0%	7.6%	0.9%	78.1%
ON-ROAD MOTOR VEHICLES	18.3%	56.6%	70.1%	15.4%	2.9%
OTHER MOBILE SOURCES	1.8%	21.0%	9.7%	19.8%	1.4%
NATURAL SOURCES	65.9%	6.4%	11.0%	0.0%	13.6%
	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE 3-2
1996 ANNUAL EMISSION INVENTORY
OUTER CONTINENTAL SHELF (OCS)

	ANNUAL EMISSIONS (TONS/YEAR)				
	ROG	NOx	CO	SOx	PM
STATIONARY SOURCES					
FUEL COMBUSTION					
OIL AND GAS PRODUCTION (COMBUSTION)	12.46	307.07	177.36	13.72	15.36
FUEL COMBUSTION TOTAL	**12.46**	**307.07**	**177.36**	**13.72**	**15.36**
CLEANING AND SURFACE COATINGS					
COATINGS AND RELATED PROCESS SOLVENTS	15.46	0.00	0.00	0.00	0.00
CLEANING AND SURFACE COATINGS TOTAL	**15.46**	**0.00**	**0.00**	**0.00**	**0.00**
PETROLEUM PRODUCTION AND MARKETING					
OIL AND GAS PRODUCTION	354.56	9.21	50.14	77.52	2.72
PETROLEUM MARKETING	0.00	0.00	0.00	0.00	0.00
PETROLEUM PRODUCTION AND MARKETING TOTAL	**354.56**	**9.21**	**50.14**	**77.52**	**2.72**
INDUSTRIAL PROCESSES					
MINERAL PROCESSES	0.00	0.00	0.00	0.00	0.87
INDUSTRIAL PROCESSES TOTAL	**0.00**	**0.00**	**0.00**	**0.00**	**0.87**
STATIONARY SOURCES TOTAL	**382.48**	**316.28**	**227.50**	**91.24**	**18.95**
AREA-WIDE SOURCES					
AREA-WIDE SOURCES TOTAL	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
MOBILE SOURCES					
OTHER MOBILE SOURCES					
AIRCRAFT	6.78	6.22	5.40	0.32	0.32
SHIPS AND COMMERCIAL BOATS	363.31	8,114.75	976.06	5,273.69	641.23
RECREATIONAL BOATS	97.93	20.42	303.05	2.31	5.50
OTHER MOBILE SOURCES TOTAL	**468.02**	**8,141.39**	**1,284.51**	**5,276.32**	**647.05**
MOBILE SOURCES TOTAL	**468.02**	**8,141.39**	**1,284.51**	**5,276.32**	**647.05**
NATURAL SOURCES					
NATURAL SOURCES					
GEOGENIC SOURCES	684.83	0.00	0.00	0.00	0.00
NATURAL SOURCES TOTAL	**684.83**	**0.00**	**0.00**	**0.00**	**0.00**
NATURAL SOURCES TOTAL	**684.83**	**0.00**	**0.00**	**0.00**	**0.00**
OUTER CONTINENTAL SHELF EMISSION INVENTORY TOTAL	**1,535.33**	**8,457.67**	**1,512.01**	**5,367.56**	**666.00**

TABLE 3-3
1990 BASE-YEAR ANNUAL EMISSION INVENTORY
SANTA BARBARA COUNTY

	ANNUAL EMISSIONS (TONS/YEAR)				
	ROG	NOx	CO	SOx	PM
STATIONARY SOURCES					
FUEL COMBUSTION					
ELECTRIC UTILITIES	0.57	27.41	0.33	0.29	5.90
COGENERATION	1.10	1.40	1.71	0.00	0.07
OIL AND GAS PRODUCTION (COMBUSTION)	296.59	2,179.58	535.66	89.89	20.27
PETROLEUM REFINING (COMBUSTION)	0.17	5.49	1.04	2.48	0.28
MANUFACTURING AND INDUSTRIAL	20.91	351.94	83.07	61.33	21.88
FOOD AND AGRICULTURAL PROCESSING	49.37	680.83	145.30	83.85	49.17
SERVICE AND COMMERCIAL	12.31	318.41	70.36	45.46	18.34
FUEL COMBUSTION TOTAL	**381.02**	**3,565.06**	**837.47**	**283.30**	**115.91**
WASTE DISPOSAL					
LANDFILLS	123.69	0.00	0.00	0.00	0.00
INCINERATORS	0.00	0.00	0.00	0.00	0.00
WASTE DISPOSAL TOTAL	**123.69**	**0.00**	**0.00**	**0.00**	**0.00**
CLEANING AND SURFACE COATINGS					
DRY CLEANING	8.51	0.00	0.00	0.00	0.00
DEGREASING	246.76	0.00	0.00	0.00	0.00
COATINGS AND RELATED PROCESS SOLVENTS	838.19	0.00	0.00	0.00	0.00
PRINTING	142.10	0.00	0.00	0.00	0.00
OTHER (CLEANING AND SURFACE COATINGS)	382.18	0.00	0.00	0.00	0.00
CLEANING AND SURFACE COATINGS TOTAL	**1,617.74**	**0.00**	**0.00**	**0.00**	**0.00**
PETROLEUM PRODUCTION AND MARKETING					
OIL AND GAS PRODUCTION	3,243.56	46.47	16.15	13.31	2.32
PETROLEUM REFINING	51.44	0.00	0.00	0.00	0.00
PETROLEUM MARKETING	245.52	0.00	0.00	0.00	0.00
PETROLEUM PRODUCTION AND MARKETING TOTAL	**3,540.52**	**46.47**	**16.15**	**13.31**	**2.32**
INDUSTRIAL PROCESSES					
CHEMICAL	48.66	0.00	0.00	0.00	0.00
FOOD AND AGRICULTURE	38.13	2.22	0.00	15.24	18.60
MINERAL PROCESSES	4.49	7.60	4.72	18.02	414.26
OTHER (INDUSTRIAL PROCESSES)	0.00	0.00	27.68	0.00	31.53
INDUSTRIAL PROCESSES TOTAL	**91.28**	**9.82**	**32.40**	**33.26**	**464.39**
STATIONARY SOURCES TOTAL	**5,754.25**	**3,621.35**	**886.02**	**329.87**	**582.62**
AREA-WIDE SOURCES					
SOLVENT EVAPORATION					
CONSUMER PRODUCTS	1,272.31	0.00	0.00	0.00	0.00
ARCHITECTURAL COATINGS AND RELATED PROCESSES	530.87	0.00	0.00	0.00	0.00
PESTICIDES/FERTILIZERS	1,269.91	0.00	0.00	0.00	0.00
ASPHALT PAVING	414.58	0.00	0.00	0.00	0.00
OTHER (SOLVENT EVAPORATION)	18.47	0.00	0.00	0.00	0.10
SOLVENT EVAPORATION TOTAL	**3,506.14**	**0.00**	**0.00**	**0.00**	**0.10**
MISCELLANEOUS					
RESIDENTIAL FUEL COMBUSTION	184.63	363.22	3,465.54	7.70	417.24
FARMING OPERATIONS	0.00	0.00	0.00	0.00	1,913.85
CONSTRUCTION AND DEMOLITION	0.00	0.00	0.00	0.00	2,599.31
PAVED ROAD DUST	0.00	0.00	0.00	0.00	3,159.23
UNPAVED ROAD DUST	0.00	0.00	0.00	0.00	1,897.19
FUGITIVE WINDBLOWN DUST	0.00	0.00	0.00	0.00	394.68
FIRES	6.01	2.10	85.90	0.00	9.90
WASTE BURNING AND DISPOSAL	68.99	23.59	623.40	0.00	117.91
UTILITY EQUIPMENT	233.54	8.60	1,989.80	0.50	4.70
OTHER (MISCELLANEOUS PROCESSES)	28.36	0.00	0.00	0.00	120.60
MISCELLANEOUS TOTAL	**521.53**	**397.51**	**6,164.64**	**8.20**	**10,634.61**
AREA-WIDE SOURCES TOTAL	**4,027.67**	**397.51**	**6,164.64**	**8.20**	**10,634.71**

TABLE 3-3
1990 BASE-YEAR ANNUAL EMISSION INVENTORY
SANTA BARBARA COUNTY

	ANNUAL EMISSIONS (TONS/YEAR)				
	ROG	NOx	CO	SOx	PM
MOBILE SOURCES					
ON-ROAD MOTOR VEHICLES					
LIGHT DUTY PASSENGER	11,672.57	7,076.40	109,034.13	204.03	171.13
LIGHT DUTY TRUCKS	4,400.47	3,749.17	45,674.10	84.07	71.05
MEDIUM DUTY TRUCKS	291.67	357.50	2,856.20	7.33	4.70
LIGHT HEAVY DUTY GAS TRUCKS	186.50	465.60	3,370.27	25.40	8.82
MEDIUM HEAVY DUTY GAS TRUCKS	136.97	199.97	2,366.97	7.50	2.01
LIGHT HEAVY DUTY DIESEL TRUCKS	21.50	146.20	104.30	9.60	18.92
MEDIUM HEAVY DUTY DIESEL TRUCKS	64.00	411.70	271.00	16.90	63.23
HEAVY HEAVY DUTY DIESEL TRUCKS	229.00	1,902.60	966.00	51.50	222.42
MOTORCYCLES	93.77	32.17	341.00	1.10	2.11
HEAVY DUTY DIESEL URBAN BUSES	6.10	68.90	7.90	1.90	2.02
ON-ROAD MOTOR VEHICLES TOTAL	**17,102.55**	**14,410.21**	**164,991.87**	**409.33**	**566.41**
OTHER MOBILE SOURCES					
AIRCRAFT	368.49	136.40	2,120.80	17.40	28.00
TRAINS	26.43	769.00	86.80	58.70	16.00
SHIPS AND COMMERCIAL BOATS	36.94	282.58	80.82	80.35	19.37
RECREATIONAL BOATS	100.29	17.02	283.48	1.89	4.96
OFF-ROAD RECREATIONAL VEHICLES	94.36	10.40	543.60	0.60	0.80
COMMERCIAL/INDUSTRIAL MOBILE EQUIPMENT	269.84	1,524.30	4,243.50	195.70	90.80
FARM EQUIPMENT	176.76	1,058.60	2,613.90	140.90	66.80
OTHER MOBILE SOURCES TOTAL	**1,073.11**	**3,798.30**	**9,972.90**	**495.54**	**226.73**
MOBILE SOURCES TOTAL	**18,175.66**	**18,208.51**	**174,964.77**	**904.87**	**793.14**
NATURAL SOURCES					
NATURAL SOURCES					
BIOGENIC SOURCES	22,532.44	883.30	0.00	0.00	0.00
GEOGENIC SOURCES	4,984.54	0.00	0.00	0.00	0.00
WILDFIRES	653.08	190.40	12,426.60	0.00	2,007.20
NATURAL SOURCES TOTAL	**28,170.06**	**1,073.70**	**12,426.60**	**0.00**	**2,007.20**
NATURAL SOURCES TOTAL	**28,170.06**	**1,073.70**	**12,426.60**	**0.00**	**2,007.20**
SANTA BARBARA COUNTY EMISSION INVENTORY TOTAL	**56,127.64**	**23,301.07**	**194,442.03**	**1,242.94**	**14,017.67**

CHAPTER 4

EMISSION CONTROL MEASURES

4. EMISSION CONTROL MEASURES

4.1 INTRODUCTION

The purpose of this chapter is to update non-transportation related emission control measures to be included in Santa Barbara County's Attainment Strategy. Local emission control measures can be generally classified in two groups:

1) APCD rules; and
2) Transportation Control Measures (TCMs).

APCD rules are formally adopted by the Santa Barbara County Air Pollution Control District (APCD) Board of Directors in a public process, and generally impose emission limits and other requirements applicable to stationary sources of air pollution (businesses and industry). These control rules are enforced by the APCD.

TCMs are essentially measures that seek to reduce air pollution by encouraging alternatives to using single passenger automobile and/or improving the efficiency of the transportation system. These measures are implemented by a number of local agencies including the Santa Barbara County Association of Governments, cities and the County of Santa Barbara. Transportation related control measures are presented and discussed in Chapter 5.

The following sections identify each of the non-transportation related control measures that contribute or will contribute to the reduction of ozone precursors: reactive organic gases (ROG) and nitrogen oxides (NOx). The control measures identified were fully examined in the Santa Barbara *County 1989 Air Quality Attainment Plan* (1989 AQAP), the *1991 Air Quality Attainment Plan* (1991 AQAP), the *1993 Rate-of-Progress* (1993 ROP) Plan, and the *1994 Clean Air Plan* (1994 CAP) which were prepared in response to state and federal mandates. The 1991 AQAP included "all feasible" measures for reducing ROG and NOx emissions based on the 1989 AQAP control

strategy. The ROG control measures were updated as part of the 1993 ROP Plan and again as part of the 1994 Clean Air Plan, which also evaluated our NO_x measures. These measures were developed and evaluated with extensive public participation.

This chapter also identifies all feasible measures for Santa Barbara County as required under the California Clean Air Act. In order to reasonably assure that the APCD has adopted or proposed to adopt all feasible measures APCD staff compared the District's Rules to those of other California Air Districts as summarized in the draft ARB document, *Identification of Achievable Performance Standards and Emerging Technologies for Stationary Sources.* Any feasible measures that are not already included in Santa Barbara County's Rules and Regulations are proposed in this document.

4.2 EMISSION CONTROL MEASURE MANDATES

Santa Barbara County's comprehensive Air Pollution Control Strategy must meet several different federal and state mandates. The status and applicability of each control measure varies with the specific requirements of the following federal and state mandates:

1. Federal Clean Air Act Amendments, 1998 Rate-of-Progress Plan (Federal 1-hour): Section 182(c) of the FCAAA requires that *serious* nonattainment areas reduce ROG emissions by 3% per year from 1996 through 1999 (9% total). This requirement, combined with the 15% requirement under Section 182(b) requires a total emission reduction of 24% between 1990 and 1999. If an area cannot achieve this mandate with ROG, NO_x reductions can be credited toward the nine percent. Applicable control measures include ROG emission reduction measures implemented by the 1999 smog season, with no credit allowed for specific federal measures. Outer continental shelf (OCS) source reductions do not count toward the 9% reduction pursuant to USEPA directions. In addition, contingency measures are identified to provide for an additional reduction in ROG emissions beginning in 2000 if the federal 1-hour ozone standard is not attained.

2. Federal Clean Air Act Amendments, Demonstration of Attainment by 1999 (federal 1-hour ozone standard): As described in Chapter 7, the APCD is required to demonstrate through the use of computer modeling (or other analytical techniques) that the county will attain the federal 1-hour ozone standard by November 1999. The attainment demonstration includes emission reductions resulting from ROG and NO_x emission control measures implemented by the 1999 ozone season, including measures and reductions achieved from OCS sources.

3. California Clean Air Act Triennial Update (state update): Chapter 10 describes state triennial update mandates. This plan includes "all feasible" measures for reducing ROG and NO_x emissions in Santa Barbara County.

4. New Federal 8-Hour Ozone Standard (federal 8-hour ozone standard): On July 18, 1997, the USEPA published final revisions to the National Ambient Air Quality Standards (NAAQS) for Ozone and Particulate Matter. This Chapter will identify Local and State measures that will be implemented between 2000 and 2005 to attain this new standard. The 8-hour standard is addressed primarily for informational purposes. A plan to specifically address the new 8-hour standard will be prepared and submitted to the USEPA in 2003.

Table 4-1 presents a summary of the control measures evaluated by the APCD for this 1998 CAP. The combination of the measures listed in Table 4-1 with those presented in Chapter 5 document Santa Barbara County's comprehensive Air Pollution Control Strategy. The APCD control measures are founded on the 1989 AQAP, the 1991 AQAP, 1993 ROP Plan and the 1994 CAP. Control measures are classified as adopted, proposed, contingency, study, deleted, or not applicable for each of the mandates listed above. *Adopted* measures are those that have been formally adopted as APCD rules and included in the State Implementation Plan (SIP); *proposed* measures for federal 1-hour standard are measures that will be adopted and implemented by the 1999 smog season. P*roposed* measures for federal eight-hour standard are measures that are proposed but will not necessarily be in effect before 1999. For state requirements, *proposed* measures are measures for which the district has plans to adopt a rule. *Contingency* measures are used to satisfy federal mandates. *Study* measures are those that require additional investigation before a commitment is

made to adopt them; and *deleted* measures have been found to be infeasible and removed from consideration. Measures which are not applied toward federal mandates are listed as not applicable *(N/A)* in columns 4 and 5.

4.3 EMISSION REDUCTION OVERVIEW

Table 4-2 summarizes the estimated emission reductions expected from the adopted and proposed emission control measures from Table 4-1 (Federal 1-hour and Federal 8-hour) that will be credited towards federal mandates. For estimated emission reductions from other proposed measures, see the 1991 AQAP. Emission reductions from the transportation control measures are summarized in Chapter 5. As can be seen from this summary, for those measures under local authority, the largest ROG emission reductions result from Rule 341, Landfill Gas Emissions (R-GN-1); Rule 331 (R-PG-1), Fugitive Emissions Inspection and Maintenance; Rule 329 (R-SL-3), and Rule 344 (R-PP-1) Petroleum Sumps, Pits, and Well Cellars. It is estimated that in 1999, emission reductions of approximately 7.96 tons per average summer day from onshore sources will result from implementation of all the control measures with an additional 2.56 tons of ROG per day expected to be reduced from OCS sources.

Significant reductions in NO_x emissions are anticipated with implementation of adopted Rule 333 (N-IC-1 and N-IC-3), Stationary Internal Combustion Engines. This measure, however, will most likely result in an increase in ROG emissions because some of the control techniques (such as leaning out fuel mixture) increase ROG emissions while decreasing NO_x. Table 4-2 shows this increase as a negative value in the Adopted ROG Emission Control Measure section. A reduction in NO_x emissions of 2.96 tons per day will occur as a result of both adopted and proposed emission control measures. Another 0.43 tons per day are attributable to OCS sources.

ARB emission control measures for NO_x and ROG are also shown in Table 4-2. ARB-S1, Consumer Products, achieves 1.12 tons per day ROG reduction and ARB's off-road mobile source measures, known as the "M-measures", achieve 0.54 tons per day of NO_x reductions. Although the

off-road measures achieve little for the 1999 attainment year they will provide greater emission reductions for later years. These are state-wide control measures that were incorporated in the 1994 ozone SIP, implemented at the state and federal level.

The remainder of this chapter is devoted to an overview of adopted and proposed control measures. Section 4.4 describes all adopted control measures that are existing APCD rules. Section 4.5 describes proposed control measures that will be adopted before the 1999 smog season and therefore apply to the federal ROP Plan and attainment demonstration. Section 4.6 describes proposed measures that will be adopted after November 1999, and therefore do not apply to the federal ROP Plan or attainment demonstration. However these measures do meet state requirements and serve as Federal contingency measures for the 1-hour standard. Section 4.7 describes measures adopted by the California Air Resources Board.

The following discussion provides a description of emitting activities and the major features of each control measure. Emission reductions from OCS sources are included in the totals, and identified in parenthesis for each applicable control measure. The numbers assigned to each emission control program refer to the number sequence used in the 1991 AQAP. For example, the "R" in R-PG-5 indicates that the measure is a ROG control measure, the PG indicates that this is a Petroleum General measure (for example, as opposed to a solvent measure, tank measure, etc), and the "N" in N-XC-6 denotes a NO_x control measure. Please refer to the 1991 AQAP and Appendix B of this 1998 CAP for further details.

4.4 ADOPTED CONTROL MEASURES

This section describes existing APCD rules, not including those implemented prior to 1990.

4.4.1 Rules 341 and 901 (R-GN-1) Control of Landfill Gas Emissions

1999 Emission Reductions: 0.1032 tons ROG per average summer weekday
2005 Emission Reductions: 0.1861 tons ROG per average summer weekday

Source Characteristics: Landfill gas is produced naturally by the aerobic and anaerobic decomposition of refuse in municipal solid waste disposal sites. This gas consists primarily of carbon dioxide and methane with smaller amounts of non-methane organic compounds (NMOCs). The gas produced from this decomposition also contains small amounts of ROG (normally less than 2%) that migrate through the layers of waste and soil until it reaches the surface and is emitted to the atmosphere.

Rule Description: Rule 341 implements the Emission Guidelines (EG) for Municipal Solid Waste Landfills (40 CFR 60 Cc). Rule 901 adopted the New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills (40 CFR 60 WWW) by reference. These regulations require landfills with waste design capacities exceeding 2.5 million megagrams (2.75 million tons) and estimated emissions greater that 50 megagrams (55 tons) per year of NMOC to control gas emissions by installing a landfill gas collection and disposal system.

Schedule: Rule 341 was adopted in 1997 with full implementation in 2001. Rule 901 was adopted in 1996 with full implementation required by December 1998.

4.4.2 Rule 331 (R-PG-1) Fugitive Emissions Inspection and Maintenance

1999 Emission Reductions: 2.3689 tons ROG per average summer weekday
2.4037 tons ROG per average summer weekday OCS
2005 Emission Reductions: 1.8981 tons ROG per average summer weekday
2.4037 tons ROG per average summer weekday OCS

Source Characteristics: The operation of gas and crude oil production and processing facilities requires a large number and variety of components such as pumps, compressors, flanges, fittings, valves, pressure relief valves and other components. In the course of operation, these components can leak process fluids and gases. For most facilities, the actual percentage of leaking components is small; however, due to the large number of components used at such facilities, the resulting emissions of reactive organic gases (ROG) are significant.

Rule Description: Rule 331 is complex. Briefly, it requires the periodic inspection of devices such as pressure relief valves, pump seals, compressor seals, and connections. It also requires that components found to be leaking be repaired within specified time periods. At the time of replacement and repair, certain components are required to be replaced with components that do not leak or leak less. Rule 331 was revised consistent with the ARB's "Determination of Reasonably Available Control Technology for Control of Fugitive Emissions of Volatile Organic Compounds from Oil and Gas Production and Processing Facilities," (December, 1992).

Schedule: Rule 331 was adopted in December 1991 with full implementation in 1992. OCS implementation occurred during 1995.

4.4.3 Rule 316 (R-PM-1, R-PM-2, R-PM-3) Storage and Transfer of Gasoline

1999 Emission Reductions: 0.3258 tons ROG per average summer weekday
2005 Emission Reductions: 0.5614 tons ROG per average summer weekday

Source Characteristics: Rule 316 limits emissions from gasoline bulk plants and dispensing facilities. *Gasoline bulk plants* are facilities that transfer gasoline into delivery trucks for distribution to motor vehicle fueling facilities (gas stations). In the process of gasoline transfer, vapors are displaced into the atmosphere, either when bulk plant tanks are loaded, or when trucks are loaded from the bulk plant storage tanks.

Gasoline dispensing facilities produce emissions in two ways. During the loading of gasoline storage tanks, gasoline vapors are displaced with gasoline and if unrestricted, are released to the atmosphere. A vapor recovery system to control these emissions is called "Phase I Vapor Recovery." Second, during vehicle refueling, gasoline vapors are displaced with gasoline in vehicle gas tanks and escape into the atmosphere. The control of these vapors is referred to as "Phase II Vapor Recovery."

Rule Description: The APCD revised its gasoline storage and dispensing rule during July, 1990. This revision deleted the bulk plant exemption for most of the bulk plants in the county. Prior to the rule change, bulk plants with a daily throughput of 20,000 gallons or less or an annual throughput of 3,000,000 gallons or less had been exempt from Rule 316. The July, 1990 revision deleted this exemption effective January, 1992.

The July, 1990 revision also changed the exemption limits for dispensing facilities subject to Phase I and Phase II vapor recovery. Prior to the revision, retail facilities with tanks larger than 250 gallons were required to have Phase I and II Vapor Recovery. The July, 1990 revision changed this exemption from retail to retail and non-retail dispensing facilities. This modification resulted in the application of Phase I and II to a substantial number of previously uncontrolled facilities.

Schedule: Rule 316 was adopted in November 1990. The rule revision required full implementation by 1992.

4.4.4 Rule 344 (R-PP-1) - Petroleum Sumps, Pits and Well Cellars

1999 Emission Reduction: 0.8518 tons ROG per average summer weekday
1999 Emission Reduction: 0.0049 tons ROG per average summer weekday OCS
2005 Emission Reductions: 0.9293 tons ROG per average summer weekday
2005 Emission Reductions: 0.0142 tons ROG per average summer weekday OCS

Source Characteristics: Sumps, pits and well cellars are open impoundments, usually in the ground, although some are located on platforms such as offshore oil rigs. When in use, they contain a combination of crude oil and water. There are three main types of sumps. *Primary sumps* hold liquid from oil production wells or a field gathering system. A *secondary sump* holds the oily water from a previous separation process, and a *tertiary sump* holds wastewater that has undergone secondary separation or the equivalent. Uncontrolled sumps emit ROG vapors as a consequence of evaporation of reactive organic compounds from the surface.

Rule Description: Rule 344 reduces emissions from petroleum sumps, pits and well cellars. The rule prohibits the use of primary sumps and pits. It also requires owners or operators of post-primary sumps and pits with a surface area of greater than 1000 square feet to install controls to reduce the emissions of ROG into the atmosphere by at least 80 percent. Choices for control include replacing the sump or pit with a tank, rigid and flexible floating covers, and fixed covers in combination with vapor recovery. The rule also requires owners and operators to prevent the buildup of crude oil in well cellars. This encourages proper maintenance of components at the well head in order to avoid repeated pumping of crude oil from well cellars.

Schedule: Rule 344 was adopted in November 1994 with full implementation required by October 1997.

4.4.5 Rule 346 (R-PP-9) Loading of Organic Liquid Cargo Vessels

1999 Emission Reduction: 0.0555 tons ROG per average summer weekday
2005 Emission Reductions: 0.0312 tons ROG per average summer weekday

Source Characteristics: A variety of vessels are used to transport organic liquids, primarily crude oil, including marine tankers, rail tank cars, and tanker trucks. ROG emissions are generated during vessel loading or unloading as the organic liquid displaces vapors in the transport vessel (loading) or storage tank (unloading). Emissions are also caused by spillage. This measure affects the loading of tanker trucks with crude oil at production facilities. Emissions from the loading and unloading of

other vessels such as marine tankers and from products such as gasoline, are covered by other APCD rules.

Rule Description: Rule 346 requires submerged filling of the transfer vessel (as opposed to "splash" loading), a vapor recovery system compatible with the loading facility, and an overfill protection system. This has a design efficiency of 90% in reducing ROG emissions.

Schedule: Rule 346 was adopted in October 1992 with full implementation required by 1995.

4.4.6 Rule 343 (R-PT-1) Petroleum Storage Tank Degassing.

1999 Emission Reduction: 0.0000 tons ROG per average summer weekday
2005 Emission Reductions: 0.0000 tons ROG per average summer weekday

Source Characteristics: Tanks containing liquid petroleum products must be opened periodically for various purposes such as cleaning to prevent the buildup of sludge that can affect the quality of the stored product, the capacity of the tank, and the ease of removing product from the tank. ROG emissions result from venting empty tank vapors using an exhaust fan. Venting is required so that maintenance personnel can safely enter the tank for cleaning. Tanks are opened every 3 to 5 five years depending on the size and use of the tank.

Rule Description: Rule 343 requires recovery or control of vapors that would otherwise be vented to the atmosphere during tank degassing operations for certain tanks.

Schedule: Rule 343 was adopted in December 1993, with full implementation required by 1994.

4.4.7 Rule 325 (R-PT-2) Crude Oil Production and Separation.
Rule 326 (R-PT-2) Storage of Reactive Organic Compound Liquids.

1999 Emission Reduction: 0.1161 tons ROG average summer weekday
1999 Emission Reduction: 0.0108 tons ROG average summer weekday OCS
2005 Emission Reductions: 0.0737 tons ROG per average summer weekday
2005 Emission Reductions: 0.0140 tons ROG per average summer weekday OCS

Source Characteristics: Fixed-roof petroleum storage tanks and wastewater separators emit ROG, H_2S and other toxic pollutants from fixtures such as pressure vacuum relief valves (PVRV) and unsealed openings. Disturbances, such as filling and temperature fluctuations, result in emissions.

The estimated control efficiency of a floating roof versus an uncontrolled fixed-roof tank is 90%. Several technologies improve the control efficiencies achievable from both kinds of tanks. These include submerged fill, sealed roofs, and PVRVs. Also, carbon adsorption, thermal oxidation, and vapor recovery systems can increase control efficiency to above 95%. Secondary seals on floating roof tanks can improve control efficiency to 95%.

Rule Description: Rule 325 requires several relatively complex changes. In general, Rule 325 requires improved vapor control on tanks and wastewater separators that were previously exempt under APCD rules. Rule 326 applies to organic liquid storage tanks that are not used for crude oil and natural gas production and separation, and is modeled after Ventura County Rule 71.2.

Schedule: Rule 325 was adopted in January 1994, with full implementation required by 1996. Rule 326 was adopted in December 1993, with full implementation required by 1995.

4.4.8 Rule 323 (R-SC-1) Architectural Coatings

1999 Emission Reduction: 0.1168 tons ROG per average summer weekday
2005 Emission Reductions: 0.1222 tons ROG per average summer weekday

Source Characteristics: During the painting of structures, ROG emissions are released from paints and thinners. In addition, some toxic compounds, specifically benzene, toluene, and xylene are also emitted. Due to the small scale and infrequent nature of architectural coating operations, emissions from this category of sources are difficult to control by addition of control equipment. Reformulation of the coatings with water or low solvent bases is currently the most practical and efficient way to reduce ROG emissions from these sources.

Rule Description: Rule 323 limits the amount of ROG per liter in various architectural coatings that may be supplied, sold, offered for sale, applied, solicited for application, or manufactured within Santa Barbara County. The ROG content varies depending on coating application (e.g., primers, enamels, and stains).

Schedule: Rule 323 was adopted in February 1990 with full compliance required by 1994.

4.4.9 Rule 330 (R-SC-2) Surface Coating of Metal Parts and Products

1999 Emission Reduction: 0.1649 tons ROG per average summer weekday
2005 Emission Reductions: 0.1774 tons ROG per average summer weekday

Source Characteristics: These coatings are applied to metal products to provide protection from environmental elements and improve appearance. The coating process generally involves several steps, including surface preparation, base and topcoat application, and clean-up. Evaporative ROG solvent emissions occur from the application and drying of the coating, the use of reduction and clean-up solvents, and from unused coating and solvent products stored at the facility.

Rule Description: Rule 330 establishes limits on the ROG content of solvents used in metal parts and products surface coatings. The ROG content varies depending on the type of coating application (e.g., primer, topcoat, rust preventers). Rule 330 is consistent with the ARB's "Draft

Proposed Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Metal Parts and Products Coating Operations," (June 1992).

Schedule: Rule 330 was adopted in November 1990 with full implementation required by 1992.

4.4.10 Rule 337 (R-SC-2) Surface Coating of Aircraft or Aerospace Vehicle Parts and Products.

Emission Reduction: Please see emission reductions listed under Rule 330, (also R-SC-2) above.

Source Characteristics: Coatings are applied to aircraft and aerospace products to provide protection from environmental elements, reduce drag resistance, and improve appearance. The coating process generally involves several steps, including surface preparation, base and topcoat application, and clean-up. Evaporative ROG solvent emissions occur from the application and drying of the coating, the use of reduction and clean-up solvents, and from unused coating and solvent products stored at the facility.

Rule Description: Rule 337 establishes limits on the ROG content of solvents used in aircraft or aerospace vehicle parts and products surface coatings. The ROG limits vary depending on the type of coating (e.g., primer, topcoat, rust preventers). Rule 337 is consistent with the ARB's "Draft Proposed Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Metal Parts and Products Coating Operations," (June 1992).

Schedule: Rule 337 was adopted in July 1990 with full implementation required by 1992.

4.4.11 Rule 339 (R-SC-4) Motor Vehicle and Mobile Equipment Coating Operations.

1999 Emission Reduction: 0.5370 tons ROG per average summer weekday
2005 Emission Reductions: 0.5929 tons ROG per average summer weekday

Source Characteristics: ROG emissions are released during the use and application of automobile refinishing products. In addition, some toxic compounds may be emitted. The sources of ROG emissions affected by this control measure are automobile body repair and paint shops, automobile dealers, "do-it-yourselfers", and illegal operators commonly known as "wildcatters". Product manufacturers and their representatives are also subject to provisions of the control measures related to product formulation.

Rule Description: Rule 339 requires the use of low ROG coatings and the use of an application method that reduces over-spray (increases transfer efficiency) by at least 65%. Add-on exhaust control equipment, such as afterburners or carbon adsorbers, may be used to attain an equivalent amount of emissions reduction. The add-on equipment must capture at least 90% of the emissions generated, and reduce these emissions by at least 95%. Rule 339 was based on ARB's "Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Automotive Refinishing Operations," which was approved on January 8, 1991.

Schedule: Rule 339 was adopted in November 1991 with full implementation required by 1996.

4.4.12 Rule 351 (R-SC-5) Surface Coating of Wood Products.

1999 Emission Reduction: 0.0070 tons ROG per average summer weekday
2005 Emission Reductions: 0.0194 tons ROG per average summer weekday

Source Characteristics: Coatings applied to wood products usually contain a high percentage of volatile ROG bearing solvents that are used as carriers for binders, sealers, pigments, and adhesives. ROG emissions occur during coating application, drying, or cleaning of application equipment. Sources affected by a wood products coatings rule would typically be household and office furniture manufacturers. It is assumed that any wood furniture coating in Santa Barbara County occurs at small wood refinishing shops or retail stores.

Rule Description: Rule 351 requires the use of low ROG wood coatings products used or sold in Santa Barbara County. ROG limits vary depending on the type of application (e.g., stains, fillers, and coatings).

Schedule: Rule 351 was adopted in August 1993 with full implementation required by 1999. A modification of the rule was completed in August 1998 to delay final implementation to 2005. The impacts of this modification on the emission reductions are minimal and are included with the emission reductions for the control measure.

4.4.13 Rule 321 (R-SL-2) Control of Degreasing Operations.

1999 Emission Reduction: 0.0592 tons ROG per average summer weekday
2005 Emission Reductions: 0.0633 tons ROG per average summer weekday

Source Characteristics: Solvent degreasing is practiced throughout Santa Barbara County in many locations, mainly in operations such as automotive repair shops, oil well field operations, and aerospace and electronic industries. Degreasing precedes operations such as painting, plating, repair, assembly, and machining; it is normally done using synthetic solvent or petroleum-based solvent in which objects to be cleaned are exposed to the solvent or the solvent vapor in tanks, trays, drums, or other containers. Solvent emissions containing ROG can occur due to direct evaporation from tanks or spills, and by evaporation of small amounts of liquid solvent remaining in cracks, crevices, and indentations, or remaining as a thin surface film after removal of the cleaned part from the degreasing area.

Rule Description: Rule 321 contains a number of provisions that reduce ROG emissions from degreasing operations. Rule 321 complies with the "Draft Proposed Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Organic Solvent Cleaning/Degreasing Operations," which was approved by the state's Technical Review Group, Solvents Committee, during July of 1991. Rule 321 was revised in 1997 to correct USEPA noted rule deficiencies. These revisions did not change the emission reductions expected from this rule.

Schedule: Rule 321 was adopted in July 1990 with full implementation required by 1991. Rule 321 was revised in 1997 but did not affect implementation.

4.4.14 Rule 329 (R-SL-3) Cutback and Emulsified Asphalt Paving Materials.

1999 Emission Reduction: 0.8455 tons ROG per average summer weekday
2005 Emission Reductions: 0.9042 tons ROG per average summer weekday

Source Characteristics: Asphalt is used in paving and roadway maintenance. The general types of asphalt include: cutback asphalt, road oils, paving asphalt, and emulsified asphalt. Cutback asphalt contains a relatively large amount of petroleum solvents to keep the asphalt pliable. Road oils are similar to cutback asphalt, except the petroleum solvents used are much less volatile, and require longer to cure. Paving asphalt relies on heat to keep the asphalt pliable for application. Finally, in emulsified asphalt, water and some limited amount of petroleum solvents in an emulsion are used to keep the asphalt pliable for application. The petroleum solvents contain ROG that evaporates as the asphalt cures. The asphalt contains higher and more volatile solvents and emits more ROG than other types of asphalt.

Rule Description: Rule 329 lowered the permissible ROG content of asphalt, and expanded the prohibition of cutback asphalt to include residential (driveway) and commercial (parking lot) uses.

Schedule: Rule 329 was adopted in February 1992 with full implementation required by 1992.

4.4.15 Rule 349 (R-SL-5) Polyester Resin Operations.

1999 Emission Reductions: 0.0023 tons ROG per average summer weekday
2005 Emission Reductions: 0.0025 tons ROG per average summer weekday

Source Characteristics: The production of reinforced plastic materials through the process of combining polyester resin/styrene mixtures and glass fibers results in the release of styrene, a photochemically reactive compound, to the atmosphere. The potential for ROG emissions from fiberglass fabrication varies with the manner in which the resin is mixed, poured, manipulated, and cast. Sources of emissions include ovens (where the fiberglass is cured) and spray booths or other areas where the resin is applied. Activities using polyester resin/styrene mixtures include boat building and repair, as well as the manufacture of synthetic marble, spas/hot tubs, surfboards, bathroom fixtures, panels, and swimming pools.

Rule Description: Rule 349 follows ARB's "Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Polyester Resin Operations," (January 1991). Rule 349 requires the use of low ROG resins, or the use of closed-mold systems and high transfer efficiency spray guns; or (2) the use of add-on control devices that can achieve an efficiency as effective as the control efficiency of complying resins.

Schedule: Rule 349 was adopted in April 1993 with full implementation required by 1994.

4.4.16 Rule 354 (R-SL-7) Graphic Arts - Letter/Offset Printing.

1999 Emission Reduction: 0.0042 tons ROG per average summer weekday
2005 Emission Reductions: 0.0045 tons ROG per average summer weekday

The federal clean air act required adoption of this rule before November 15, 1992 because the USEPA established control technology guidelines for the subject source category. Thus, this rule is categorized as a RACT catch-up. According to the act, the emission reductions should have occurred before November 1990 and thus are subtracted from the emission inventory baseline and do not count towards the mandated ROP reductions.

Source Characteristics: This control measure addresses emissions from graphic arts operations, including letterpress, offset lithography, gravure, screen printing and flexography. The primary

sources of ROG emissions from graphic arts operations in Santa Barbara County are from letterpress and lithography. In letterpress, image areas are raised relative to the blank or non-image areas, similar to the keys on a typewriter. Ink is then applied to the raised area and then transferred directly to the paper or other printing substrate. In offset lithography (or printing), the image and non-image surface of the printing plate are on the same plane (no raised surfaces). The image area of the plate is made of a material that is ink-receptive and water repellant, whereas the non-image area is of material which can be made water-receptive. The image plate is wrapped around a cylinder (the plate cylinder) and is turned. In every revolution, the plate is wetted with an aqueous solution (called a fountain solution) by a dampening system. The ink is then applied to the wetted plate, adhering only to the image area. The ink is transferred, or "offset," to a rubber-covered blanket cylinder and the blanket cylinder transfers the image to the print surface. ROG emissions from printing processes occur mainly from the evaporation of solvents in inks, dampening solutions, and cleaning solutions.

Control Measure Description: The rule limits ROG emissions from printing operations. The rule includes the following provisions: (1) limitations on the ROG content of inks, fountain solutions, and solvents; (2) required use of closed containers for the disposal of cloth or paper used for cleaning; and (3) restrictions on the application, storage, and disposal of solvent. In lieu of the above requirements, an approved control system may be operated that will achieve equivalent levels of control. The rule is based on ARB's "Draft Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Graphic Art Operations." This rule is classified as a "RACT catch-up" by the USEPA and cannot be applied to the rate-of-progress emission reductions in 1999 or 2005.

Schedule: Rule adoption occurred in June 1994 with full implementation required by 1995. The adopted rule applies to rotogravure and flexographic operations. Letterpress and lithographic operations will be addressed in a revised rule once the USEPA finalizes Control Technology Guidelines for these emission sources.

4.4.17 Rule 333 (N-IC-1, N-IC-3) Control of Emissions from Internal Combustion Engines.

1999 Emission Reduction: 0.9721 tons NO_x per average summer weekday
1999 Emission Reduction: -0.1488 tons ROG per average summer weekday
1999 Emission Reduction: 0.3394 tons NO_x per average summer weekday OCS
1999 Emission Reduction: -0.0014 tons ROG per average summer weekday OCS
2005 Emission Reduction: 0.8624 tons NO_x per average summer weekday
2005 Emission Reduction: -0.1367 tons ROG per average summer weekday
2005 Emission Reduction: 0.3669 tons NO_x per average summer weekday OCS
2005 Emission Reduction: -0.0014 tons ROG per average summer weekday OCS

Source Characteristics: This rule is directed at controlling NO_x emissions from gas-fired (N-IC-1) and diesel-fired (N-IC-3) internal combustion engines. Gas-fired combustion is typical of piston type engines with spark ignition. There are primarily two different types of gas-fired engines: lean burn and rich burn. Diesel engines operate differently in that the combustion process is not initiated until the compression stroke where fuel is injected into the combustion chamber. Upon injection, the diesel fuel mixes with the hot air and burns. Both types of engines are typically used to drive rotating equipment in remote locations, and range in size from less than 50 to over 1,000 BHP.

Rule Description: Rule 333 affects both gas-fired and diesel-fired internal combustion engines with a horsepower rating greater than or equal to 50 BHP by requiring at least 80% reductions in NO_x emissions. These reductions can be accomplished by a number of control options, including switching to electric motors, installing selective and non-selective catalytic reduction, pre-stratified charge systems, and retarding diesel injection timing.

Schedule: Rule 333 was adopted in December 1991, with full implementation in 1994. OCS implementation occurred in 1995. A revision to Rule 333 is scheduled for 1999 with implementation in 2001 (see Section 4.6.1).

4.4.18 Rule 342 (N-XC-4, N-XC-5, N-XC-6) Control of NO_x from Boilers, Steam Generators and Process Heaters.

1999 Emission Reductions: 0.2385 tons NO_x per average summer weekday
1999 Emission Reductions: 0.0125 tons NO_x per average summer weekday OCS
2005 Emission Reductions: 0.2061 tons NO_x per average summer weekday
2005 Emission Reductions: 0.0125 tons NO_x per average summer weekday OCS

Source Characteristics: In Santa Barbara County, commercial and industrial boilers, steam generators, and process heaters are used to produce heat, steam and hot water for industrial, institutional and commercial facilities. These units emit significant amounts of oxides of nitrogen (NO_x), which can react in the atmosphere to from ozone and particulate matter.

Rule Description: Rule 342 affects boilers, steam generators, and process heaters with rated heat inputs of greater than or equal to 5 million Btu per hour. For units with annual heat inputs greater than or equal to 9 billion Btu's per year, NO_x emission levels shall not exceed 30 parts per million by volume (ppmv) when operated on natural gas and 40 ppmv when operated on oil. For units with annual heat inputs of less than 9 billion Btu's per year, the rule requires boilers to be operated at or below 3 percent excess oxygen, or be tuned at least once per year, or be operated in compliance with the emission levels specified above.

Schedule: Rule 342 was adopted in March 1992, with full implementation in 1996.

4.4.19 Rule 359 (N-XC-8) Petroleum Flares and Relief Gas Oxidizers.

Emission Reductions: This rule is primarily a SO_x emission control rule. While we expect ROG and NO_x emission reductions, they are difficult to quantify.

Source Characteristics: Flaring (or thermal oxidizing) is a combustion process used to destroy reactive organic gases (ROG) in a high-temperature flame. In the oil and gas production industry,

flares are used to oxidize the extremely hazardous hydrogen sulfide (H_2S) present in a sour gas stream to sulfur dioxide (SO_2) and water prior to its release. Flares are also used to dispose of excess produced gas that cannot be consumed either at the operation or elsewhere.

Rule Description: The rule exclusively affects oil and gas production, refining and transportation industries. It relieves operators from some of the sulfur control requirements of District Rule 311, particularly those that occur during emergency flaring, while requiring additional emission controls during planned flaring. It requires flare operators to minimize flare gas volume, use technology standards and limit fuel sulfur content for OCS sources to existing prohibitory rule limits.

Schedule: Rule 359 was adopted in June 1994, with full implementation in 1999.

4.5 PROPOSED CONTROL MEASURES - FEDERAL ROP AND ATTAINMENT DEMONSTRATION.

Proposed control measures are emission control programs that have been developed and which the APCD has committed to implement, but that have not yet adopted as rules. The following measures will be adopted by the 1999 smog season and are included as measures to achieve the Federal 1-hour standard.

4.5.1 Rule 353 (R-SL-9) Control of ROG Emissions from Adhesives and Sealants.

1999 Emission Reduction: 0.4228 tons of ROG per average summer weekday
2005 Emission Reductions: 0.4523 tons ROG per average summer weekday

Source Characteristics: Adhesive and sealant ROG emissions result from evaporation of solvents during transfer, drying, surface preparation, and cleanup operations. These solvents are the media used to make the adhesive or sealant soluble material so that it may be applied. The solvent is also used to completely wet the surface to provide a stronger bond. In plastic pipe bonding, the solvent

dissolves the polyvinyl chloride pipe and reacts with the pipe to form a bond. Solvents used to clean the surface before bonding and to clean the application equipment also contribute to emissions.

Rule Description: This control measure proposes to reduce ROG emissions by adopting a Rule to set ROG limits for adhesives, adhesive primers, sealants, sealant primers and preparation and cleanup solvents. These limits will be based on the limits found in the Draft RACT/BARCT Determination and limits in other air districts' adhesives rules. As an alternative to low-ROG materials, the rule could allow for add-on control equipment. The Rule should also include a prohibition of sale of materials that do not comply with the ROG limits.

Rule Schedule: The rule is scheduled for adoption in April 1999 with Implementation by June 1999.

4.5.2 Rule 352 (N-XC-1, N-XC-2, N-XC-3) - Residential and Commercial Space and Water Heaters.

1999 Emission Reduction: 0.0047 tons of NO_x per average summer weekday
2005 Emission Reductions: 0.0265 tons NO_x per average summer weekday

Source Characteristics: Residential type water heaters are used to supply hot water for use in residences and businesses. Water is heated in these devices by controlled external combustion of utility grade natural gas, or liquefied petroleum gases (LPG). This rule will apply to residential type water heaters rated up to 75,000 Btu/hr gross heat input duty. The NO_x emissions from the devices currently in use averages approximately 0.1 lb per million Btu (MMBtu) of net heat output. Residential and commercial space heaters are used to provide space heating of buildings, warehouses, and other structures. This measure will apply to new fan-forced draft space heaters that burn natural gas, or liquified petroleum gases (LPG) rated up to 175,000 Btu/hr gross heat input duty. Typical NO_x emission rates from existing space heaters already in place range up to 0.080 lb

per million Btu (MMBtu) gross heat input (0.13 lb/MMBtu of useful heat output assuming 60% recovery efficiency).

Rule Description: This control measure is included to meet the requirements for all feasible measures under the California Clean Air Act. Although the emission reductions round down to 0.0000 when expressed in tons per day, the measure is still cost effective since the technology is standard equipment available in California for no additional cost to the purchaser. Rule 352 will require any new residential-type water heaters and space heaters to meet the same NO_x emission standards as required in the South Coast AQMD and Ventura APCD. Space heaters and water heaters that comply with these specifications are currently manufactured and available and predominate in the California market.

Rule Schedule: The rule is scheduled for adoption in April 1999 with Implementation by June 1999.

4.6 CONTINGENCY MEASURES (Post 1999).

The following proposed control measures are scheduled for implementation after the November 15, 1999, federal 1-hour standard attainment deadline for "serious" non-attainment areas. Therefore, these measures do not apply to the federal 1-hour standard, but meet state requirements and serve as contingency measures for the federal 1-hour standard and proposed measures to meet the federal 8-hour standard and State 1-hour ozone standard.

4.6.1 Revision to Rule 333 (N-IC-1, N-IC-3) - Control of Emissions from Reciprocating Internal Combustion Engines

1999 Emission Reduction: 0.0000 tons of NO_x per average summer weekday
1999 Emission Reduction: 0.0000 tons of NO_x per average summer weekday OCS
2005 Emission Reductions: 1.3656 tons NO_x per average summer weekday

2005 Emission Reduction: 0.0000 tons of NO_x per average summer weekday OCS

Source Characteristics: Reciprocating internal combustion engines generate power by combusting a mixture of fuel and air. Combustion in an engine is generated by either a spark plug or compression heating. Operators use stationary engines to power electrical generators, pumps, compressors, rock crushers, cranes, blowers, fans, and other devices. Industries using internal combustion engines include: agriculture, military, water transport, oil and gas pipelines, oil and gas production, general industrial (including construction), and electrical power generation. Engine fuel can be Public Utility Commission-quality natural gas, gasoline, diesel, liquid petroleum gas, landfill gas, digester gas, process gas, methanol, waste gas (e.g., from degassing), other hydrocarbon fuels, and combinations thereof.

Rule Description: The District is studying different control options for the revised Rule 333. The California Air Resources Board expects to complete its guidance document on RACT/BARCT for stationary internal combustion engines in the near future. The final form and content of proposed Rule 333 revision will likely depend on this guidance. Please refer to the control measure working papers in Appendix B for more details.

Rule Schedule: The rule is scheduled for adoption in April 1999 with implementation scheduled for April 2001.

4.7 CALIFORNIA AIR RESOURCES BOARD CONTROL MEASURES

The ARB has adopted regulations that reduce pollution from consumer products and mobile sources. The following sections summarize the ARB control measures emission reductions from these adopted control measures are creditable towards the federal 1-hour and 8-hour standards. The mobile source control measures, or "M" measures, are presented as in California's 1994 State Implementation Plan (SIP) for Ozone, adopted by the Air Resources Board (ARB or Board) on November 15, 1994. Only measures that apply to Santa Barbara County are discussed.

4.7.1 ARB R001 - California Diesel Fuel Regulations (1994 CAP ARB-S4)

1999 Emission Reduction: 0.0076 tons ROG per average summer weekday
1999 Emission Reduction: 0.0835 tons NO_x per average summer weekday
1999 Emission Reduction: 0.0000 tons ROG per average summer weekday OCS
1999 Emission Reduction: 0.0000 tons NO_x per average summer weekday OCS
2005 Emission Reduction: 0.0605 tons ROG per average summer weekday
2005 Emission Reduction: 0.7064 tons NO_x per average summer weekday
2005 Emission Reduction: 0.0047 tons ROG per average summer weekday OCS
2005 Emission Reduction: 0.0677 tons NO_x per average summer weekday OCS

Source Characteristics: There is an extensive variety of diesel/distillate oil fuel combustion processes subject to this state regulation. Stationary sources include asphalt heating and other in-process fuel use, such as dryers, furnaces and kilns. Mobile sources include railroad locomotives, heavy-duty construction and farm equipment, and refrigeration units on trucks.

Control Measure Description: The ARB Diesel Fuel Regulations apply to sulfur and aromatic content of fuel and result in both ROG and NO_x emission reductions. An increase in CO emissions of 0.50 tons per day is expected to occur in the short term, primarily from heavy duty non-farm equipment, until the regulation is more fully implemented (by year 2000).

Schedule: The regulations (Title 13, California Code of Regulations, sections 2281-2282) were adopted by ARB in November 1988. Implementation of the Diesel Fuel Regulations began in October 1993.

4.7.2 ARB R002 - California Phase II Reformulated Gasoline Regulations (1994 CAP ARB-S5)

1999 Emission Reduction: 0.4005 tons ROG per average summer weekday
1999 Emission Reduction: -0.0091 tons NO_x per average summer weekday
1999 Emission Reduction: 0.0400 tons ROG per average summer weekday OCS
1999 Emission Reduction: -0.0003 tons NO_x per average summer weekday OCS
2005 Emission Reduction: 0.4240 tons ROG per average summer weekday
2005 Emission Reduction: -0.0095 tons NO_x per average summer weekday
2005 Emission Reduction: 0.0401 tons ROG per average summer weekday OCS
2005 Emission Reduction: -0.0004 tons NO_x per average summer weekday OCS

Source Characteristics: Mobile gasoline combustion sources (other than on-road vehicles) affected by the regulations include heavy duty farm equipment, light duty industrial equipment (i.e. forklifts) and recreational vehicles such as motorcycles and All Terrain Vehicles.

Control Measure Description: The reformulated gasoline regulations require modifications to physical properties and chemical composition of gasoline . Reduced vapor pressure has a direct effect on evaporative ROG emissions. Reformulated fuel composition will lower exhaust and evaporative emissions. Of particular importance is the lowering of the aromatic and olefinic fractions of gasoline because these chemical species are the most photochemically reactive in the atmosphere after evaporation. The content of benzene, an aromatic hydrocarbon component of gasoline and a toxic compound, will be specifically reduced. A further air quality benefit is realized by requiring reductions in fuel sulfur content, which results in improved catalytic converter efficiency in reducing ROG, NO_x and CO emissions.

Schedule: The regulations (Title 13, California Code of Regulations, sections 2260-2272) were adopted by ARB in November 1991. Implementation of the Reformulated Gasoline regulations began in March 1996.

4.7.3 ARB R003 - CONSUMER PRODUCTS (1994 CAP ARB-S1)

1996 Emission Reduction: 1.1198 tons ROG per average summer weekday
2005 Emission Reductions: 2.2438 tons ROG per average summer weekday

Source Characteristics: Many consumer products contain ROG which either evaporate or are propelled into the air. The California Air Resources Board (ARB) is in the process of regulating several of these products, particularly antiperspirants and deodorants, air fresheners, automotive windshield wiper fluids, bathroom and tile cleaners, charcoal lighter material, engine degreasers, floor polishes, furniture maintenance products, general purpose cleaners, glass cleaners, hair mousse, hair spray, hair styling gels, aerosol insect repellents, laundry pre-wash products, nail polish removers, oven cleaners, and shaving creams. In the future, ARB plans to regulate aerosol paints.

Control Measure Description: The effect of the consumer product regulation is to limit, and in some cases phase out, the use of ROG in consumer products listed above.

Schedule: The ARB adopted Consumer Products regulations (Title 17, California Code of Regulations, sections 94500 - 94517) in 1989, 1990 and 1992 with full implementation by 1999.

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

1999 Emission Reduction: 0.3976 ROG tons per average summer weekday
1999 Emission Reduction: -0.0230 NO_x tons per average summer weekday
2005 Emission Reduction: 0.6023 ROG tons per average summer weekday
2005 Emission Reduction: -0.0447 NO_x tons per average summer weekday

Source Characteristics: Utility engines include a large and diverse range of portable equipment powered by gasoline, diesel or alternate fuel two and four stroke air or liquid cooled engines. Utility

engines are defined as engines designed for powering residential and commercial lawn and garden equipment and implements, and also include small horsepower electric generators, pumps, compressors and welding machines. ARB has classified utility equipment in two ways: (1) hand-held equipment; and (2) non-hand-held equipment. Examples of hand-held equipment include chain saws, leaf blowers, and string trimmers. Walk-behind and riding mowers, garden tractors and generators are examples of non-hand-held utility equipment.

Control Measure Description: The utility engine regulations consist of exhaust emission limits, test procedures, standardized emission control system labeling requirements, emission-related component defect warranty provisions and quality-audit and compliance procedures for manufacturers. Exhaust emission standards will be implemented in two tiers for both ARB engine classifications. Tier I hydrocarbon NO_x, CO and PM emission standards apply to new utility engines produced on or after January 1, 1995, and achieve emission reductions through simple engine modifications such as calibrations and component tolerances. More stringent Tier II emission standards apply to new utility engines produced on or after January 1, 1999, and incorporate advanced control technology such as catalytic converters to achieve emission reductions. Farm and construction equipment less than 175 hp preempted from state or local emission regulations by the federal Clean Air Act Amendments of 1990 are not subject to this ARB regulation.

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

4.7.5 ARB R005 - Heavy Duty Off-Road Diesel Engines (1994 CAP ARB-S8)

1999 Emission Reduction: 0.0070 tons ROG per average summer weekday
1999 Emission Reduction: 1.8460 tons NO_x per average summer weekday
2005 Emission Reduction: 0.0238 tons ROG per average summer weekday
2005 Emission Reduction: 2.6703 tons NO_x per average summer weekday

Source Characteristics: Heavy duty off-road diesel engines are used in construction, farming, mining, forestry and industrial equipment. These engines generate significant quantities of NO_x and appreciable ROG and PM emissions. This category does not included locomotives, marine vessels or stationary engines.

Control Measure Description: The regulation applies to new, non-farm engines 175 horsepower (hp) or greater. California is preempted by the Federal Clean Air Act Amendments from adopting regulations for new engines less than 175 hp that power farm or construction equipment. The regulation consists of exhaust emission standards and testing procedures for new 1996 or later diesel cycle engines regardless of fuel used. Exhaust standards for new engines will be implemented in 1996, with a second more stringent set of standards taking effect in 2001. Exhaust standards should be achievable using adapted heavy duty on-road diesel control technology, including injection timing retard, turbocharging, and aftercooling for NO_x and fuel injection and combustion modification for ROG and PM. Potential emission reductions from subject engines of 65 percent for NO_x, 32 percent for ROG and 40 percent for PM could be realized upon full implementation.

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

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

1999 Emission Reduction: 0.1440 ROG tons per average summer weekday
1999 Emission Reduction: 0.0000 NO_x tons per average summer weekday
2005 Emission Reduction: 0.2509 ROG tons per average summer weekday
2005 Emission Reduction: 0.0000 NO_x tons per average summer weekday

Source Characteristics: Off-highway recreational vehicles include off-road motorcycles, all-terrain vehicles (ATVs), golf carts and "specialty" carriers such as personnel carriers and transport vehicles.

Engines consist of two and four stroke configurations and range from 8 horsepower (hp) to 30 hp. Most of the smaller engines are gasoline powered and are relatively simple, although some of the larger engines utilize more advanced designs such as fuel injection and alternate fuels. Some of these vehicles are designed for competition purposes. CO is the primary pollutant emitted from these engines, followed by ROG and a small amount of NO_x emissions.

Control Measure Description: The regulation contains two major provisions: exhaust emission standards for non-competition vehicles and limitations on use of competition-designed vehicles for recreational purposes. Exhaust standards will be required for new 1997 or later non-competition vehicles (ATVs and off-road motorcycles). All new 1997 and later golf carts will have to meet zero-emission standards. All new 1995 and later specialty vehicles less than 25 hp (go-karts) will conform with utility engine emission regulations (see control measure ARB- S3) while those 25 hp or greater will have to comply with the second tier 1999 utility engine standards beginning in 1997. Upon full implementation, this regulation is expected to achieve up to 81% reduction in ROG and 38% reduction in CO from off-highway recreational vehicles. A slight increase (6%) in NO_x emissions could also result.

Schedule: The regulation was adopted by ARB in January 1994 (Title 13, California Code of Regulations, sections 2111-2140) and will be fully implemented in 1999.

4.7.7 ARB-R007 Consumer Products – Aerosol Coatings

1999 Emission Reduction: 0.0501 tons ROG per average summer weekday
2005 Emission Reduction: 0.0532 tons ROG per average summer weekday

Source Characteristics: This category consists of paint, varnish, and related products dispensed from disposable aerosol containers. Emissions from aerosol paints come from the solvents and propellants used in these products, which are primarily ROG.

Control Measure Description: The proposed regulation would establish VOC (ROG) content limits specified for 35 different categories of aerosol paint. The term VOC as used in this description is synonymous with the term ROG as used in the rest of the Clean Air Plan. There are two tiers of standards. The first tier of standards was put in place for January 1, 1996, and the second is slated for December 31, 1999. A special recognition program which would recognize low-VOC aerosol paints is also being explored as a voluntary program that would augment the aerosol paint regulation. Such a program would be used to reward aerosol paints, which achieve early compliance or lower their VOC content below the requirements in the aerosol paint regulation.

To realize additional emission reductions from aerosol paints, technologies that are not currently available will need to be developed and deployed. For example, aerosol paints may eventually be able to be formulated with VOC contents at or near zero, if major breakthroughs in resin technology, non-VOC solvent and propellant systems, and valve design occur. Currently, some "brush-on" paints already have reached VOC levels at or near zero VOC. However, formulating zero VOC aerosol spray paints may pose unique challenges different from those encountered in the development of near-zero VOC "brush- on" paints. Market incentive approaches may also be explored as a vehicle to spur the development of low-and zero-VOC aerosol paints. Market incentive approaches may also be explored as a vehicle to spur the development of low-and zero-VOC aerosol paints. Overall, if the short and long-term measures are implemented, the emissions from aerosol paints will be reduced by approximately 85 percent relative to 2010 uncontrolled emissions. While the cost effectiveness of these measures is not currently known, it is expected that the cost effectiveness will be similar to other measures adopted around the turn of the century. As the measures are developed, the ARB staff will analyze the potential cost impact and provide the information as it becomes available.

Schedule: Adoption in 1996 with implementation in 1996, 1999 and beyond.

4.7.8 M9, M10 - Off-Road Industrial Equipment (Diesel)

2.5 G/BHP-HR NOx; California - Measure M9

2.5 G/BHP-HR NOx; Federal - Measure M10

1999 Emission Reduction: 0.0000 ROG tons per average summer weekday

1999 Emission Reduction: 0.5381 NO_x tons per average summer weekday

2005 Emission Reduction: 0.0000 ROG tons per average summer weekday

2005 Emission Reduction: 0.5381 NO_x tons per average summer weekday

Description of the Category

This category includes off-road diesel equipment, including farm and construction equipment.

Existing Control Program

The ARB has adopted HC, NOx and PM standards for equipment 175 horsepower and above. By 1996, these sources will have to comply with a NOx standard of 6.9 g/bhp-hr. Effective in 2001, the NOx standard for engines 175 to 750 horsepower will be reduced to 5.8 g/bhp-hr. Engine technology used to meet the NOx standard of 5.8 g/bhp-hr will also reduce ROG emissions from post-2001 new engines by 50 percent. The USEPA has sole authority to control new farm and construction equipment less than 175 horsepower, which accounts for 68 percent of the 2010 baseline NOx emissions of the under 175 hp subcategory. The USEPA has adopted a nationwide NOx emission standard of 6.9 g/bhp-hr for compression-ignition (diesel) engines 50 horsepower and greater, to be phased-in beginning in 1997. The measure affects all equipment in this category, including the preempted farm and construction equipment.

Additional Emission Reduction Measures

M9 - 2.5 g/bhp-hr NOx; California

M10 - 2.5 g/bhp-hr NOx; Federal

Transfer of cost-effective on-road diesel engine control technology to new off-road engines will allow most engines to meet more stringent standards in the 2005 and later time frame. That control technology includes improved engine design (especially in fuel/air management and delivery), exhaust gas recirculation, and exhaust gas aftertreatment.

With these technologies, an emission standard for new engines not primarily used in construction or farm equipment of 2.5 g/bhp-hr NOx will be adopted for year 2005 models. This would be a reduction of 64 percent from the new engine emission standard for engines 50 to 175 horsepower, which is being phased-in nationally beginning in 1997. The reduction would be 57 percent from the California 2001 new engine emission standard for engines 175 horsepower or greater. The technology used to meet these standards will also further reduce ROG emissions from post-2005 new engines.

Because over one half of the emissions of engines in this category cannot be regulated by California due to federal preemption, it is necessary that the USEPA also adopt and implement the 2.5 g/bhp-hr NOx standard in the same time frame. Since much off-road equipment is used regionally, including states other than California, adoption of this standard by the USEPA on a nationwide basis is necessary to achieve the emission reductions upon which the plan is predicated.

Responsible Agency: USEPA, ARB

4.7.9 M11, M12 - GAS AND LPG EQUIPMENT 25 - 175 HORSEPOWER

Three-Way Catalyst Technology; California - Measure M11

Three-Way Catalyst Technology; Federal - Measure M12

1999 Emission Reduction: 0.0000 ROG tons per average summer weekday
1999 Emission Reduction: 0.0000 NO_x tons per average summer weekday
2005 Emission Reduction: 0.1944 ROG tons per average summer weekday
2005 Emission Reduction: 0.0981 NO_x tons per average summer weekday

Description of the Category

The category consists of off-road gasoline and LPG equipment greater than 25 horsepower and less than 175 horsepower, including forklifts, pumps, compressors, farm equipment, and construction equipment. The USEPA has the sole authority to control new farm and construction equipment less than 175 horsepower, whose 2010 baseline emissions account for approximately 43 percent of ROG and NOx from this category.

Existing Control Program

The ARB and the USEPA currently have no emission standards for these sources.

Additional Emission Reduction Measures

M11 - Three-Way Catalyst Technology; California

M12 - Three-Way Catalyst Technology; Federal

Many engines in the category are similar to, or derived from, early 1980s automobile engines. Emission standards for new engines not primarily used in construction or farm equipment will be phased-in beginning in 2000, based on use of closed-loop three-way catalyst systems. The catalyst systems are expected to reduce ROG by 75 percent, and NOx by at least 50 percent.

Because over 40 percent of the emissions of engines in this category cannot be regulated by California due to federal preemption, it is necessary that the USEPA also adopt and implement catalyst system technology requirements in the same time frame. Since much equipment in this category is used regionally, including states other than California, adoption of this standard by the USEPA on a nationwide basis is necessary to achieve the emission reductions upon which the plan is predicated.

Responsible Agency: USEPA, ARB

4.7.10 M13 - MARINE VESSELS National and International Emission Standards - Measure M13

1999 Emission Reduction: No reductions claimed
1999 Emission Reduction: No reductions claimed

Description of the Category

Ocean-going marine vessels, and harbor vessels exclusive of those used in recreational activities, are included in this category. Included are all naval and commercial marine vessels like tugs, crew/supply boats, fishing boats, as well as cruise ships, roll-ons/roll-offs (RO-ROs), container ships, and tankers. The marine vessel fleet ranges in power from approximately 500 horsepower to 67,000 horsepower, and is propelled by diesel engines, steam turbines, or gas turbines.

Existing Control Program

The ARB and USEPA currently have no emission standards or operational control measures for these sources although some operational controls have been implemented by local districts.

Additional Emission Reduction Measure

M13 - National and International Emission Standards

Many ocean-going vessels are registered in foreign countries, and most use engines produced outside the U.S. Emissions from new engines used in these vessels can be most effectively reduced by establishing international emission standards, and the USEPA and the International Maritime Organization have begun to address appropriate requirements. The proposed control measure would reduce NOx emissions from new diesel engines used in ocean-going vessels by 30 percent. Assuming a 30 year life expectancy for ocean-going ships, the proposed international standards would result in an overall NOx emission reduction of 10 percent for ocean-going ships in 2010.

Commercial ship traffic control measures can be utilized to further reduce ocean-going ship emissions. Relocation of the Southern California shipping channel to outside the Channel Islands

would reduce the impact of ship emissions in both the Ventura and South Coast Air Basins. Reduction in ship speeds may also reduce ship emissions.

Emission reductions achieved by the proposed ocean-going ship control measures are dependent upon actual ship operations and associated emissions. Uncertainty remains regarding the actual emissions of this previously unregulated source and the emission inventory is under review. It is, however, estimated that the proposed ocean-going ship international engine standards and ship traffic control measures combined could reduce emissions by approximately 25 percent in the year 2010.

Many non-ocean going vessels (captive fleet vessels) use engines derived from heavy-duty truck or locomotive engines, and NOx emissions can be reduced by at least 65 percent by the USEPA establishing emission limits for new engines used in these vessels.

Technology being developed to meet more stringent standards for on-road diesel trucks and locomotives would be used. Assuming a life expectancy of 16 years for the captive fleet, the proposed measure would result in an overall NOx emission reduction of approximately 50 percent in 2010.

Further reductions can be achieved through locally adopted/enforced measures which encourage the use of cleaner/newer engines in nonattainment areas, or provide incentives to reduce emissions at the ports. The degree to which these and other similar approaches can contribute to lower emissions by 2010 has not yet been assessed.

Additionally, as part of USEPA's consultative process on Measure M-13 of the 1994 California ozone SIP, ARB has convened a technical working group which includes the Santa Barbara County APCD to assess the onshore impact of relocating the shipping channel and vessel speed reduction. We will continue to work with ARB and the USEPA through this consultative process to develop viable control measures and to identify any appropriate emission reductions.

Responsible Agency: USEPA/International Maritime Organization, U.S. Coast Guard

4.7.11 M14 - Locomotives National Emission Standards - Measure M14

1999 Emission Reduction: 0.0000 ROG tons per average summer weekday
1999 Emission Reduction: 0.0000 NO_x tons per average summer weekday
2005 Emission Reduction: 0.0000 ROG tons per average summer weekday
2005 Emission Reduction: 0.7454 NO_x tons per average summer weekday

Description of the Category

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

Existing Control Program

The ARB and the USEPA currently have no emission standards for these sources.

Additional Emission Reduction Measure

M14 - National Emission Standards

Section 213 of the federal Clean Air Act directs the USEPA to adopt emission standards applicable to new locomotives and new engines used in locomotives by 1995, and a proposed rulemaking is expected to be published early next year. The ARB plans to take credit for the locomotive emission reductions that will result due to the promulgation of the Section 213 rules by the USEPA.

The ARB expects that as part of the USEPA's Section 213 authority, the USEPA will adopt national emission standards, which are the most stringent, feasible standards possible. Moreover, the ARB anticipates that locomotive engine emission standards will be met primarily through the use of diesel fuel and the transfer of emission control technologies from clean truck engines. The control technology needed to achieve these reductions has not yet been developed commercially; it might

include diesel engine modifications, electronic fuel injection, improved cooling, after-treatment, and/or use of EGR.

The 1994 SIP assumes that the USEPA will adopt a two-tiered national NOx standard for new locomotives, which will decrease the standard on average by 58 percent effective in 2000, and by 67 percent effective in 2005. In addition, the ARB anticipates that the USEPA will propose a national emission standard for remanufactured engines which reduces emissions on average by 33 percent for this class of engines, beginning in 2000.

If the USEPA adopts a different 2005 emission standard than the standard on which the ARB has based its 1994 SIP revisions, the fleet average requirement and reduction assumptions would have to be revisited.

The national Section 213 emission standards for new locomotives and new engines used in locomotives will lead to significant emission reductions throughout the state as newer and lower emitting locomotive engines are purchased and as in-use locomotives are remanufactured. Accordingly, the ARB intends to take credit for a near-term 42 percent NOx reduction by 2005. This reduction level is consistent with the USEPA's published estimates of the emission reduction impact of the phase-in of locomotives meeting the national emission standards to be adopted by the USEPA under its Section 213 standard setting authority. The ARB will also consider operational controls, such as reduced idling and use of California diesel fuel, if, based on the USEPA final rule, additional emission reductions are needed.

Responsible Agency: USEPA, ARB

4.7.12 M16 - Pleasure Craft Nationwide Emission Standards - Measure M16

1999 Emission Reduction: 0.0000 ROG tons per average summer weekday
1999 Emission Reduction: 0.0000 NO_x tons per average summer weekday
1999 Emission Reduction: 0.0000 ROG tons per average summer weekday OCS

1999 Emission Reduction: 0.0000 NO_x tons per average summer weekday OCS
2005 Emission Reduction: 0.0990 ROG tons per average summer weekday
2005 Emission Reduction: 0.0000 NO_x tons per average summer weekday
2005 Emission Reduction: 0.0990 ROG tons per average summer weekday OCS
2005 Emission Reduction: 0.0000 NO_x tons per average summer weekday OCS

Description of the Category

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

Existing Control Program

These sources are currently uncontrolled.

Additional Emission Reduction Measure

M16 - Nationwide Emission Standards

The USEPA has proposed nationwide regulations that would reduce ROG emissions of new outboard and personal watercraft gasoline equipment in this category by 75 percent, with an emission cap for all other watercraft to be phased-in beginning in 1998. In addition, standards of 8.0 g ROG/kw-hr and 6.5 g NOx/kw-hr are being considered by the USEPA with a five year phase-in beginning in 1998 for inboard and stern-drive gasoline engines. Emission reductions will be obtained using carburetor modifications, fuel injection, improved calibration and fueling systems, and possibly aftertreatment. In addition, since 4-stroke engines are significantly cleaner than 2-stroke engine configurations, a usage shift, which is expected, would result in substantial ROG emission reductions. Additional reductions of ROG emissions from current 4-stroke gasoline equipment are expected as well due to advancement in technology.

Responsible Agency: USEPA

4.7.13 Consumer Products – SIP Reductions.

1999 Emission Reduction: 0.0000 tons ROG per average summer weekday
2005 Emission Reduction: 1.2543 tons ROG per average summer weekday

Source Characteristics: Many consumer products contain ROG, which either evaporate or are propelled into the air. The California Air Resources Board (ARB) is in the process of regulating several of these products, namely: antiperspirants and deodorants, air fresheners, automotive windshield wiper fluids, bathroom and tile cleaners, charcoal lighter material, engine degreasers, floor polishes, furniture maintenance products, general purpose cleaners, glass cleaners, hair mousse, hair spray, hair styling gels, aerosol insect repellents, laundry pre-wash products, nail polish removers, oven cleaners and shaving creams. In the future, ARB plans to regulate aerosol paints.

Control Measure Description: This measure is a continuation of the state consumer regulation as described in ARB-S1 above. This regulation achieves greater reductions by reducing ROG from more categories than originally covered in the original consumer product rule. This measure includes categories for mid-term and long-term reductions.

Schedule: Full implementation by 2005

4.7.14 ARB-Pesticides Measure -Proposed (1994 CAP S2)

1999 Emission Reduction: No reductions claimed.
2005 Emission Reductions: No reductions claimed.

Source Characteristics: Pesticides are chemicals used to control plant or animal pests and for the regulation of plant growth and plant defoliation. There are various formulations of pesticides, including aerosols, dusts, flowables, granulars, solutions, and wettable powders applied by means of aircraft spraying, ground-rig spraying and soil injection. ROG emissions result from evaporation of

reactive organic compounds in both active and inactive ingredients, including carriers, diluents, emulsifiers, inhibitors, fillers, and propellants.

Control Measure Description: The proposed regulation would apply to agricultural and commercial structural pesticides. Home-use pesticides are already subject to ARB's Consumer Product Regulation (see ARB control measure ARB-S1). Currently there are no statewide regulations to control agricultural and commercial structural pesticide use as ROG sources. The strategy to reduce pesticide ROG emissions entails the California Department of Pesticide Regulation (DPR) establishing a 1990 baseline pesticide emission inventory and target reduction goals in three year milestone increments beginning with 1996. It is expected that most of the reductions will be voluntary and occur as a result of ongoing activities such as integrated pest management (IPM) programs, low ROG reformulated products, and introduction of products designed with very low usage rates. If targeted ROG emission reductions are not achieved through voluntary controls, already-adopted mandatory measures would go into effect to achieve the needed emission reductions. The goal of the program is to reduce subject pesticide ROG emissions by 20 to 45% statewide by 2005. Since the program is voluntary and was developed for areas designated as serious ozone non-attainment areas developing their 1994 Clean Air Plans, Santa Barbara cannot opt into the measure for emission reduction credit. However, the air in Santa Barbara will still benefit from any emission reductions that do occur.

Schedule: Adoption by the California Department of Pesticide Regulation is ongoing, with full, statewide implementation by 2005.

4.8 CONCLUSIONS

The APCD, SBCAG, county, and cities have developed a comprehensive "Air Pollution Control Strategy" for Santa Barbara County that identifies all feasible measures available to bring the county into compliance with both the state and federal ozone standard. These measures include controls on all inventory categories contributing ROG and NO_x emissions: industrial processes, combustion

sources, petroleum handling, solvent use, consumer products, waste burning, automobiles and other mobile sources. Some measures are not credited towards the federal 24% ROG Rate-of-Progress or attainment demonstration requirements. The APCD's strategy, combined with emission reductions to be realized from on-road mobile sources described in detail in Chapter 5, will bring Santa Barbara County into compliance with all applicable state and federal mandates.

TABLE 4-1

APCD CONTROL MEASURES EVALUATED FOR THE 1998 CAP

Rule #	CAP Control Measure ID#	Control Measure	Federal Requirements (1-hour standard)	Federal Requirements (8-hour standard)	State Requirements
GENERAL ROG EMISSION CONTROL MEASURES					
341/901	R-GN-1	Landfill Gas Emissions	Adopted	Adopted	Adopted
N/A	R-GN-2	Wineries	Study	Study	Study
N/A	R-GN-3	Vegetable Oil Processing	Deleted	Deleted	Deleted
N/A	R-GN-4	Bakeries	Deleted	Deleted	Deleted
N/A	R-GN-5	Barbecue Lighter Fluid	Deleted	Deleted	Deleted
N/A	R-GN-6	Waste Water Treatment Facilities	Study	Study	Study
N/A	R-GN-7	Vacuum Producing Systems	Deleted	Deleted	Deleted
GENERAL PETROLEUM RELATED ROG EMISSION CONTROL MEASURES					
331	R-PG-1	Fugitive Emissions I & M	Adopted	Adopted	Adopted
N/A	R-PG-2	Process Turnarounds	Study	Study	Study
N/A	R-PG-3	Pipeline Pigging	Deleted	Deleted	Deleted
N/A	R-PG-4	Pneumatic Instruments	Deleted	Deleted	Deleted
348	R-PG-5	Glycol Regeneration Vents	Deleted	Deleted	Deleted
PETROLEUM MARKETING ROG EMISSION CONTROL MEASURES					
316	R-PM-1	Gasoline Bulk Plants	Adopted	Adopted	Adopted
316	R-PM-2	Gasoline Dispensing Phase I Vapor Recovery	Adopted	Adopted	Adopted
316	R-PM-3	Gasoline Dispensing Phase II Vapor Recovery	Adopted	Adopted	Adopted
N/A	R-PM-4	Pleasure Craft Fuel Transfer	Study	Study	Study
N/A	R-PM-5	Liquefied Natural and Petroleum Gas Truck Loading	Study	Study	Study

TABLE 4-1

APCD CONTROL MEASURES EVALUATED FOR THE 1998 CAP

Rule #	CAP Control Measure ID#	Control Measure	Federal Requirements (1-hour standard)	Federal Requirements (8-hour standard)	State Requirements
PETROLEUM PRODUCTION ROG EMISSION CONTROL MEASURES					
344	R-PP-1	Petroleum Sumps, Pits, and Well Cellars	Adopted	Adopted	Adopted
N/A	R-PP-3	Abandoned Well Vents	Deleted	Deleted	Deleted
N/A	R-PP-4	Petroleum Vacuum Trucks	Deleted	Deleted	Deleted
361	R-PP-5	Cyclic Steam Injection Oil Well Vents	Deleted	Deleted	Deleted
N/A	R-PP-6	Pseudocyclic Oil Well Vents	Deleted	Deleted	Deleted
N/A	R-PP-7	Heavy Oil Test Stations	Deleted	Deleted	Deleted
N/A	R-PP-8	Wet Gas Combustion	Deleted	Deleted	Deleted
346	R-PP-9	Loading of Organic Liquid Cargo Vessels	Adopted	Adopted	Adopted
PETROLEUM STORAGE TANKS ROG EMISSION CONTROL MEASURES					
343	R-PT-1	Petroleum Storage Tank Degassing	Adopted	Adopted	Adopted
325	R-PT-2	Crude Oil Production and Separation	Adopted	Adopted	Adopted
326	R-PT-2	Storage of Reactive Organic Compound Liquids	Adopted	Adopted	Adopted
SURFACE COATING ROG EMISSION CONTROL MEASURES					
323	R-SC-1	Architectural Coatings Architectural Coatings (revision)	Adopted Study	Adopted Study	Adopted Study
337 & 330	R-SC-2	Surface Coating of Aerospace and Metal Parts and Products	Adopted	Adopted	Adopted

TABLE 4-1

APCD CONTROL MEASURES EVALUATED FOR THE 1998 CAP

Rule #	CAP Control Measure ID#	Control Measure	Federal Requirements (1-hour standard)	Federal Requirements (8-hour standard)	State Requirements
N/A	R-SC-3	Surface Coatings – Industrial Maintenance	Deleted	Deleted	Deleted
339	R-SC-4	Motor Vehicle & Mobile Equipment Coating Operations	Adopted	Adopted	Adopted
351	R-SC-5	Surface Coating Wood Product Surface Coating Wood Products (revision)	Adopted Proposed	Adopted Proposed	Adopted Proposed
355	R-SC-6	Plastics	Deleted	Deleted	Deleted
SOLVENT ROG EMISSION CONTROL MEASURES					
320	R-SL-1	Dry Cleaning	Study	Study	Study
321 321	R-SL-2 R-SL-2	Degreasing Operations Degreasing (revision)	Adopted Study	Adopted Study	Adopted Study
329	R-SL-3	Cutback and Emulsified Asphalt	Adopted	Adopted	Adopted
358	R-SL-4	Electronics Industry	Study	Study	Study
349	R-SL-5	Polyester Resin Operations	Adopted	Adopted	Adopted
347	R-SL-6	Solvent Using Industrial and Commercial Processes	Deleted	Deleted	Deleted
354	R-SL-7	Graphic Arts – Letter/Offset Printing	N/A	N/A	Adopted
N/A	R-SL-8	Asphalt Roofing	Deleted	Deleted	Deleted
353	R-SL-9	Adhesives	Proposed	Proposed	Proposed
INTERNAL COMBUSTION NO_x EMISSION CONTROL MEASURES					
333 333	N-IC-1 N-IC-1	I/C Engines (Gas-Fired) I/C Engines (Revision)	Adopted Contingency	Adopted Proposed	Adopted Proposed
353	N-IC-2	Gas Fired Turbines	Deleted	Deleted	Deleted
333 333	N-IC-3 N-IC-3	I/C Engines (Diesel-Fired) I/C Engines (Revision)	Adopted Study	Adopted Study	Adopted Study

TABLE 4-1

APCD CONTROL MEASURES EVALUATED FOR THE 1998 CAP

Rule #	CAP Control Measure ID#	Control Measure	Federal Requirements (1-hour standard)	Federal Requirements (8-hour standard)	State Requirements
N/A	N-IC-4	Fuel Burning Platform Equipment	Deleted	Deleted	Deleted
N/A	N-IC-5	Exploratory Drilling Vessels	Deleted	Deleted	Deleted
N/A	N-IC-6	Marine Tankers	Deleted	Deleted	Deleted
NA	N-IC-7	Lawn and Garden Equipment	Study	Study	Study
NA	N-IC-8	Airport Ground Support Equipment	Study	Study	Study
EXTERNAL COMBUSTION NO_x EMISSION CONTROL MEASURES					
352	N-XC-1	Residential Water Heaters	Proposed	Proposed	Proposed
352	N-XC-2	Commercial Water Heaters	Proposed	Proposed	Proposed
352	N-XC-3	Residential & Commercial Space Heaters	Proposed	Proposed	Proposed
342	N-XC-4	Small Industrial / Commercial Boilers	Adopted	Adopted	Adopted
342	N-XC-4	(revision)	Study	Study	Study
342	N-XC-5	Large Industrial / Commercial Boilers	Adopted	Adopted	Adopted
342	N-XC-6	Process Heaters	Adopted	Adopted	Adopted
356	N-XC-7	Tail Gas Incinerators	Study	Study	Study
359	N-XC-8	Petroleum Flares & Relief Gas Oxidizers	Adopted	Adopted	Adopted
N/A	N-XC-9	Solar Water Heaters	Deleted	Deleted	Deleted
342	N-XC-10	Tank Heaters	Adopted	Adopted	Adopted
342	N-XC-11	Steam Generators	Adopted	Adopted	Adopted
345	N-XC-12	Direct Fired External Combustion Units	Study	Study	Study

TABLE 4-2

EMISSION CONTROL MEASURES REQUIRED TO MEET FEDERAL MANDATES

Rule #	CAP Control Measure ID	Description	1999 ROG	1999 NOx	2005 ROG	2005 NOx	Rule Adoption Date	Full Implementation Date
341/901	R-GN-1	Landfill Gas Emissions	0.1032		0.1861		September 1997	2001
331	R-PG-1	Fugitive Emissions Inspection and Maintenance	2.3689		1.8981		December 1991	1992 (1995 OCS)
316	R-PM-1	Gasoline Bulk Plants	0.0081		0.0086		November 1990	1992
316	R-PM-2	Gasoline Dispensing Phase I Vapor Recovery	0.1066		0.1142		November 1990	1992
316	R-PM-3	Gasoline Dispensing Phase II Vapor Recovery	0.2111		0.2261		November 1990	1992
344	R-PP-1	Petroleum Sumps, Pits, and Well Cellars	0.8518		0.9293		November 1994	1998
346	R-PP-9	Loading of Organic Liquid Cargo Vessels	0.0555		0.0312		October 1992	1995
343	R-PT-1	Petroleum Storage Tank Degassing	0.0000		0.0000		December 1993	1994
325	R-PT-2	Crude Oil Production and Separation	0.1161		0.0767		January 1994	1996
326	R-PT-2	Storage of Reactive Organic Compound Liquids	Included with Rule 326		Included with Rule 326		December 1993	1995
323	R-SC-1	Architectural Coatings	0.1168		0.1222		February 1990	1994
330	R-SC-2	Surface Coating of Metal Parts and Products	0.1649		0.1749		November 1990	1992
337	R-SC-2	Surface Coating of Aircraft or Aerospace Vehicle Parts and Products	Included with Rule 330		Included with Rule 330		July 1990	1992
339	R-SC-4	Motor Vehicle and Mobile Equipment Coating Operations	0.5370		0.5940		November 1991	1995
351	R-SC-5	Surface Coating of Wood Products	0.0070		0.0194		August 1993	1999

TABLE 4-2

EMISSION CONTROL MEASURES REQUIRED TO MEET FEDERAL MANDATES

Rule #	CAP Control Measure ID	Description	1999 ROG	1999 NOx	2005 ROG	2005 NOx	Rule Adoption Date	Full Implementation Date
321	R-SL-2	Control of Degreasing Operations	0.0592		0.0633		July 1990	1991
329	R-SL-3	Cutback and Emulsified Asphalt Paving Materials	0.8455		0.9042		February 1992	1992
349	R-SL-5	Polyester Resin Operations	0.0023		0.0025		April 1993	1994
354	R-SL-7	Graphic Arts – Letter/Offset Printing	0.0042		0.0045		June 1994	1995
353	R-SL-9	Adhesives and Sealants	0.4228		0.4523		1999	1999
333	N-IC-1 N-IC-3	Stationary Internal Combustion Engines	-0.1488	0.9721	-0.1367	0.8624	December 1991	1994 (1995 OCS)
352	N-XC-1 N-XC-2 N-XC-3	Residential and Commercial Space Heaters and Water Heaters		0.0047		0.0265	1999	2009
342	N-XC-4 N-XC-5 N-XC-6	Boilers, Steam Generators and Process Heaters		0.2385		0.2061	Mar. 1992	1996
359	N-XC-8	Petroleum Flares and Relief Gas Oxidizers	*	*	*	*	June 1994	1999
ARB R001 ARB-S4		California Diesel Fuel Regulations	0.0076	0.0835	0.0605	0.7064	1988	1993
ARB R002 ARB-S5		California Reformulated Gasoline	0.4005	-0.0091	0.4240	-0.0095	1988	1993
ARB- R003 ARB-S1		Consumer Products	1.1198		0.9895		1992	1999

TABLE 4-2

EMISSION CONTROL MEASURES REQUIRED TO MEET FEDERAL MANDATES

Rule #	CAP Control Measure ID	Description	1999 ROG	1999 NOx	2005 ROG	2005 NOx	Rule Adoption Date	Full Implementation Date
ARB 004 ARB-S3		Utility Equipment Emission Limits	0.3976	-0.0230	0.6203	-0.0447	1990	1995
ARB R005 ARB-S8		Off-Road Heavy Duty Diesel Engine Standards	0.0070	1.0846	0.0238	2.6703	1992	1996
ARB R006 ARB-S9		Off-Highway Recreational Vehicles and Engines	0.1440	0	0.2509	-0.0007	1994	1999
R007		Aerosol Coatings	0.0501		0.0532		1996	1999
M9,M10		Off-Road Industrial Equipment (Diesel)	0	0	0	0	1996	2001 2005
M11, M12		Gas And LPG Equipment 25 - 175 Horsepower	0	0	0.1941	0.0981	NA	2000
M14		Locomotives National Emission Standards		0		0.7454	NA	2005
M16		Pleasure Craft Nationwide Emission Standards -	0		0.0990		NA	1998
Cons		Consumer Products SIP measure	0		1.2543		NA	2005
Pest		Pesticides					NA	
Totals			**7.9588**	**2.3513**	**9.6405**	**3.7984**	NA	NA

* This rule is primarily a SO_x emission control rule. While we expect ROG and NO_x emission reductions, they are difficult to quantify.

CHAPTER 5

TRANSPORTATION CONTROL MEASURES

5. TRANSPORTATION CONTROL MEASURES

5.1 INTRODUCTION

Transportation control measures (TCMs) are programs or activities that states and localities can implement to encourage the travelling public to rely less on the automobile or to use the automobile more efficiently. TCMs reduce emissions from on-road motor vehicles and trucks by: improving the existing transportation system to allow motor vehicles to operate more efficiently; inducing people to change their travel behavior to less polluting modes; or, ensuring emission control technology improvements in the motor vehicle fleet are fully and expeditiously realized.

TCMs can have benefits beyond emissions reductions by relieving congestion and improving energy efficiency. During the public participation process of the Clean Air Plan for Santa Barbara County, representatives of the business and environmental community emphasized the need for everyone to do their part to clean the air. TCMs address the need for the travelling public to: 1) carefully consider the implications of continued reliance on the single occupant vehicle as the major source of commute trips; 2) the need to provide and promote alternatives to single occupant vehicle travel; and, 3) the need to consider regulating those factors which promote single occupant vehicle travel.

As discussed in preceding chapters, the Federal Clean Air Act Amendments (FCAAA) requires "serious" nonattainment areas to develop an emissions control strategy which can: demonstrate a 9% reduction in reactive organic gases (ROG) between 1996 to 1999; establish new on-road mobile source emission budgets for ROG and NO_x; and, demonstrate through photochemical modeling (or another suitable method approved by EPA) attainment of the federal 1-hour ozone standard by 1999. The purpose of this chapter is to identify those TCMs relied upon to help accomplish these planning mandates.

In case the county fails to achieve the federal 1-hour standard for ozone by 1999, the FCAAA also require the implementation of contingency measures. This chapter presents the TCMs that are included in the county's contingency plan.

5.2 MEMORANDUM OF UNDERSTANDING

The Santa Barbara County Air Pollution Control District (APCD) entered into a Memorandum of Understanding (MOU) with the Santa Barbara County Association of Governments (SBCAG) in May, 1993. The agreement evolved out of recognition that there were common planning responsibilities shared between the two agencies.

SBCAG is the agency responsible for all transportation planning and programming activities under federal law. SBCAG also serves as the Congestion Management Agency and is responsible for multi-modal transportation planning, programming, and fund allocation required under state statutes.

Federal and state air quality legislation has placed greater emphasis on reducing on-road mobile source pollution and likewise, the federal and state transportation laws recognize the need to preserve and/or enhance mobility without sacrificing ambient air quality. To ensure coordination of plans and consistency between the APCD and SBCAG, the MOU specifies that SBCAG will develop and approve the transportation control measures and the APCD will adopt the air quality plans required under state and federal law.

5.3 TRANSPORTATION CONTROL MEASURES

The 1994 CAP evaluated every feasible transportation control measure for reducing ROG and NOx emissions. These measures were evaluated with the participation of interested members of the public. The 1998 CAP TCMs are identical to the 1994 CAP TCMs except for those measures which are comprised of specific programmed projects. Hence, the 1998 CAP does not propose any "new" TCMs, but identifies new projects within several of the established TCM categories. Table 5-1 lists all those TCMs currently being implemented in the county and summarizes the implementation characteristics of each, namely: the type of TCM; the adopting agency/agencies; the agency/agencies responsible for implementing the TCM; the formal agreements between the

adopting and implementing agencies; and, how TCM implementation will be monitored and by whom.

5.4 EMISSION REDUCTIONS OVERVIEW

During 1992-1993, SBCAG participated with the APCD in a cooperative effort to develop the Santa Barbara Travel Model using the SYSTEM2 software developed by JHK & Associates. In preparation of the 1994 CAP, a 1990 baseline travel estimate and a 1996 travel forecast was developed for the purpose of generating the following three emission estimates: a 1990 baseline on-road mobile source inventory; a 1996 on-road mobile source emissions forecast without controls; and, a 1996 on-road mobile source emissions forecast with controls (TCMs). For the 1998 CAP, a revised 1990 baseline travel estimate and a new 1996 base year travel estimate were developed using the recently re-calibrated Santa Barbara Travel Model. In addition, travel forecasts for 1999 and 2005, with and without controls, were developed. The transportation activity data (e.g., regional vehicle miles of travel (VMT), a VMT by speed class distribution, and regional vehicle trips) generated by the Santa Barbara Travel Model provided the basis for these on-road mobile source emission estimates. County specific vehicle registration data from the DMV was also acquired to update the county's vehicle fleet age demographic profile for light duty autos and trucks.

Calculation of emission reductions from the TCMs for the 1998 Clean Air Plan were analyzed, in aggregate, using the California Air Resources Board's (ARB) MVEI7G on-road emissions model. MVEI7G, the successor to the 7F family of emission models used as part of the 1994 CAP, was approved for use in California by EPA in April 1998. According to the MVEI7G emissions analysis, implementation of the 1998 CAP TCMs will result in a reduction of .11 tons/day and .09 tons/day of ROG and NO_x respectively between 1996 and 1999. A more detailed description of the emissions analysis is provided in Appendix C.

The ROG emission estimate of 17.42 tons/day and the NO_x emission estimate of 22.07 tons/day establish the new emission budgets for these two ozone precursors. As required by the 1990 CAAA, a comparison of regional on-road mobile source emissions to these budgets will occur

during updates of federal and state regional transportation plans and programs for Santa Barbara County. Exceeding either one of these emission budgets will jeopardize federal funding for transportation improvements and greatly restrict what transportation improvements may be pursued in the county.

The net on-road mobile source ROG emission reduction from the 1996 baseline is:

1990 ROG	43.37 tons/day
1996 ROG	20.38 tons/day
1999 ROG with TCMs	17.42 tons/day
(1999 ROG Emissions Budget)	
Total On-Road Mobile Source ROG Reduction	2.96 tons/day

The net 1999 on-road mobile source ROG emission reduction resulting from TCMs is:

1999 ROG (without TCMs)	17.52 tons/day
1999 ROG with TCMs	17.42 tons/day
(1999 ROG Emissions Budget)	
Total CAP TCM ROG Reduction	0.10 tons/day

The net on-road mobile source NOx emission reduction from the 1996 baseline is:

1990 NOx	41.65 tons/day
1996 NOx	26.24 tons/day
1999 NOx with TCMs	22.07 tons/day
(1999 NOx Emissions Budget)	
Total On-Road Mobile Source NOx Reduction	3.17 tons/day

The net 1999 on-road mobile source NOx emission reduction resulting from TCMs is:

1999 NOx (without TCMs)	22.16 tons/day

1999 NOx with TCMs	22.06 tons/day
(1999 NOx Emissions Budget)	
Total CAP TCM NOx Reduction	0.09 tons/day

Figure 5-1 illustrates the ROG emissions reduction resulting from the 1998 CAP TCMs. As shown in Figure 5-1, a large percentage (76 percent) of the actual on-road mobile source ROG emission reduction will be a result of federal controls for which the county is not allowed to credit towards the FCAAA 9% ROG emission reduction requirement. The 1998 CAP is allowed to take credit for emissions reductions associated with traditional TCMs (e.g., transportation demand management strategies and transportation system management strategies); non-traditional TCMs such as Accelerated Retirement of Vehicles (T-13) and Alternative Fuels (T-18) (listed as Local Tailpipe in Figure 5-1); and, emission reductions associated with the more stringent California motor vehicle controls which go beyond the federal controls (listed as State Tailpipe in Figure 5-1). The latter constitutes the greatest "creditable" ROG emission reduction with a contribution of 85 percent (0.60 tons/day).

To ensure that the emission reductions identified in the 1998 CAP are realized, TCM effectiveness is tracked by monitoring the implementation of projects and programs identified in the Federal Transportation Improvement Program (FTIP). Expeditious implementation of all 1998 CAP TCMs (and TCM related projects) will be determined during updates of Santa Barbara County's Regional Transportation Plan (RTP) and the FTIP as required by the transportation conformity provisions under the 1990 FCAAA. For those projects credited in the 1998 CAP which are not included in the FTIP, annual project implementation status is monitored as part of the county's Congestion Management Program annual conformance assessments.

To ensure that the on-road activity data used to generate the 1999 on-road mobile source emissions forecast remains accurate, "ground truth" VMT data from Caltrans Office of Travel Forecasting (OTF) will be annually monitored/tracked. VMT tracking is necessary to protect the integrity of the 1998 CAP emission forecasts. Figure 5-2 illustrates the VMT growth "ceiling"

between actual VMT as measured by Caltrans OTF and SBCAG's 1999 VMT forecasts. If actual VMT exceeds this VMT ceiling, a revised 1999 travel forecast may be warranted.

The following section provides an overview of those control measures relied upon in the 1998 CAP to meet the FCAAA planning requirements.

5.5 ADOPTED MEASURES

Adopted measures are existing APCD rules or, in the case of TCMs, ordinances or commitments that have been scheduled for implementation prior to 1999. All of the TCMs in the 1998 CAP were adopted as part of the 1994 CAP. The following discussion of the control measures provides the VMT and vehicle trip reductions anticipated to occur in 1999; a description of emitting activities; and, a description of the major features of the control measures proposed to reduce emissions from such activities. More detailed descriptions of the transportation control measures are provided in Appendix C.

5.5.1 TRANSPORTATION CONTROL MEASURES

5.5.1.1 T-1 Trip Reduction Program;
T-2 Employer-Based Transportation Demand Management Programs

1999 VMT Reduction: 25,848 per average summer weekday
1999 Vehicle Trip Reduction: 2,068 per average summer weekday

Source Characteristics: Running exhaust of ROG and NO_x emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NO_x emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Measure requires all jurisdictions within the county to implement the 1994 CAP TDM Resolutions of Commitment as adopted by each local jurisdiction in Santa Barbara County.

These requirements are designed to encourage commuters to use alternative transportation modes, rather than the single occupant vehicle. The cities and unincorporated areas of the county have adopted TDM resolutions of commitment specifying TDM responsibilities as defined in the 1994 CAP.

Schedule: The TDM Resolution of Commitments listed in the 1994 CAP were adopted by all cities and the remaining unincorporated areas of the county in 1992/93. A more stringent TDM Program was adopted by the City of Santa Barbara and the County (for the unincorporated area of Goleta) in 1991.

5.5.1.2 T-3 Work Schedule Changes

1999 VMT Reduction: Not quantified.
1999 Vehicle Trip Reduction: Not quantified.

Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes if vehicle trips are eliminated as a result of employing a shorter work week schedule.

TCM Description: Recommends that the county and cities adopt voluntary alternative work schedule programs and/or continue existing programs to meet the needs of the Santa Barbara County's 1994 CAP TDM Resolutions of Commitment.

This measure is designed to encourage employers to allow employees to commute during off-peak periods or reduce vehicle trips by allowing a shorter work week.

Schedule: This measure was adopted in 1994 and has been a County policy since 1988. Greater opportunities and incentives for implementation of this TCM have been realized through the City/County TDM Ordinance (T-1,2) implementation efforts.

5.5.1.3 T-4 Areawide Ridesharing

1999 VMT Reduction: Not Quantified (see T-1,2)
1999 Vehicle Trip Reduction: Not Quantified (see T-1,2)

Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Requires the continued operation of SBCAG's Traffic Solutions Division to meet the increased rideshare demand resulting from the implementation of the Santa Barbara County's 1994 CAP TDM Resolutions of Commitment.

This measure is designed to increase the use of carpools and vanpools by commuters.

Schedule: This measure was adopted as part of the 1994 CAP and has been actively implemented in Santa Barbara County since 1982.

5.5.1.4 T-5 Improve Commuter Public Transit Service

1999 VMT Reduction: 3,510 per average summer weekday
1999 Vehicle Trip Reduction: 145 per average summer weekday

Source Characteristics: Running exhaust of ROG emissions emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle

trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Recommends short range commuter transit service expansion and operational changes for the Santa Barbara Metropolitan Transit District (SBMTD), Santa Maria Area Transit, Lompoc Transit, and Santa Ynez Valley Transit, and, continued efforts to provide regional commuter transit service and expand inter-city passenger rail service in Santa Barbara County.

This measure encourages transit providers to pursue ways to increase the utilization of short range (bus) and long range commuter oriented public transit systems serving Santa Barbara County. This is dependent upon the transit providers maintaining and expanding their current programs.

Schedule: This measure was adopted as part of the 1994 CAP.

5.5.1.5 T-7 Traffic Flow Improvements

1999 VMT Reduction: 0 per average summer weekday
1999 Vehicle Trip Reduction: 0 per average summer weekday

Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections.

TCM Description: Requires the continuing commitments from the cities and the county in their efforts toward signal synchronization and road improvements included in the regions Regional Transportation Plan. Additionally, the measure requires the City and County of Santa Barbara to consult with SBMTD regarding bus pullouts in the course of planning expansions of any surface street where average daily traffic is projected to be greater than 10,000 vehicles.

Schedule: This measure was adopted as part of the 1994 CAP.

5.5.1.6 T-8 Parking Management

1999 VMT Reduction: Not Quantified
1999 Vehicle Trip Reduction: Not Quantified

Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and from vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Recommends that the City of Santa Barbara continue to enforce its current parking management program and evaluate additional time of day parking restrictions, including fines and fees, to discourage single occupant vehicle commute parking and 90 minute re-parking activity by downtown employees.

Schedule: This measure was adopted as part of the 1994 CAP.

5.5.1.7 T-9 Park & Ride and Fringe Parking

1999 VMT Reduction: 3,628 per average summer weekday
1999 Vehicle Trip Reduction: 0 per average summer weekday

Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Recommends the establishment of parking lots on the fringe of urbanized areas or at remote sites along freeways within Santa Barbara County in order to promote higher commuter vehicle occupancies and reduce trips.

Schedule: This measure was adopted as part of the 1994 CAP.

5.5.1.8 T-10 Bicycling

1999 VMT Reduction: 426 per average summer weekday
1999 Vehicle Trip Reduction: 142 per average summer weekday

Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Recommends that the county and cities ensure that bicycle needs are integrated into local planning efforts, including local plans and ordinances, and encourages that federal, state, and local funding be expeditiously pursued for purposes of completing missing commuter oriented bikeway segments identified in SBCAG's Regional Bikeway Study and the cities and county's local Bicycle Master Plans and/or Bikeway Elements of their General Plans.

This measure promotes a shift from auto to bicycle use by either expanding the current bikeway system or maintaining/upgrading existing facilities. The measure recommends the county and cities ensure that bicycle needs are integrated into local planning efforts and encourages that funding sources for bikeway improvements be actively pursued.

Schedule: This measure was adopted as part of the 1994 CAP.

5.5.1.9 T-13 Accelerated Retirement of Vehicles

1999 Emission Reduction: 0.06 tons of ROG per summer weekday
0.02 tons of NOx per summer weekday

Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle

trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Recommends that the APCD re-establish the Old Car Buyback Program and continue efforts to secure funding for its continued implementation after 1999.

This measure allows older more polluting cars to be retired faster than the normal attrition rate for such vehicles. Removing older vehicles will provide short term (three to five years) emissions benefits given that older cars are more polluting than newer vehicles.

Schedule: This measure was adopted as part of the 1994 CAP. The program was implemented between 1993 and 1996 until funding for the program ceased at the end of 1996. This measure re-establishes the program in 1999.

5.5.1.10 T-17 Telecommunications

1999 VMT Reduction: 2,760 per average summer weekday
1999 Vehicle Trip Reduction: 60 per average summer weekday

Source Characteristics: Running exhaust ROG and NOx emissions emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Recommends that city and county agencies and private employers be encouraged to replace work related travel with teleconferencing, telecommuting, and tele-education.

Schedule: This measure was adopted as part of the 1994 CAP.

5.5.1.11 T-18 Alternative Fuels

1999 Emission Reduction: 0.0002 tons of ROG per summer weekday
0.002 tons of NOx per summer weekday.

Source Characteristics: Running exhaust of ROG and NOx emitted by heavy and medium duty urban buses and light duty vehicles.

TCM Description: Recommends an alternate fuel program consisting of four different elements which demonstrate the applicability of alternative fuels. The first is aimed at demonstrating light duty vehicle compressed natural gas (CNG), the second is a diesel engine emission reduction study, the third, a transit bus CNG demonstration program, and the fourth consists of the operational use of 8 to 10 SBMTD's passenger vans using battery power as the primary fuel source as a pilot program for electric vehicles.

This measure promotes the use of alternative "clean fuels" as a replacement for conventional automotive fuels by demonstrating the applicability of these fuels with real-world, on-road applications.

Schedule: This measure was adopted as part of the 1994 CAP.

5.5.1.12 T-19 Public Education Program

1999 VMT Reduction: Not quantified.
1999 Vehicle Trip Reduction: Not quantified.
Source Characteristics: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions) and ROG emissions from evaporative processes.

TCM Description: Requires that the APCD, SBCAG, the cities and the county provide public education functions/activities to promote public support, cooperation, and compliance with those measures which reduce ozone precursor gas emissions (e.g., ROG and NOx).

Schedule: This measure was adopted as part of the 1994 CAP.

5.6 CONTINGENCY MEASURES

Contingency measures are emission control programs to be implemented if the county does not achieve attainment of the federal 1-hour ozone standard by 1999.

5.6.1 TRANSPORTATION CONTROL MEASURES

5.6.1.1 T-21 Enhanced Inspection and Maintenance Program

2005 Emission Reduction[1]: 4.29 tons of ROG per summer weekday
3.07 tons of NOx per summer weekday

Source Characteristics: This emission control program is designed to reduce running emissions of ROG and NOx from gasoline powered on-road motor vehicles.

Program Description: Requires restructuring the Inspection Maintenance (Smog Check II) program currently being implemented in Santa Barbara County and throughout much of the State of California to meet federal requirements for implementing an Enhanced I/M program. For Santa Barbara County, restructuring of the current I/M program entails upgrading its decentralized program to allow: testing fuel system evaporative emission controls; NOx emission testing; using recently developed high technology testing equipment; additional enforcement capabilities through

[1] Emission reduction estimates from this measure were generated by the MVEI7G model which does not reflect recent legislative changes to the Enhanced I/M Program. Given that several elements of the Enhanced I/M Program have been relaxed, these reductions should be considered overly optimistic.

roadside testing of emissions; and, a high emitter profile element which will include checks at "test only" stations.

The current Smog Check Program as implemented in Santa Barbara County is a decentralized program comprised of visual inspections of emission components and tailpipe emission tests. Legislative and executive passage of a federally approved Enhanced Inspection and Maintenance bill was passed in April 1994 in California. The Enhance I/M bill was amended in October 1997 delaying implementation in Serious and above nonattainment areas until May 1998. The Bureau of Automotive Repair, the implementing agency of this measure, has tiered its implementation towards those areas with the worst air quality first. Consequently, Santa Barbara County is not scheduled for Enhanced I/M implementation. Depending if the 1-hour ozone standard is achieved by 1999, the APCD will choose whether to opt-in to an upgraded decentralized program.

Schedule: This measure was adopted as a contingency measure in the 1994 CAP. Due to delays in program implementation at the state level, this measure is not scheduled for implementation until the emission reductions and cost effectiveness of the program is first demonstrated in the more polluted areas of the state (e.g., Los Angeles, Ventura).

5.6.1.2 T-22 Mandatory Employer Trip Reduction Program

2005 Emission Reduction: 30,840 per average summer weekday
5,140 per average summer weekday

Source Characteristics: This emission control program is designed to reduce running emissions of ROG and NOx from gasoline powered on-road motor vehicles.

Program Description: Running exhaust of ROG and NOx emitted by light duty autos and trucks on congested roadways and intersections, and ROG and NOx emissions associated with vehicle trip starts (e.g., cold start incremental emissions, hot soak emissions), and ROG emissions from evaporative processes.

TCM Description: Measure requires all employers within the county with 100 employees or more to implement an employee trip reduction program consistent with the federal Employee Commute Option (ECO) requirements for severe and worse nonattainment areas. Amendments to the ECO requirements of the Clean Air Act does allow affected employers to implement alternative measures that will achieve equivalent or greater emission reductions anticipated from the ECO program. If pursued by affected employers, alternative emission reduction plans will be evaluated on a case by case basis.

This program is designed to encourage commuters to use alternative transportation modes, rather than the single occupant vehicle.

Schedule: This measure is scheduled for implementation 1999 with full implementation by 2000 if the county does not achieve attainment of the 1-hour federal ozone standard.

5.7 CALIFORNIA AIR RESOURCES BOARD CONTROL MEASURES

The ARB has adopted regulations that reduce pollution from mobile sources. The following sections summarize these ARB control measures. This discussion emphasizes only those programs that will reduce emissions by the end of 1999.

5.7.1 ARB EMISSION STANDARDS FOR ON-ROAD VEHICLES

1999 ROG Emission Reduction: .60 tons per average summer weekday

Note that the reductions above can be credited under the FCAAA. That is, under the Act, credit can be taken for emission reductions over and above those that would be realized by the federal emission standards.

Source Characteristics: ARB regulations apply to all on-road motor vehicles, including cars, trucks, and buses.

Program Description: The state of California has led the nation in controlling pollution from automobiles. Cars manufactured for sale in California are required to meet more stringent emission limits than those manufactured for sale in the rest of the nation. As a result, air quality has improved substantially in most areas of the state despite large increases in population. This emphasis will continue as a result of California's recent adoption of more aggressive auto pollution standards. State regulation will require the use of vehicles using alternative fuels. Other states have opted to follow California's lead. The elements of California's vehicle emission controls are listed below.

1. Enhanced Vehicle Inspection and Maintenance (Smog Check II)
2. On-board Diagnostic Systems (Phases 1 and 2)
3. Expanded Compliance Testing
4. Certification of Aftermarket Catalytic Converters
5. Revised In-Use Recall Regulations
6. Emission Control System Warranty Requirements
7. Light-Duty Vehicle Aftermarket Parts Program
8. Heavy-Duty Vehicle Smoke Enforcement Program
9. New and Used Import Vehicle Certification Regulations
10. Standards for Gas and Diesel-Powered Heavy-Duty Engines
11. Standards of 0.4 Gram NO_x per Mile for Light- and Medium-Duty Vehicles
12. Lower HC and CO Standard for Light-Duty Vehicles
13. New Diesel Fuel Quality Standard
14. Revised Standards and Tests for Medium- and Light-Heavy-Duty Engines
15. Revised Evaporative Emission Test Procedures
16. Low Emission Vehicles and Clean Fuels Program
17. Methanol, LPG, and CNG Emission Standards (1989/1990)
18. Improved Certification Requirements for Alternate Fuels Retrofit
19. New Gasoline Specifications
20. Enhancement to Smog Check Program
21. Smog Check for Light-Duty Diesel Vehicles
22. Smog Check for Fleet Heavy-Duty Trucks

23. Heavy-Duty Bus Particulate Trap Retrofit
24. Control of Off-Cycle Emissions
25. Low Emission Vehicle Standards for Heavy-Duty Engines

5.8 1998 CLEAN AIR PLAN TCM PROJECTS

The remainder of this chapter describes the specific programmed projects identified in the 1998 CAP. These projects augment the emission reduction benefits of those projects implemented as part of the 1994 CAP.

5.8.1 1994 Clean Air Plan

The most recent EPA-approved State Implementation Plan (SIP) for Santa Barbara County is the 1994 CAP. Given that some 1994 TCMs were based on the implementation of specific programmed projects and that implementation of those projects effectively renders them obsolete with respect to achieving "new" emission reductions, additional projects are needed to reduce emissions from on-road mobile sources for the 1998 CAP. A description of the 1994 CAP TCMs, the specific programmed projects implemented to promote the TCMs, and their implementation status is provided in Table 5-2. Table 5-3 lists the TCM projects relied upon in the 1998 CAP. For a more detailed description of the 1998 CAP TCMs and TCM related programmed projects, refer to Appendix C.

5.9 CONCLUSIONS

This chapter has presented the transportation control measure portion of Santa Barbara County's Comprehensive Air Pollution Control Strategy. These measures are designed to help reduce ozone levels to meet the federal 1-hour ozone standard by 1999; establish ROG and NOx emission budgets for transportation conformity purposes; and, help demonstrate compliance with the 9% ROG emission reduction requirement.

TABLE 5-1

1998 CLEAN AIR PLAN TRANSPORTATION CONTROL MEASURES

TCM #	TCM Designation	Type of TCM	Adopting Agency(ies)	Implementing Agency(ies)	Commitments	Monitoring Mechanism (Agency)
T-1 T-2	Trip Reduction Program Employer-Based TDM Program	Voluntary; TDM Program; State AQAP	Tier 1: Guadalupe; Buellton; Solvang; County, SYV Tier 2: Lompoc; Santa Maria; Carpinteria; County Unincorporated Tier 3: Santa Barbara; County, Goleta	Tier 1 (County/ Cities) Tier 2 (County/Cities) Tier 3 (County/Cities)	Tiers 1 & 2: Resolution of Commitments from Affected jurisdictions; Tier 3: City and County TDM Program City of Santa Barbara and Goleta area	TDM Program (SBCAG) CMP Conformity (SBCAG) SIP Conformity (SBCAG)
T-3	Work Schedule Changes	Voluntary	County and Cities	County and Cities; Private Sector	Adopted Policy, County, 1988	Not Applicable (TDM)
T-4	Area Wide Ridesharing	Voluntary	County and Cities	SBCAG	Interagency Agreement	SIP Conformity (SBCAG)
T-5	Public Transportation	Programmed	County and Cities	SBMTD; SMAT; SBCAG; APCD; Lompoc Transit; Santa Ynez Valley Transit;	FTIP and RTIP; SRTP, TDP	List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-7	Traffic Flow Improvement	Programmed	County and Cities	County and Cities; Caltrans; SBMTD; SBCAG	FTIP and RTIP	List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-8	Parking Management	Parking Ordinance	City of Santa Barbara	City of Santa Barbara	Not Applicable	City of Santa Barbara Parking Task Force; SIP Conformity (SBCAG)
T-9	Park-and-Ride Fringe Parking	Voluntary; Programmed	County and Cities	County and Cities; Caltrans	FTIP and RTIP	Caltrans, District 5; List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-10	Bicycle/Pedestrian	Programmed	County and Cities	County and Cities; Caltrans; SBCAG	FTIP and RTIP; General Bikeway Elements; Bikeway Master Plans	List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-13	Accelerated Re-tirement of Vehicle	Voluntary	APCD	APCD	Contract APCD/Engineering	APCD; SIP Conformity (SBCAG)
T-17	Telecommunication	Voluntary	County and Cities	County and Cities; Private Sector	Not Applicable	Not Applicable (TDM)
T-18	Alternative Fuel Program	Voluntary	APCD	APCD; County and Cities	Interagency Agreements Unnecessary	APCD; SIP Conformity (SBCAG)
T-19	Public Education	Commital; Voluntary	County and Cities APCD; SBCAG	County and Cities APCD; SBCAG	Interagency Agreements Unnecessary	Not Applicable; CMP Conformance (SBCAG); SIP Conformity (SBCAG);

TABLE 5-2

1994 CLEAN AIR PLAN - ON ROAD MOBILE SOURCE CONTROL MEASURES

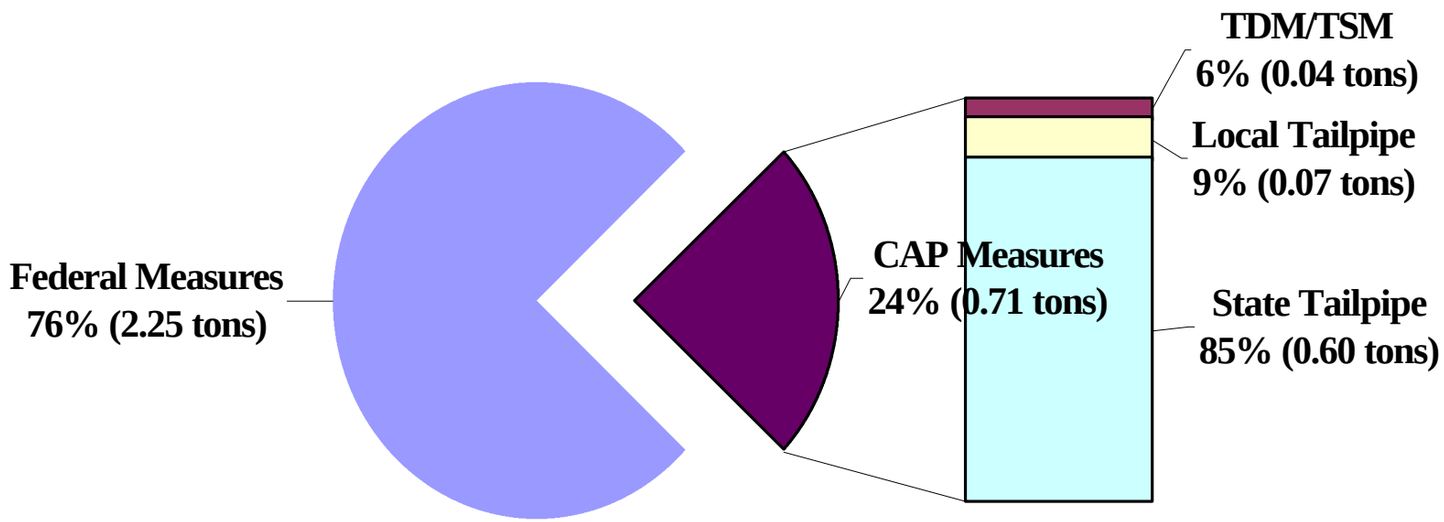
TCM	Description	Project Sponsor	Project/Program Description	Implementation Status	SIP Analysis
1-4	Travel Demand Management	Traffic Solutions	City-County TDM Program	Program On-Going	Yes
	Areawide Ridesharing	Traffic Solutions	County Rideshare Program	Program On-Going	Yes
	Work Schedule Changes	Traffic Solutions/Business	Flexibie Work Hours	Program On-Going	No
5	Public Transportation	SBMTD	Isla Vista - SBCC Express Service	Service On-Going	Yes
		SBMTD	Downtown Waterfront Shuttle Expansion	Service On-Going	Yes
		APCD	Clean Air Express Expansion	Service On-Going	Yes
		City of Santa Maria	SMAT Expansion - 1 30 foot bus	Service On-Going	Yes
		City of Lompoc	Lompoc Transit Expansion - 2 buses & farebox system	Service On-Going	Yes
		City of Solvang	SYVT Expansion - 1 van to establish fixed route service	Service On-Going	Yes
		AMTRAK	Service Expansion from 2 to 4 train stops per day	Service On-Going	Yes
7	Traffic Flow Improvements	Caltrans	Crosstown Freeway Project	Completed	Yes
		County/Caltrans	Rte. 101/ Patterson Avenue I/C	Completed	Yes
		SBCAG/Caltrans	Rte. 101 / La Cumbre Road I/C	Completed	Yes
		SBCAG/Caltrans	Rte. 101 / Storke Road I/C	Completed	Yes
		SBCAG/Caltrans	Rte. 101/ Betteravia Road I/C	Completed	Yes
		County/Caltrans	Rte. 101/Fairview Avenue I/C	Under Development	Yes
		City of Santa Maria	Rte. 135/Betteravia Road Intersection	Completed	Yes
		County of Santa Barbara	Hollister Avenue/Fairview Avenue	Completed	Yes
		City of Santa Barbara	Castillo Street/Montecito Street	Completed	Yes
		County of Santa Barbara	Signal Synchonization - Hollister Avenue	Completed	Yes
8	Parking Management	City of Santa Barbara	Residential Parking Program	On-going	No
9	Park-n-Ride Lots	N/A	N/A	N/A	No
10	Bicycle/Pedestrian	City of Santa Maria	Santa Maria Valley Railroad Bikeway	Partially Completed	Yes
		City of Santa Maria	Battles Road Bicycle and Pedestrian Project	Completed	Yes
		City of Solvang	Alamo Pintado Creek Bikeway/Pedestrian Bridge	Partially Completed	Yes
		City of Santa Barbara	SBCC - East Campus Bicycle and Pedestrian Project	Completed	Yes
		City of Santa Barbara	Crosstown East - West Bikelane Couplet	Completed	No
		City of Santa Barbara	Shoreline Drive/Cabrillo Blvd. Bikeway	Completed	No
		County of Santa Barbara	Fairview Avenue Bicycle Lane	Under Development	Yes
		County of Santa Barbara	Bradley Road Bikeway	Completed	Yes
		County of Santa Barbara	El Capitan Ranch Bikeway	Under Development	No
13	Old Car Buyback	Parsons Inc. - APCD	Vehicle Buyback Program	Completed 1993-96	Yes
17	Telecommunication	County of SB - Probation	Expansion of Video Conferencing Network	Completed	Yes
18	Alternative Fuel Program	APCD	ITG Program	On-Going	Yes
		APCD	Clean Air Express Expansion	Completed - On-Going	Yes -T-5
		SBMTD	Waterfront Shuttle Service Expansion	Completed - On-Going	Yes -T-5
		SBMTD	Easy Lift Conversion of 5 vans to CNG	Completed - On-Going	Yes
		SBMTD	Gillig Bus Refurbishment	Completed - On-Going	Yes
		SBMTD	AMG Bus Refurbishment	Completed - On-Going	Yes
19	Public Education	APCD	Overall Work Program	On-going	No
		SBCAG	Overall Work Program	On-going	No
CONTINGENCY PLAN - FY 1997					
21	Enhanced I/M Program	BAR	Enhanced I/M Program	Delayed by State-2000	Yes

TABLE 5-3

1998 CLEAN AIR PLAN - ON ROAD MOBILE SOURCE CONTROL MEASURES

TCM	Description	Project Sponsor	Project/Program Description	Funding
1-4	Travel Demand Management	Traffic Solutions	City-County TDM Program	CMAQ
	Areawide Ridesharing	Traffic Solutions	County Rideshare Program	CMAQ/State
	Work Schedule Changes	Traffic Solutions/Business	Flexible Work Hours – Guaranteed Ride Home	CMAQ/State
5	Public Transportation	City of Santa Maria	CNG Transit Bus, expanded service to Guadalupe	DMV
		County of Santa Barbara	Goleta Rail Platform - San Diegan Extension	State
			Surf Rail Platform - San Diegan Extension	State
		City of Guadalupe	Guadalupe Rail Platform - San Diegan Extension	State
7	Traffic Flow Improvements	N/A	N/A	N/A
8	Parking Management	City of Santa Barbara	Residential Parking Program	N/A
9	Park-n-Ride Lots	County of Santa Barbara	Lompoc Park-n-Ride Lot – Ocean Ave/7th Ave	CMAQ
		County of Santa Barbara	Santa Maria Park-n-Ride Lot – Clark/HWY101	CMAQ
10	Bicycle/Pedestrian	City of Santa Maria	1 Bike Locker	DMV
		County of Santa Barbara	Class II Bikeway in Santa Ynez - Alamo Pintado Rd.	DMV
		County of Santa Barbara	Rufugio Road Class II Bikeway-Samantha Dr-SR246	CMAQ
		County of Santa Barbara	Phelps Road Class II Bikelane	CMAQ
		County of Santa Barbara	Via Real Class II Bikeway – Cravens Lane to Padaro	RSTP
		County of Santa Barbara	Maria Ygnacia Creek Class I Bikeway	RSTP
13	Old Car Buyback	Parsons Inc. - APCD	Vehicle Buyback Program	ITG/DMV
17	Telecommunication	County of SB - Probation	Expansion of Video Conferencing Network	DMV
18	Alternative Fuel Program	UCSB	2 CNG Truck Conversions/fuel maker	DMV
		City of Lompoc	NG Garbage Truck, roll-off bins, compactors	DMV
		City of Santa Maria	Purchase Dual Fuel Van	CMAQ
		City of Santa Maria	Purchase 1 CNG Bus	CMAQ
19	Public Education	SB Bike Coalition	Bicycle Video	DMV
		County of Santa Barbara	Local Regulations for Electric Vehicles	DMV
		APCD	On-going Efforts	APCD
		SBCAG	On-going Efforts (98-99 OWP)	APCD
CONTINGENCY PLAN – FY 2000				
21		BAR	Enhanced I/M Program	Pending
22		Local Businesses+APCD+	Countywide Employer-Based	Pending
		Traffic Solutions	Trip Reduction Ordinance 100+EMPLOYEES	

Figure 5-1
On-Road Mobile Source ROG Emission Reductions
Tons Per Day

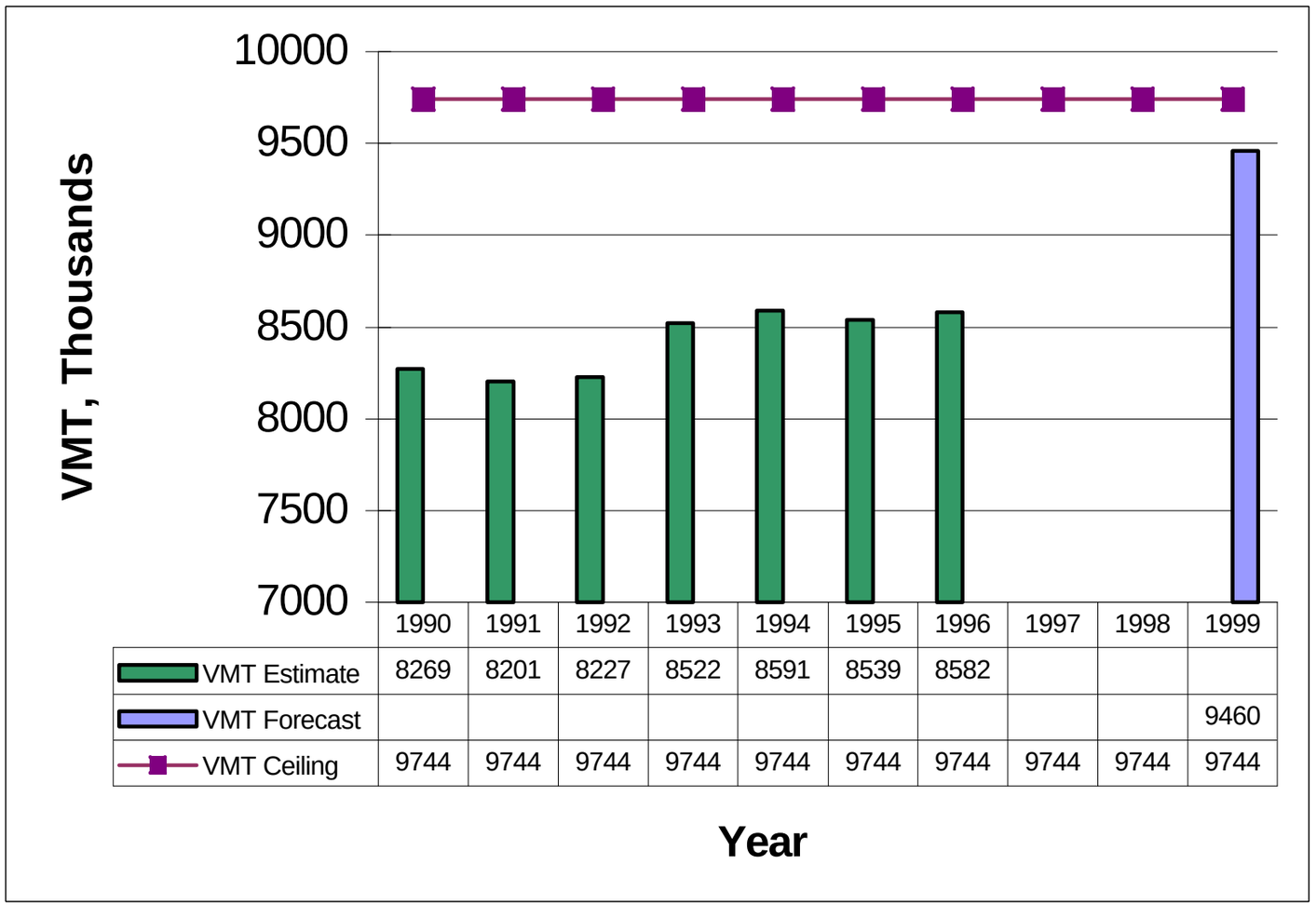


Total ROG Emission Reduction = 2.96 tons per day

1999 Emission Forecast

Figure 5 – 2

Tracking Daily Vehicle Miles of Travel
Santa Barbara County – Santa Barbara Travel Model



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
VMT Estimate	8269	8201	8227	8522	8591	8539	8582			
VMT Forecast										9460
VMT Ceiling	9744	9744	9744	9744	9744	9744	9744	9744	9744	9744

VMT Estimate: Office of Travel Forecasting (HPMS, Caltrans
VMT Ceiling: Error Tolerance: 3%

CHAPTER 6

EMISSION FORECASTING

Introduction

Emission Forecast

Emission Inventories

Conclusions

6. EMISSION FORECASTING

6.1 INTRODUCTION

This chapter presents emission inventories for reactive organic gases (ROG), oxides of nitrogen (NO_x), and carbon monoxide (CO) emissions in Santa Barbara County and the Outer Continental Shelf (OCS), offshore of Santa Barbara County. These inventories are the 1996 Planning Emission Inventory, 1999 Planning Emission Inventory Forecast, and 2005 Planning Emission Inventory Forecast.

The 1999 Planning Emission Inventory Forecast is used to determine if the Clean Air Plan's (CAP) emission control strategies will achieve a 24% reduction in ROG emissions between 1990 and 1999. Per USEPA guidance, the 24% reduction in ROG emissions represents a combination of the 15% ROG emission reduction required by 1996 under Section 182(b) plus a 9% ROG emission reduction required by 1999 under Section 182(c). The 1999 Planning Emission Inventory Forecast is also used to corroborate emission ratio techniques used by the ARB in photochemical modeling to demonstrate attainment of the 1-hour federal ozone standard by 1999.

The 2005 Planning Emission Inventory Forecast is prepared to assess emission trends at the attainment date specified for "severe" nonattainment areas ("severe" is the next higher classification beyond our current status of "serious".) This inventory provides an advanced view of future emission levels that we may have to analyze if we fail to attain the 1-hour federal ozone standard by 1999 and to assess emission reductions needed to attain the new federal 8-hour ozone standard. Thus, the 2005 Planning Emission Inventory Forecast is informational in nature and has no specific regulatory requirement at this time.

Both the 1999 and 2005 Planning Emission Inventory Forecasts are based on the 1996 Annual Emission Inventory. As discussed in Chapter 3, numerous changes, specifically updated emission factors and calculation methodologies, were implemented between 1990 and 1996. The 1996 Annual Emission Inventory is the most current and accurate inventory available. This inventory was used for

the forecasts, and has been converted to the *1996 Planning Emission Inventory*. A Planning Emission Inventory (PEI) is essentially a modified subset of an Annual Emission Inventory (AEI) and contains the following differences. First, annual emissions from the AEI are converted to daily emissions in the PEI. Second, an AEI contains the ozone precursor pollutants of ROG, NOx, and CO, as well as SOx and PM. The PEI only contains the three ozone precursor pollutants, (ROG, NOx, and CO). Third, the creation of the PEI involves adjusting the AEI to account for seasonal variation because most exceedances of the federal 1-hour ozone standard occur during the April to October ozone season. And lastly, the emissions from natural sources such as biogenics, oil and gas seeps, and wildfires that are in the AEI are excluded from the PEI since they are not currently regulated through implementation of emission control measures.

6.2 EMISSION FORECAST

To forecast future year emissions, estimates of the changes in the level of pollution producing activities are applied to the 1996 Planning Emission Inventory. In addition, emission reductions resulting from local controls adopted by the APCD Board of Directors after 1990 and from state-wide regulations adopted by the California Air Resources Board (ARB) are estimated and subtracted from the emission inventory.

The 1999 Planning Emission Inventory Forecast of emissions is used to demonstrate that the emission control measures, described in Chapters 4 and 5 of this plan, will reduce enough emissions to achieve the Rate-of-Progress target level and federal 1-hour ozone standard in 1999. (Future Air Quality is discussed in Chapter 7 and the Rate-of-Progress is discussed in Chapter 9.)

One special adjustment that is made to the forecast inventories is the accounting of emission reduction credits (ERCs) that were banked prior to 1990. ERC's are previous reductions in emissions that can be credited to allow increased emissions from a new or modified stationary source. USEPA policy mandates that pre-1990 ERC's must be treated as potential growth in forecast years. Currently, only Vandenberg Air Force Base has banked ERC's that may be used toward future growth. Total available ERC's from Vandenberg Air Force Base as of the 4th quarter 1996 were 0.003 tons per day

ROG, 0.173 tons per day NOx, 0.01 tons per day SOx, 0.049 tons per day CO, and 0.054 tons per day PM.

6.2.1 ACTIVITY INDICATORS

Forecasting quantities of pollution in future years is accomplished by assuming that the amount of pollution is related to activity levels of selected ***activity indicators***. Examples of activity indicators include population, housing, employment, oil production, number of producing oil wells, daily vehicle miles traveled, and daily vehicle starts. The Santa Barbara County Association of Governments (SBCAG) was the source for several of the activity indicator estimates. The California Air Resources Board, and other state and local agencies also contributed activity data. These data represent the best available estimates of future activity levels for the county. The ***activity factor*** is the ratio of the 1999 and 2005 forecast levels of activity to the 1996 level of activity. An activity factor greater than one indicates an increase in growth, while an activity factor of less than one indicates a decline in growth for each activity relative to 1996. Table 6-7 provides the 1996 level of activity, the predicted 1999 and 2005 levels of activity, the activity factors, and the source of the forecast for each of the activity indicators.

An activity indicator was assigned to each Stationary Source and Area-Wide Source category described in Chapter 3, with the exception of the On-Road Motor Vehicle source category. To forecast future year emissions, the quantity of emissions from each source in 1996 is multiplied by the activity factor of its assigned activity indicator. The resulting quantities predict the future year emissions that would result if no additional controls were implemented after 1990. The assignments of activity indicators to emission sources are documented in Appendix A, Emission Inventory and Forecasting Documentation.

The forecasting of On-Road Motor Vehicle emissions was conducted differently from the other components of the inventory. On-Road Motor Vehicles emissions are forecast by SBCAG for each class of vehicle using activity data generated by the SBCAG Travel Model. This vehicle activity data is then used as input to other emission models to estimate the On-Road Motor Vehicle Emission Inventory for the forecast years.

6.2.2 CONTROL MEASURES

The next step in forecasting future year emissions is to account for regulations and control measures scheduled for implementation since 1990. Emission reductions are achieved through implementation of federal, state and local controls on a variety of pollution sources, including Stationary Sources, Area-Wide Sources, and Mobile Sources.

The emissions from each source were reduced according to the expected efficiency of any control measures that apply to that source, taking into account any existing level of control. The efficiencies for each control measure and how they are calculated are provided in Appendix B, Stationary Source Emission Control Documentation. Estimated efficiencies take into account equipment (design) efficiencies, exemptions, phased implementations, and expected rates of compliance (assumed to be a default 80%, as recommended in USEPA guidelines). The resulting emissions after the application of control measures represent a forecast seasonally adjusted emission inventory. A detailed accounting of forecast emissions after control measure implementation for each source category is presented in Appendix A.

6.3 EMISSION INVENTORIES

The following is a summary of the 1996 Planning Emission Inventory, the 1999 Planning Emission Inventory Forecast, and the 2005 Planning Emission Inventory Forecast for both Santa Barbara County and the Outer Continental Shelf (OCS).

6.3.1 1996 PLANNING EMISSION INVENTORY: SANTA BARBARA COUNTY

<u>ROG Emissions: 41.37 tons per day</u>

- 22.4% Stationary Sources: 9.27 tons per day
  - 1.9% Fuel Combustion
  - 1.0% Waste Disposal
  - 10.5% Cleaning and Surface Coatings

8.7% Petroleum Production and Marketing

0.3% Industrial Processes

- 22.0% Area-Wide Sources: 9.09 tons per day
  - 19.4% Solvent Evaporation
  - 2.6% Miscellaneous
- 55.6% Mobile Sources: 23.00 tons per day
  - 49.3% On-Road Motor Vehicles
  - 6.3% Other Mobile Sources

<u>NOx Emissions: 45.54 tons per day</u>

- 19.4% Stationary Sources: 8.85 tons per day
  - 19.0% Fuel Combustion
  - 0.1% Waste Disposal
  - 0.3% Petroleum Production and Marketing
- 1.3% Area-Wide Sources: 0.58 tons per day
  - 1.3% Miscellaneous
- 79.3% Mobile Sources: 36.11 tons per day
  - 55.4% On-Road Motor Vehicles
  - 23.9% Other Mobile Sources

<u>CO Emissions: 235.99 tons per day</u>

- 2.9% Stationary Sources: 6.77 tons per day
  - 2.6% Fuel Combustion
  - 0.2% Petroleum Production and Marketing
  - 0.1% Industrial Processes
- 4.7% Area-Wide Sources: 11.15 tons per day
  - 4.7% Miscellaneous
- 92.4% Mobile Sources: 218.06 tons per day
  - 78.9% On-Road Motor Vehicles
  - 13.5% Other Mobile Sources

6.3.2 1999 PLANNING EMISSION INVENTORY FORECAST: SANTA BARBARA COUNTY

ROG Emissions: 38.93 tons per day

- 22.6% Stationary Sources: 8.79 tons per day
  - 2.2% Fuel Combustion
  - 1.0% Waste Disposal
  - 10.4% Cleaning and Surface Coatings
  - 8.6% Petroleum Production and Marketing
  - 0.4% Industrial Processes
- 26.1% Area-Wide Sources: 10.14 tons per day
  - 20.5% Solvent Evaporation
  - 5.6% Miscellaneous
- 51.4% Mobile Sources: 20.04 tons per day
  - 44.8% On-Road Motor Vehicles
  - 6.6% Other Mobile Sources

NOx Emissions: 43.15 tons per day

- 22.4% Stationary Sources: 9.70 tons per day
  - 20.2% Fuel Combustion
  - 0.2% Waste Disposal
  - 2.0% Petroleum Production and Marketing
- 2.6% Area-Wide Sources: 1.11 tons per day
  - 2.6% Miscellaneous
- 75.0% Mobile Sources: 32.30 tons per day
  - 51.3% On-Road Motor Vehicles
  - 23.7% Other Mobile Sources

CO Emissions: 216.94 tons per day

- 3.7% Stationary Sources: 8.01 tons per day
  - 3.3% Fuel Combustion

0.1% Waste Disposal

0.2% Petroleum Production and Marketing

0.1% Industrial Processes

- 9.1% Area-Wide Sources: 19.65 tons per day

  9.1% Miscellaneous

- 87.2% Mobile Sources: 189.28 tons per day

  72.1% On-Road Motor Vehicles

  15.1% Other Mobile Sources

6.3.3 2005 PLANNING EMISSION INVENTORY FORECAST: SANTA BARBARA COUNTY

ROG Emissions: 32.08 tons per day

- 27.3% Stationary Sources: 8.75 tons per day

  2.6% Fuel Combustion

  1.2% Waste Disposal

  13.6% Cleaning and Surface Coatings

  9.4% Petroleum Production and Marketing

  0.5% Industrial Processes

- 29.5% Area-Wide Sources: 9.45 tons per day

  20.5% Solvent Evaporation

  9.0% Miscellaneous

- 43.2% Mobile Sources: 13.81 tons per day

  36.1% On-Road Motor Vehicles

  7.1% Other Mobile Sources

NOx Emissions: 34.69 tons per day

- 25.5% Stationary Sources: 8.83 tons per day

  23.9% Fuel Combustion

  0.3% Waste Disposal

  1.3% Petroleum Production and Marketing

- 4.3% Area-Wide Sources: 1.50 tons per day

4.3% Miscellaneous

- 70.1% Mobile Sources: 24.25 tons per day
  - 48.1% On-Road Motor Vehicles
  - 22.0% Other Mobile Sources

CO Emissions: 172.86 tons per day

- 4.5% Stationary Sources: 7.65 tons per day
  - 3.9% Fuel Combustion
  - 0.2% Waste Disposal
  - 0.2% Petroleum Production and Marketing
  - 0.2% Industrial Processes
- 14.8% Area-Wide Sources: 25.95 tons per day
  - 14.8% Miscellaneous
- 80.7% Mobile Sources: 140.52 tons per day
  - 60.4% On-Road Motor Vehicles
  - 20.3% Other Mobile Sources

6.3.4 1996 PLANNING EMISSION INVENTORY: OUTER CONTINENTAL SHELF

ROG Emissions: 5.62 tons per day

- 68.9% Stationary Sources: 3.87 tons per day
  - 4.1% Fuel Combustion
  - 1.8% Cleaning and Surface Coatings
  - 63.0% Petroleum Production and Marketing
- 31.1% Mobile Sources: 1.75 tons per day
  - 31.1% Other Mobile Sources

NOx Emissions: 29.04 tons per day

- 80.0% Mobile Sources: 23.24 tons per day
  - 80.0% Other Mobile Sources
- 20.0% Stationary Sources: 5.80 tons per day

13.4% Fuel Combustion

6.6% Petroleum Production and Marketing

CO Emissions: 17.37 tons per day

- 73.4% Stationary Sources: 12.74 tons per day

  13.5% Fuel Combustion

  59.9% Petroleum Production and Marketing

- 26.7% Mobile Sources: 4.63 tons per day

  26.7% Other Mobile Sources

6.3.5 1999 PLANNING EMISSION INVENTORY: OUTER CONTINENTAL SHELF

ROG Emissions: 5.63 tons per day

- 68.2% Stationary Sources: 3.84 tons per day

  4.1% Fuel Combustion

  1.4% Cleaning and Surface Coatings

  62.7% Petroleum Production and Marketing

- 31.8% Mobile Sources: 1.79 tons per day

  31.8% Other Mobile Sources

NOx Emissions: 29.31 tons per day

- 80.1% Mobile Sources: 23.46 tons per day

  80.1% Other Mobile Sources

- 19.9% Stationary Sources: 5.83 tons per day

  13.2% Fuel Combustion

  6.7% Petroleum Production and Marketing

CO Emissions: 17.45 tons per day

- 73.0% Stationary Sources: 12.74 tons per day

  13.4% Fuel Combustion

59.6% Petroleum Production and Marketing

- 27.0% Mobile Sources: 4.71 tons per day

  27.0% Other Mobile Sources

6.3.6 2005 PLANNING EMISSION INVENTORY: OUTER CONTINENTAL SHELF

ROG Emissions: 5.61 tons per day

- 69.0% Stationary Sources: 3.87 tons per day

  4.1% Fuel Combustion

  1.8% Cleaning and Surface Coatings

  63.1% Petroleum Production and Marketing

- 31.0% Mobile Sources: 1.74 tons per day

  31.0% Other Mobile Sources

NOx Emissions: 26.28 tons per day

- 77.9% Mobile Sources: 20.48 tons per day

  77.9% Other Mobile Sources

- 22.1% Stationary Sources: 5.80 tons per day

  14.8% Fuel Combustion

  7.3% Petroleum Production and Marketing

CO Emissions: 17.61 tons per day

- 72.4% Stationary Sources: 12.74 tons per day

  13.3% Fuel Combustion

  59.1% Petroleum Production and Marketing

- 27.7% Mobile Sources: 4.87 tons per day

  27.7% Other Mobile Sources

6.4 CONCLUSIONS

This chapter presents the 1996 Planning Emission Inventory, and the 1999 and 2005 Planning Emission Inventory Forecasts. The 1996 Planning Emission Inventory was used as the basis to calculate the 1999 and 2005 forecasts. The 1999 Planning Emission Inventory Forecast is the most significant, as this forecast will be used to determine Rate-of-Progress emission reductions. This is more fully discussed in Chapter 9.

The following tables and figures detail the emissions in Santa Barbara County and the Outer Continental Shelf for the years 1996, 1999, and 2005. Tables 6-1, 6-2, and 6-3 show the Santa Barbara County emission inventories for the years 1996, 1999 and 2005, respectively. Mobile Sources, primarily On-Road Motor Vehicles (Light-Duty Passenger and Light-Duty Trucks) produce the majority of ROG, NOx, and CO for each of these years, although the trend shows a large decline in these emissions from 1996 to 2005. Tables 6-4, 6-5, and 6-6 show the same data for the Outer Continental Shelf, offshore of the county. The majority of the ROG and CO emissions are Stationary Sources, primarily Oil and Gas Production, with the bulk of NOx emissions from Other Mobile Sources, specifically Ship and Commercial Boats. The emission trend for the Outer Continental Shelf also shows a more gradual emission decline compared to the Santa Barbara County emissions. Since the OCS doesn't include the large quantity of emissions from On-Road Motor Vehicles, the decline that is evident onshore is not as dramatic.

Figures 6-1, 6-2, and 6-3 graphically illustrate the relative contributions of the major emission categories to the emissions of ROG, NO_X, and CO in the county in 1996, 1999, and 2005, respectively. Figures 6-4, 6-5, and 6-6 illustrate the same data for the Outer Continental Shelf offshore of the county. Refer to Appendix A for additional forecast information.

TABLE 6-7

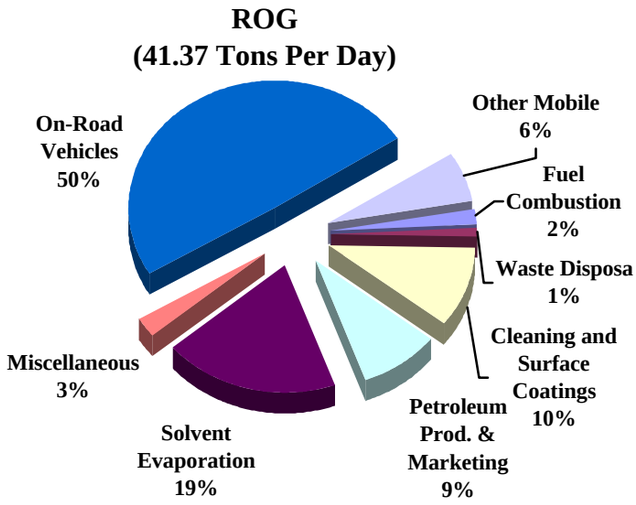
1998 CLEAN AIR PLAN ACTIVITY INDICATORS AND FACTORS FOR 1999 AND 2005

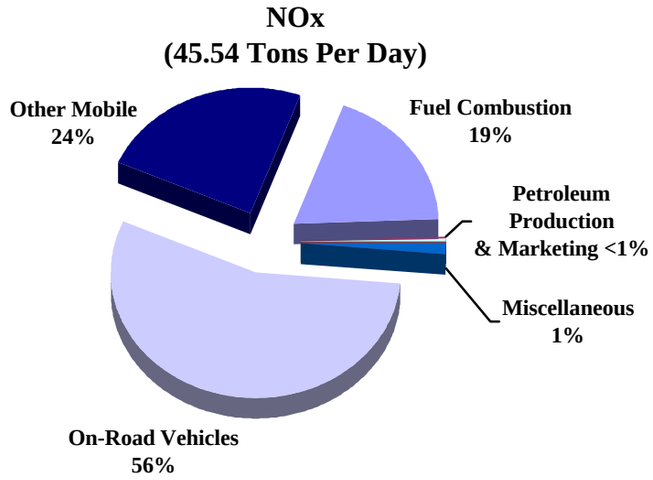
ACTIVITY INDICATOR	UNITS	VALUE			FACTOR		INFORMATION SOURCE
		1996	1999	2005	1999	2005	
AGRICULTURAL-ACRES	ACRES	115,676	115,953	117,437	1.002	1.015	Agricultural Commissioner's Crop
AIRCRAFT OPERATIONS	OPERATIONS	280,569	352,609	392,408	1.233	1.373	AIRPORT MASTER PLANS
DAILY VEHICLE MILES	1000 MILES TRAVELLED	8,613	9,022	9,696	1.048	1.126	SBCAG
EMP-COMMERCIAL	EMPLOYEES	79,318	83,467	91,800	1.052	1.157	SBCAG
EMP-INDUSTRIAL	EMPLOYEES	26,946	28,211	30,171	1.047	1.120	SBCAG
HOUSING	HOUSEHOLDS	134,686	138,151	144,522	1.026	1.073	SBCAG
LANDFILLS	1000 TONS IN PLACE	14,187	15,659	18,506	1.104	1.304	SBCAPCD
LOCOMOTIVES	1000 GALLONS BURNED	4,003	3,911	3,835	0.977	0.958	CARB/Booz-Allen & Hamilton [b]
NO GROWTH	NO UNITS	1	1	1	1.000	1.000	SBCAPCD
PESTICIDE USE	TONS PESTICIDES APPLIED	2,264	2,391	2,389	1.056	1.055	CA DEPT. OF PESTICIDE REG.
PETROLEUM PROD.	1000 BARRELS	4,602	3,568	2,073	0.775	0.450	CA DIVISION OF OIL & GAS
PETROLEUM WELLS	PRODUCING AND INACTIVE WELLS	2561	2493	2167	0.973	0.846	CA DIVISION OF OIL & GAS
POPULATION	RESIDENTS	398,574	411,804	437,398	1.033	1.097	SBCAG
PRESCRIBED FIRES	ACRES	1,500	7,150	12,325	4.767	8.217	US FOREST SERVICE
SHIP ACTIVITY	VESSEL TRANSITS	7,729	7,806	7,960	1.010	1.030	SBCAPCD/VCAPCD/SCAQMD

a Gasoline vehicles only

b Activity factors are composites of pollutant-specific factors developed by source.

Figure 6-1
1996 Santa Barbara County
Planning Emission Inventory





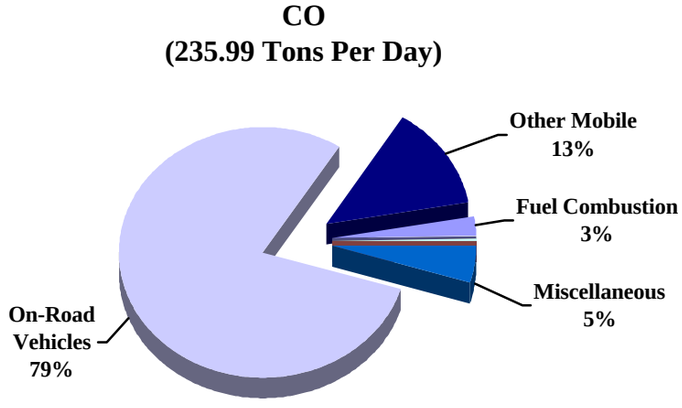
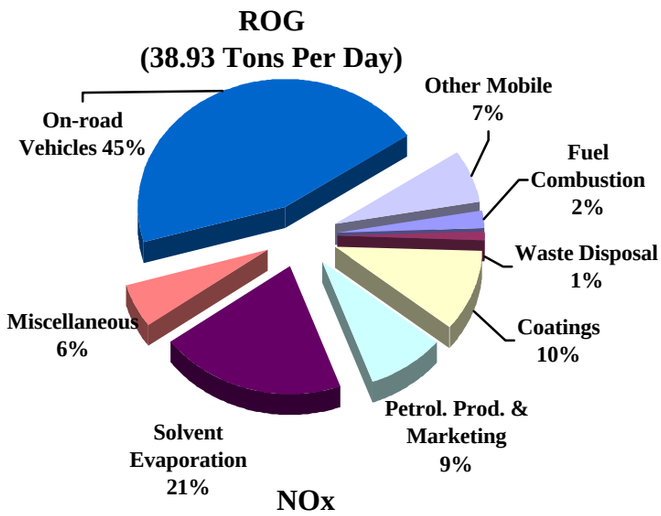
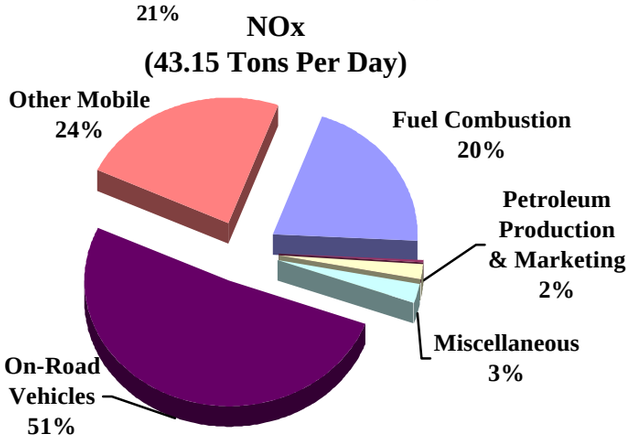


Figure 6-2
1999 Santa Barbara County
Planning Emission Inventory





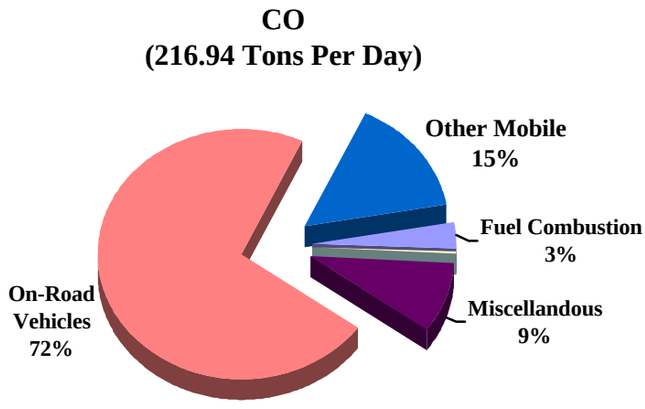
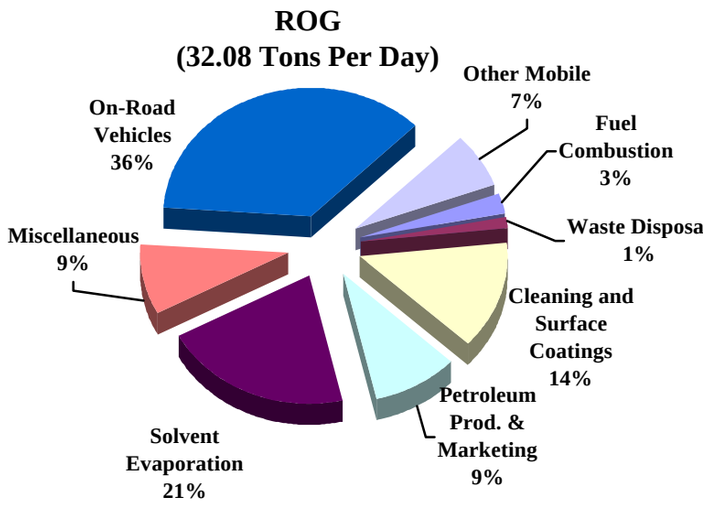
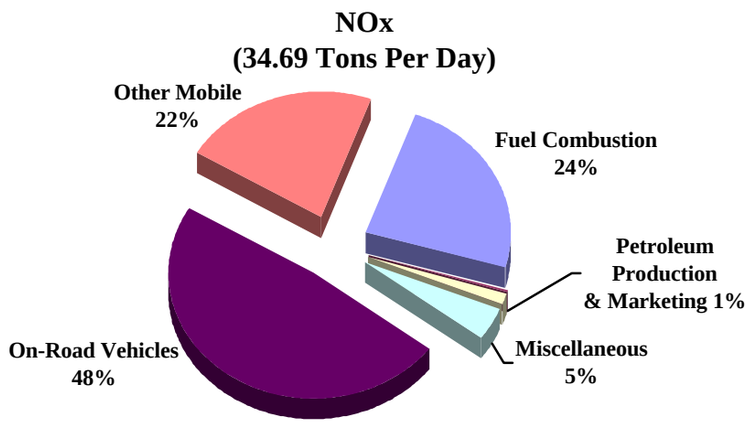


Figure 6-3
2005 Santa Barbara County
Planning Emission Inventory





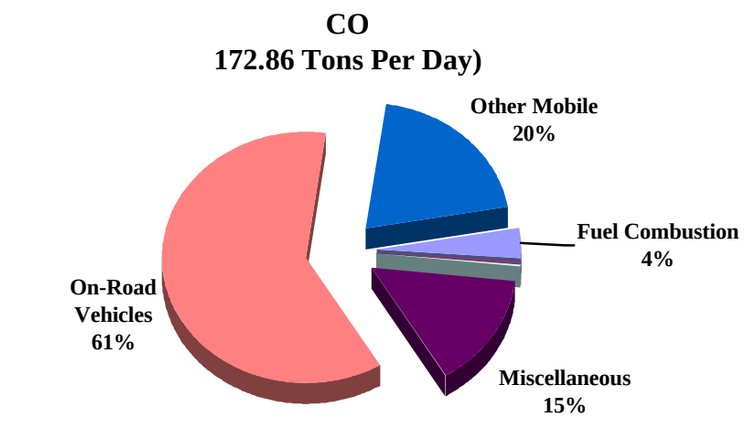
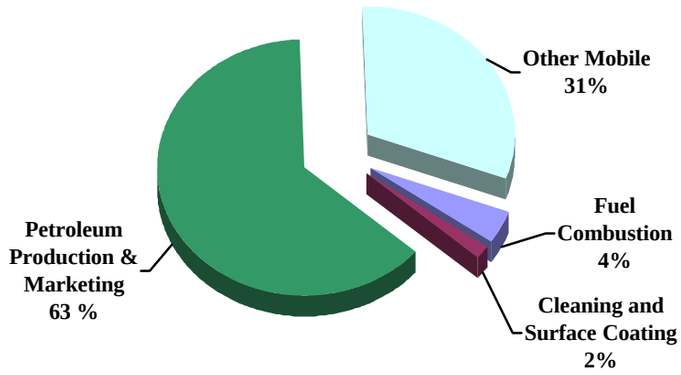


Figure 6-4
1996 Outer Continental Shelf
Planning Emission Inventory

ROG
(5.62 Tons Per Day)



NOx
(29.04 Tons Per Day)

CO
(17.37 Tons Per Day)

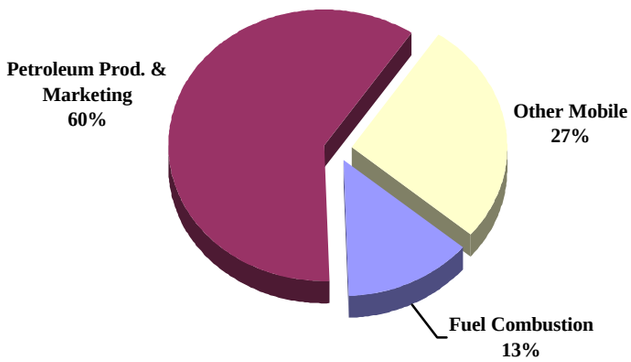
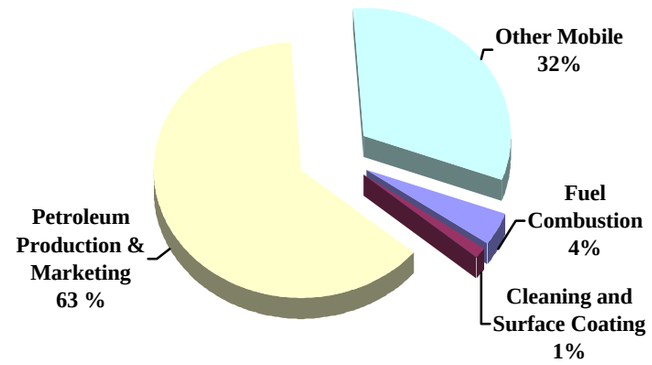
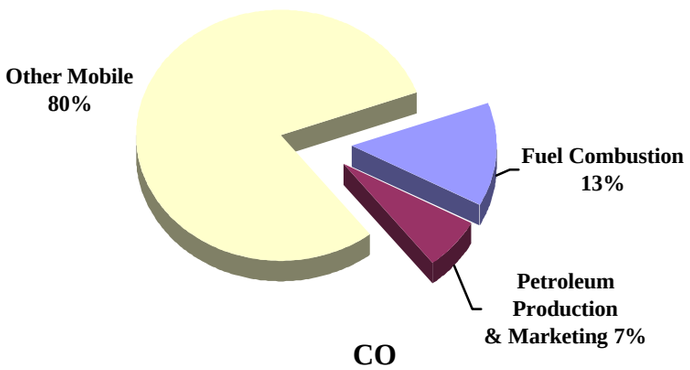


Figure 6-5
1999 Outer Continental Shelf
Planning Emission Inventory

ROG
(5.63 Tons Per Day)



NOx
(29.31 Tons Per Day)



CO
(17.45 Tons Per Day)

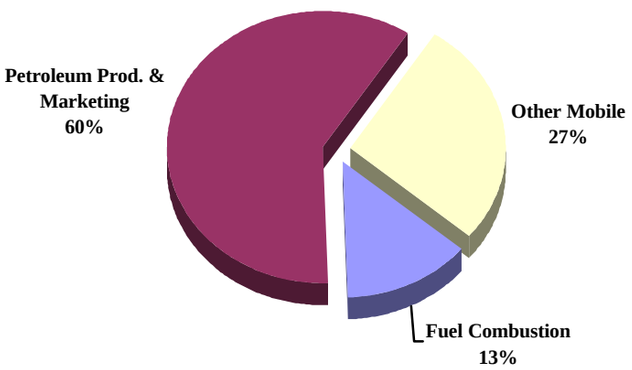
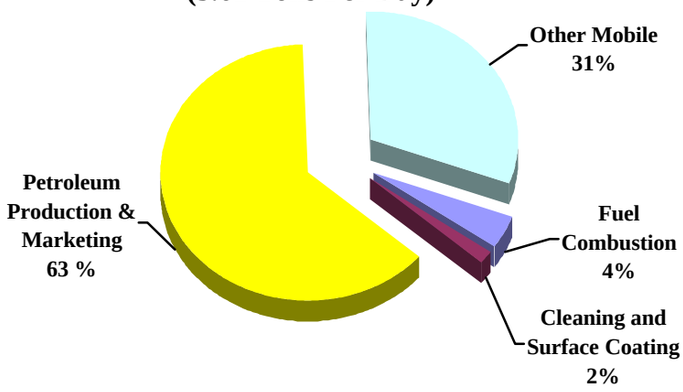
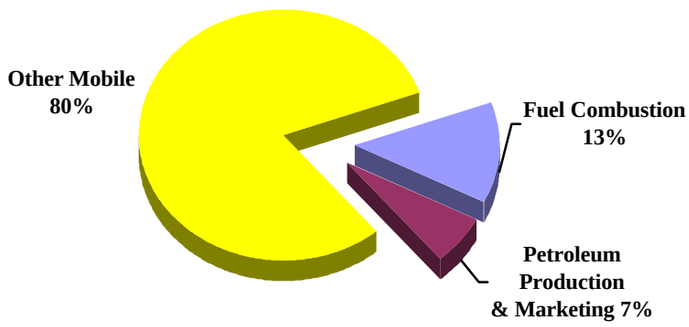


Figure 6-6
2005 Outer Continental Shelf
Planning Emission Inventory

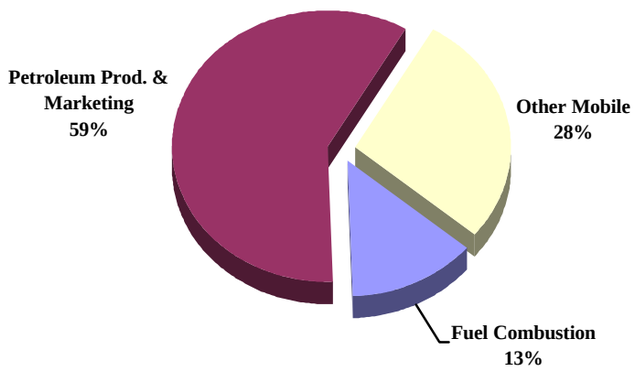
ROG
(5.61 Tons Per Day)



NOx
(26.79 Tons Per Day)



CO
(17.61 Tons Per Day)



CHAPTER 7

FUTURE AIR QUALITY

7. FUTURE AIR QUALITY

7.1 INTRODUCTION

Air quality modeling is a computer simulation of the atmospheric processes that govern the quality of the air we breathe. This type of modeling is performed to estimate the air quality impact from existing sources of air pollutants. Models are also useful for planning purposes as they can assess the relative changes in ambient air quality from future levels of emissions. This chapter describes how air quality modeling is used to demonstrate that the county will attain the federal 1-hour ozone standard by 1999 and how pollutants transported from areas outside Santa Barbara County influence our local air quality.

The outline of this chapter is as follows: Section 7.2 discusses the modeling objectives and methodology used for the demonstration of attainment. Section 7.3 describes the input preparation required to execute the model. Section 7.4 documents the procedures for evaluating the performance of the model. Modeling results and the attainment demonstration are presented in Section 7.5 with data access procedures outlined in Section 7.6. Section 7.7 discusses the impacts of transported pollutants on local air quality. And finally, Section 7.8 summarizes the conclusions derived from the modeling and transport analyses. Technical documentation of the attainment demonstration modeling is available from the California Air Resources Board through a written request to the Santa Barbara County APCD.

7.2 MODELING OBJECTIVES AND METHODLOGY

Section 182(b)(1)(A) of the federal Clean Air Act Amendments (FCAAA) requires that "moderate" nonattainment areas develop plans to "provide for such specific annual reductions in emission of volatile organic compounds and oxides of nitrogen as necessary to attain the national primary ambient air quality standard for ozone" by 1996. To satisfy this requirement, the Santa Barbara County APCD and the Ventura County APCD jointly prepared an ozone attainment demonstration for the southern region of the South Central Coast Air Basin using ozone episodes collected during the South Central Coast Cooperative Aerometric Monitoring Program (SCCCAMP). The analyses were conducted with

the Urban Airshed Model (UAM) and carbon bond IV chemistry. The primary objectives of this effort were to demonstrate attainment of the federal ozone standard in Santa Barbara County by 1996 and in Ventura County by 2005. The effort was also coordinated with the current Federal Implementation Plan (FIP) modeling for Ventura County. A joint modeling protocol was developed and forwarded to the USEPA and ARB in June 1992. Alpine Geophysics also developed a modeling protocol for the FIP modeling for Ventura County (using the same SCCCAMP episodes) in February 1993.

Although the use of photochemical grid modeling was not specifically mandated for "moderate" nonattainment areas, it was mutually agreed upon by the USEPA, ARB, and the APCD that the joint Santa Barbara/Ventura modeling effort, supplemented with a countywide investigation, would satisfy the attainment demonstration requirement.

As already discussed, while our local air quality has improved, it did not improve enough to comply with the federal 1-hour ozone standard by 1996. On December 10, 1997, the USEPA recognized this fact and reclassified the entire county as a "serious" nonattainment area. This action mandates that a revision to the Clean Air Plan be developed and submitted within 12 months (by January 9, 1999) to comply with Section 182(c) of the FCAAA . Section 182(c)(2)(A) requires that "serious" nonattainment areas demonstrate attainment of the 1-hour ozone standard by November 15, 1999. The act also specifies that the attainment demonstration must be based on photochemical modeling or any other analytical method that is at least as effective.

The modeling analysis and attainment demonstration provided in this chapter are based on work performed previously for the 1994 planning mandates for both Santa Barbara County and Ventura County. Emission inventories for 1984, 1996, and 1999 were developed for the modeling by the California Air Resources Board. The ratio of the peak simulated ozone concentrations within Santa Barbara County between 1996 and 1999 is used to scale the maximum design value recorded from 1994 through 1996 as a demonstration of attainment. While there is a significant degree of uncertainty associated with this analysis, it provides the basis for a "weight of evidence" determination that is consistent with the analytical requirements of Section 182(c)(A)(2).

7.2.1 THE URBAN AIRSHED MODEL

Photochemical models are designed to simulate the transport and diffusion of pollutants in the atmosphere and the chemical transformations and removal processes these compounds are subject to. The results provide estimates of ozone concentrations at various locations (known as grid cells) within the modeling domain.

Of the various photochemical models available for assessing ozone air quality impacts, both the Urban Airshed Model (UAM) and the Empirical Kinetic Modeling Approach (EKMA) have been given guideline status by the USEPA. Of these two models, the UAM was used for this attainment demonstration because it represents the best available analytical technique to evaluate the impact of ROG and NO_x emissions on ozone concentrations. The UAM is a photochemical grid model as required for the demonstration of attainment for "serious" nonattainment areas under Section 182(c)(A)(2).

The UAM is based on a stationary three-dimensional array of grid cells. Each grid cell has a constant horizontal dimension, while the vertical dimension varies depending on meteorological conditions. Pollutants are emitted within the grid cells, transported from cell to cell, diffused by turbulence, exchanged between adjacent cells, and removed from the grid region by deposition or by other means. The UAM predicts ozone concentrations for every grid cell within the domain and for all hours of the simulation period. Generally, to test the applicability of the model, a base case episode is simulated using emissions and meteorological data from a specific date which had experienced ozone concentrations similar to the area's design value. If the model successfully reproduces the observed ozone concentrations within a set criteria, the base case emissions can then be modified and re-run to estimate ozone concentrations in the future. In this case, both 1996 and 1999 simulations will be conducted to assess the relative improvements to local air quality from this 1998 CAP.

It is important to emphasize that UAM is an ozone **simulation** model. Ozone formation is an extremely complex process and our ability to reproduce and predict this process is not complete. The model is assumed to be performing adequately when it reproduces maximum observed concentrations

over a region within plus or minus 30 percent. Thus, if the model predicts a peak ozone concentration of 11 parts per hundred million (pphm), the actual observed concentration could range from 8 to 14 pphm. This uncertainty is particularly important in this analysis since the design value for the 1994 through 1996 period was 13 pphm and the next mandated attainment date is 1999. These two variables (concentrations very close to the standard and a very short span of time) combine to introduce a significant amount of uncertainty in the analysis.

7.2.2 MODELING DOMAIN

Figure 7-1 shows the modeling domain used for the attainment demonstration. This figure includes the entire southern region and part of the northern portion of Santa Barbara County, the majority of Ventura County, and the extreme western part of Los Angeles County.

The modeling domain consists of a 54 x 26 grid mesh with each grid square covering a 4 x 4 kilometer horizontal area. Six vertical layers of grid cells, three above the inversion base and three below were included in the simulations (the inversion base is the level above the ground at which the air temperature begins to increase with height, thus acting as a lid to trap pollutants below this level).

7.2.3 MODEL EPISODE SELECTION

A key element in air quality modeling to predict future year ozone concentrations is the selection of the modeling episode. The modeling episode serves as the basis from which future year emissions, and resultant ozone concentrations, are assessed. The design episodes to be used for the attainment demonstration in the 1994 CAP were selected based on the following factors:

1. The peak ozone concentration observed during the design episode should be greater than the 1-hour federal standard (12 pphm) and should be greater than or equal to the fourth highest ozone concentration recorded in the last three years.

   The fourth highest ozone concentration is used as a reference point to be consistent with the USEPA methodology for determining an area's classification (discussed in

detail in Chapter 2). The county's design value during the 1984-1986 (SCCCAMP was conducted during 1984 and 1985) period was 15 pphm measured at Santa Barbara. A valid modeling episode should have measured ozone concentrations near this level.

2. The meteorology during the design episode (surface flow and upper air analysis) should indicate little or no pollutant transport from outside the modeling region.

   Transport refers to ozone and ozone precursors generated outside the county that affect ozone concentrations within the modeling region. An ideal modeling episode should experience minimal transport.

3. A comprehensive and accurate set of model inputs must be available for the design episode (these data are required to evaluate performance of the UAM).

   Application of the UAM requires an extensive database for both development of the model input and model performance evaluation. These data requirements generally exceed those that are routinely available. Data collected during SCCCAMP provide the intensive database required to exercise the model. In addition, extensive technical assistance was provided during the monitoring portion of SCCCAMP, the subsequent data analyses, and development of base case modeling episodes as part of the Santa Barbara County 1989 AQAP.

4. It is preferable (but not imperative) that a design episode occur during the weekdays (Monday through Friday), when better estimates of motor vehicle emissions can be obtained.

Five candidate episodes were reviewed based on the above criteria and are documented in the Federal Implementation Plan modeling protocol developed by Ventura County for the USEPA. The five candidate episodes are September 5-7, 1984, September 16-17, 1984, September 11-13, 1985, September 23-25, 1985, and October 2-3, 1985.

In the 1994 CAP, two episodes were selected for the modeling analyses: September 5-7, 1984 and September 16-17, 1984. For this analysis, it was determined that the September 5-7, 1984, episode was the most appropriate base case to use for the attainment demonstration simulations. Each of the remaining episodes experienced significant boundary conditions influence from areas outside the modeling domain. It should be noted that this effort should be the last time episodes from SCCCAMP are used for an attainment demonstration. These episodes are old and will be replaced with more recent data. APCD staff are participating in the technical working group assessment of the Southern California Ozone Study (SCOS) which was conducted in the summer of 1997. The objective of this effort is to develop new base case episodes to address future photochemical modeling requirements.

7.3 MODEL INPUT PREPARATION

Modeling inputs for each of the five episodes listed above have been developed under various modeling projects using the data collected during the SCCCAMP measurement projects. Data for the September 5-7, 1984, episode of interest were taken from the 1994 SIP modeling performed for Ventura County and Santa Barbara County. Details of the original input development procedures are provided in a report prepared for the USEPA (Tesche, 1988). Additional information is provided in the modeling protocols developed for the 1994 CAP process (Reeve, 1992; Tesche, 1993; Murphy, 1993), Chapter 7 and Appendix D of the 1994 CAP.

The current modeling effort focused mainly on updating the emission inventories from the earlier work for 1984, 1996, and 1999. Simulations were performed for 1984 to assess model performance and for 1996 and 1999 to represent the design value year and the attainment year, respectively.

7.3.1 EMISSIONS PREPARATION

As just mentioned, updated emission inventories were developed for 1984, 1996, and 1999. However, the development of day specific inventories was not feasible due to limited resources, time constraints and data collection efforts for SCOS. The emission inventory data collected under SCOS represent the most up-to-date information available in a gridded format. Therefore, the 1990 gridded emissions inventory developed with data collected for SCOS was used as the basis for the 1984, 1996, and 1999

emission inventories, which were then mapped into the SCCCAMP modeling domain. This exercise required several assumptions that are documented in a Final Report prepared by the California Air Resources Board (ARB, 1998) and included in this 1998 CAP as Appendix D. The emission inventory ratio process was necessary to reflect emissions from Santa Barbara County, Ventura County, and part of Los Angeles County that are within the SCCCAMP domain.

7.3.2 AIR QUALITY AND METEOROLOGICAL DATA PREPARATION

Air quality and meteorological data input files from the 1994 SIP process for Santa Barbara and Ventura Counties were used in this analysis with only one modification. Changes to the boundary condition files were made to the eastern side of the modeling domain to represent the decreasing influence (and impacts) of the South Coast Air Basin (Los Angeles area) over time. Boundary condition files for 1996 and 1999 were developed using a linear interpolation of anticipated ROG and NOx reductions expected to occur in the South Coast Air Basin (ARB, 1998). The pollutant concentrations on the north, south and west boundaries were not changed.

7.4 MODEL PERFORMANCE EVALUATION

Model performance for the September 5-7, 1984, episode was statistically evaluated to determine whether the results of the UAM simulation would satisfy a list of predetermined performance objectives developed by the USEPA (USEPA, 1991). A performance evaluation is necessary in order to test the model's ability to duplicate measured ozone concentrations within a specified range of uncertainty. The September 5-7, 1984, base case episodes passed the performance standards suggested by the USEPA (with the exception of normalized bias on September 6th) and therefore the model was used to demonstrate attainment as discussed in detail below.

7.5 MODEL RESULTS

This section summarizes the modeling results for the September 5-7, 1984, episode. First, a summary analysis of the base case predictions will focus on how well the episode is reproduced by the model. The analysis will focus on September 6th and 7th since the initial conditions used to start the simulation

on the 5th will influence predicted ozone concentrations. Then, the peak ozone concentrations predicted in the 1996 and 1999 simulations will be used to ratio the 1994-1996 design value to demonstrate attainment by 1999.

7.5.1 BASE CASE SIMULATIONS

It is important to understand how well the model is reproducing ozone concentrations in the base case episode before evaluating the effects of future year emissions. Although the model predicts ozone concentrations for each hour of the simulation at every grid cell within the modeling region, the federal standard is expressed as a peak one-hour concentration. Therefore, consideration must be given to the spatial and temporal reproduction of peak ozone concentrations.

To assess the merit of the approach used to scale the 1990 gridded emissions inventory for the years 1984, 1996, and 1999, the simulation results for the September 5-7, 1984, base case were compared with actual ozone concentrations measured during SCCCAMP. The peak ozone concentrations measured in the modeling domain were 17.0 pphm on September 6 and 18.0 pphm on September 7. The peak ozone concentrations simulated in the base case were 18.5 pphm on September 6 and 17.6 pphm on September 7. The peak concentration measured in Santa Barbara County on September 7 was 15.0 pphm compared to a peak simulated concentration of 17.6 pphm. While the peak concentrations are simulated within limits specified in USEPA guidelines, the model over-predicts the maximum concentration in Santa Barbara County by 2.6 pphm.

As mentioned, the USEPA has developed guidelines for assessing the overall performance of photochemical models (USEPA, 1991). For September 6, the peak prediction accuracy was +9%, the normalized bias was –17%, and the gross error was 27%. For September 7, the peak prediction accuracy was –2%, the normalized bias was –6%, and the gross error was 29%. With the exception of the normalized bias on September 6 (-17% versus –15%), these statistical measures of the model meet the USEPA performance guidelines.

7.5.2 1999 ATTAINMENT DEMONSTRATION

It is important to understand that there are a number of uncertainties associated with this analysis when applied to the design value site located in Las Flores Canyon. First, the Las Flores Canyon site was not in operation during the September 5-7, 1984, episode so the actual concentrations experienced at that location during this episode are not known. Second, a design value of 13 pphm (from 1994 through 1996) is very close to the federal 1-hour ozone standard (12 pphm) and the ability of photochemical models to resolve small differences is limited. Third, this analysis covers a very short time period (1996-1999) for simulating reductions in ozone concentrations. And last, the primary afternoon wind-flow during the episode is westerly which limits the influence from the major sources of anthropogenic emissions that are east of Las Flores Canyon.

Given these limitations, the September 5-7, 1984 base case episode was run using emissions inventories and boundary conditions derived for 1996 and 1999. For 1996, the peak simulated concentration in Santa Barbara County was 14.8 pphm compared to a peak of 14.2 pphm simulated for 1999. Thus, the peak simulated concentration between 1996 and 1999 was reduced by approximately 4%. As discussed, the measured design value for ozone in Santa Barbara County from 1994 through 1996 was 13 pphm. Based on the simulation results, the projected design value for Santa Barbara County is 12 pphm (12.47 pphm) which is considered attainment of the 1-hour federal ozone standard. Therefore, this exercise has provided a "weight of evidence" demonstration that Santa Barbara County will attain the federal 1-hour ozone standard by 1999.

7.6 DATA ACCESS

A summary archive of all input and output files used in the modeling analyses and attainment demonstration is available from the Air Resource Board. To obtain copies of the files, please submit a written request to the Santa Barbara County APCD.

7.7 IMPACTS OF POLLUTION TRANPORT ON SANTA BARBARA COUNTY

The impacts of pollution transport from areas outside of Santa Barbara County on our local air quality have been well documented (ARB, 1990; Hanna, 1989; Lehrman, 1981; SBCO, 1990; SBCO, 1997, Smith, 1987). The impacts of transport on local air quality contribute to the uncertainty discussed in the attainment demonstration in Section 7.5.2. Given the magnitude of the emissions inventories produced by the areas to the south and east of Santa Barbara County, it is clear that local air pollution episodes can be influenced to a significant degree by sources beyond our local control. In fact, it must be recognized that our ability to attain the federal 1-hour standard locally depends on the ability of neighboring areas to decrease their levels of pollution to below the applicable standards. It is very likely that pollution originating outside of Santa Barbara County will continue to impact our local air quality.

The USEPA has recognized that upwind areas generating higher levels of air pollution can impact areas that are downwind and delay expeditious attainment of air quality standards (USEPA, 1994; USEPA, 1998). On July 17, 1998, the USEPA issued a new policy memorandum to provide guidance on extending attainment dates for ozone nonattainment areas that have been classified as "moderate" or "serious" for the federal 1-hour ozone standard. The policy addresses the issue of pollution transport on down-wind areas by allowing an area to extend their attainment date if certain criteria are met. To apply for an attainment date extension an area must: 1) be identified as an area affected by pollution transport, 2) submit an approvable attainment demonstration that shows the area will attain the federal 1-hour standard no later than the attainment date of the upwind area, 3) show that all applicable local measures required under the current classification have been adopted, and 4) provide for the implementation of the adopted measures as expeditiously as practicable. The 1998 USEPA memorandum discusses the legal rationale behind the policy in detail.

This 1998 CAP demonstrates that the control strategy outlined in Chapters 4 (Emission Control Measures) and 5 (Transportation Control Measures) will provide for attainment of the federal 1-hour ozone standard by 1999. However, it is possible that pollution transported from areas outside Santa Barbara County will interfere with our ability to achieve this milestone. In the event that we are unable to demonstrate attainment of the federal 1-hour ozone standard by 1999 due to the influence of transported pollution, supported by an analysis of monitoring and meteorological data, we may request that the USEPA evaluate our local air quality circumstances and extend our attainment date.

7.8 CONCLUSIONS

Our understanding of atmospheric processes and our ability to mathematically simulate them are far from perfect. The Urban Airshed Model is a simulation model that represents the current state-of-the-art photochemical grid modeling for ozone. This process has many uncertainties associated with the mathematics used in the model including, among others, the reliance on a single ozone episode to represent future weather conditions, inaccuracies in emission inventories and meteorological data, and uncertainties with using peak concentrations to ratio our design value. These uncertainties call for caution when interpreting the results of the modeling. With this in mind, the conclusions of the air quality modeling are as follows:

1. The September 5-7, 1984, ozone episode performed well enough to be used to demonstrate attainment of the federal 1-hour ozone standard.

2. Using the ratio of peak simulated ozone concentrations for the 1996 and 1999 emissions inventories, the 1994 through 1996 design value at Las Flores Canyon, and rolled boundary conditions, the September 5-7, 1984, episode provides a "weight of evidence" demonstration that under similar meteorological conditions in the future, there would be no violation of the federal 1-hour ozone standard monitored in Santa Barbara County.

3. While the photochemical modeling summarized in this chapter demonstrates that the control strategy presented in this 1998 Clean Air Plan will provide for attainment of the federal 1-hour ozone standard by 1999, the potential impact of transported pollution from areas that are beyond our local control may interfere with our ability to achieve this milestone by 1999.

4. In the event that it is clear that Santa Barbara County was unable to achieve the federal 1-hour ozone standard by 1999 due to the influence of transported pollution, supported

by an analysis of monitoring and meteorological data, the USEPA should evaluate extending our attainment date.

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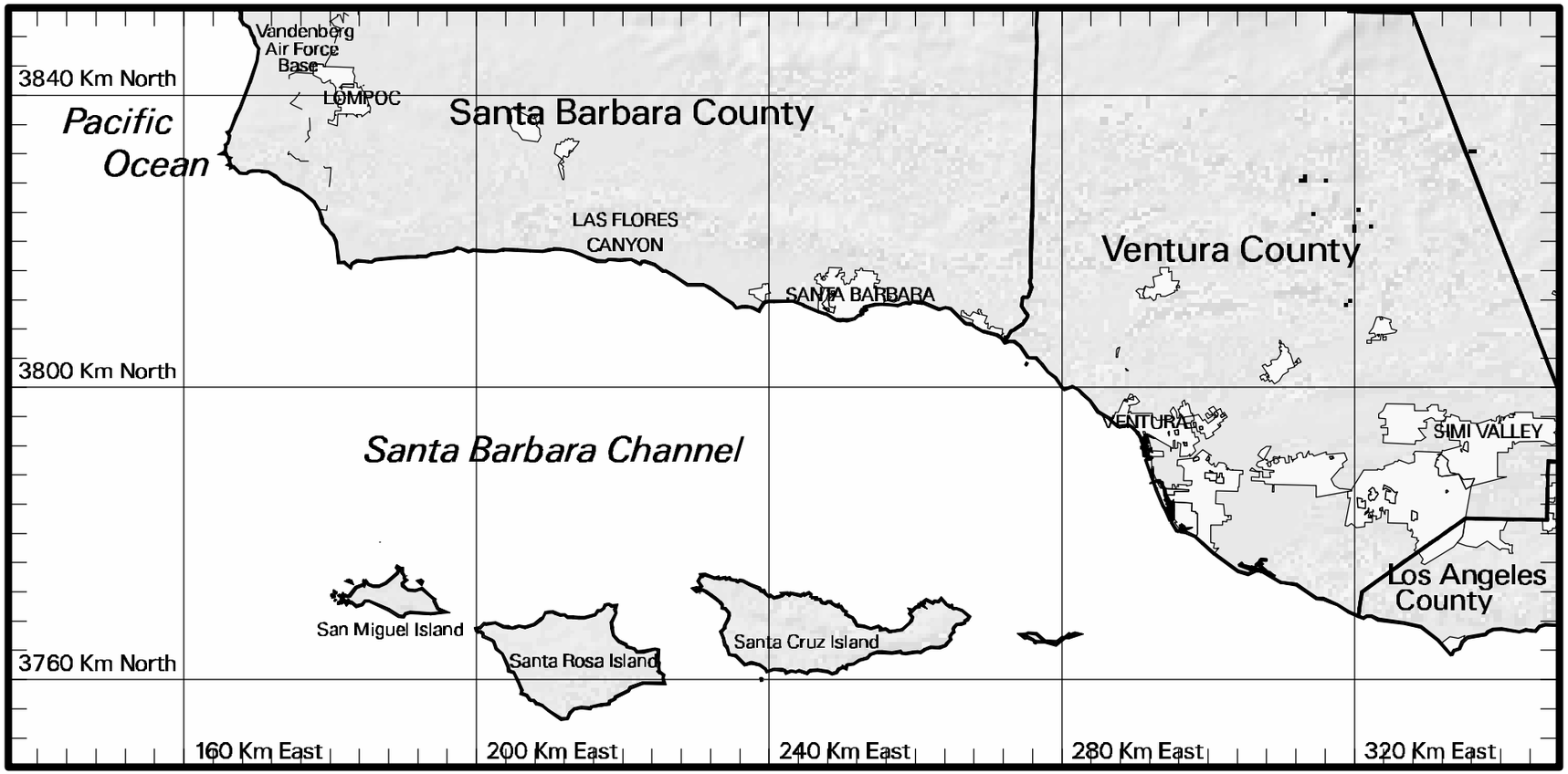
Figure 7-1

The 1984 SCCCAMP Modeling Domain



CHAPTER 8

IMPLEMENTATION SUPPORT ACTIVITIES

8. IMPLEMENTATION SUPPORT ACTIVITIES

8.1 INTRODUCTION

In addition to the implementation of the control measures described in this Clean Air Plan, there are other programs and regulations that can affect the attainment of air quality standards. These include the APCD's **New Source Review (NSR)** permitting process, the federal **transportation conformity and general conformity** regulations and **pollution prevention** programs. In addition, the APCD works cooperatively with other federal, state, and local agencies to reduce emissions through the environmental review requirements of the **California Environmental Quality Act** (CEQA) and the **National Environmental Policy Act** (NEPA). The land use policies adopted by the county and incorporated cities under their **general plans and ordinances** also serve to control emissions to some degree. Finally, programs and policies traditionally associated with **transportation planning** also contribute to attaining air quality standards and are addressed in this chapter.

8.2 APCD PERMIT REGULATIONS

The APCD's New Source Review (NSR) permitting program is designed, through the use of permits, to reduce air pollution by requiring Best Available Control Technology (BACT), modeling and/or emission offsets. The intent of this permitting program is to eliminate or reduce the number and severity of violations of the state and federal ozone standards and to help achieve expeditious attainment of these standards. As such, businesses are issued a permit only if their emissions would not (1) cause or contribute to any new standard violations, (2) increase the frequency or severity of any existing standard violations, and (3) delay the timely attainment of any standard.

In April 1997, major revisions were made to the rules governing the NSR program:

1. The list of equipment/activities deemed exempt from permit requirements was modified. The aggregate exemption limit per equipment source category was reduced from 150 pounds per day to 10 tons per year.
2. Time limits were established for permit processing depending on the size and complexity of the source.
3. The amount of emission growth allowed by a source before Best Available Control Technology (BACT) and emission offsets are required were modified from an hourly basis to a daily or annual basis. Additionally, the base year from which emissions growth is calculated was changed from 1979 to 1990.
4. Emission offset ratios for non-attainment pollutants were changed.
5. An Emissions Reduction Credit system was established to create and manage emission reduction credits proposed for use as offsets.

With the recent change in Santa Barbara County's federal ozone classification to "serious" nonattainment, the current NSR program was evaluated to determine if revisions were needed to comply with the additional requirements of the federal Clean Air Act Amendments of 1990. The specific sections of the Act that apply to serious areas include: 1) Section182(c)(6) – *De Minimis* Rule, 2) Section 182(c)(7) – Special Rule For Modifications of Sources Emitting Less Than 100 Tons, 3) Section 182(c)(8) – Special Rule For Modifications of Sources Emitting 100 Tons or More, and 4) Section 182(c)(10) – General Offset Requirement. While the implications of these new requirements are difficult to quantify, it appears that the provisions in our current NSR program are at least as stringent (or more stringent) than the requirements mandated for "serious" areas. Therefore, no revisions to the current NSR program are anticipated in this CAP.

8.3 CONFORMITY REGULATIONS

Other than emissions subject to the APCD's NSR and PSD rules, emission increases are also governed by two APCD rules, Transportation Conformity (Rule 701) and General Conformity (Rule 702).

8.3.1 TRANSPORTATION CONFORMITY

Rule 701 as amended is, except for eight minor modifications, the federal conformity regulation as promulgated by EPA on August 15, 1997. Its purpose is to prevent uncontrolled increases of on-road motor vehicle emissions from undermining the strategy established in the CAP. To this end, conformity determinations or exemptions are required for the adoption, acceptance, approval, or support of transportation plans, programs, and projects funded or approved under title 23, U.S.C. of the Federal Transit Act. Essentially transportation conformity ensures that future transportation investments do not jeopardize the County's efforts to attain the national ambient air quality standards and makes attainment of these standards a goal of transportation planning instead of a consequence.

In order for significant transportation improvement projects to be funded, they must be included in a conforming Regional Transportation Plan (RTP) and federal Transportation Improvement Program (FTIP). An RTP is a long range (20 year) multi-modal plan to improve a region's state highways; local streets, road and bikeways; airport and marine facilities; transit, paratransit and passenger rail services. As a guide for the development of these systems, the RTP describes the priorities for making investments in Santa Barbara County's transportation system. An FTIP is a multi-year program of transportation projects that are funded primarily from federal sources. The FTIP is developed and adopted by the metropolitan planning organization (Santa Barbara County Association of Governments) on a biennial basis. Once adopted, the FTIP is submitted to the California Transportation Commission and federal funding agencies.

For a conformity determination to be made, the on-road mobile source emissions incorporating all applicable projects in a plan (RTP) or program (FTIP), taken as a whole, cannot exceed the maximum allowable (i.e., emissions budget) on-road mobile source emissions established in the SIP (Clean Air Plan). To perform such an analysis, modeling must be performed to ascertain the total vehicle activity (vehicle trips, vehicle miles of travel and vehicle speed distributions) resulting from the implementation of the plan or program. These data are then applied to on-road mobile source emission inventory models to generate total emissions. Rule 701 requires that the assumptions and tools used for this modeling exercise represent the latest acceptable

methods as recognized by the federal transportation and air quality planning agencies (i.e., Federal Highway Administration and EPA).

In addition, it must be demonstrated as part of conformity that all emission reducing transportation programs and projects that were credited in the SIP (i.e., transportation control measures) are being expeditiously implemented. As part of the latter assessment, it must be demonstrated that the RTP and FTIP each facilitate the implementation of air quality improving projects and programs. If delays in project/program implementation have occurred, a description of how the RTP or FTIP will bring the project/program back on schedule is required.

Pursuant to Rule 701, SBCAG has prepared conformity determinations for the 1993 RTP, the 1994-95 FTIP, the 1995 RTP and the 1996 FTIP. As required by Rule 701, consultation between SBCAG, the APCD other affected federal, state and local agencies and the general public have occurred during these conformity determinations.

8.3.2 GENERAL CONFORMITY

In order to assure that federal agencies do not take or support actions, which are in any way inconsistent with the effort to achieve the NAAQS, EPA promulgated the federal General Conformity Rule on November 30, 1993 (58 FR 63214). Rule 702 incorporates this federal rule in verbatim form. General Conformity is intended to assure that a federal action does not adversely affect the emission reduction progress plans leading to attainment by reconciling the emissions from the federal action with the SIP. The rule covers direct and indirect emissions of criteria pollutants or their precursors that are caused by a federal action and exceed specified *de minimis* levels. Certain federal actions are not subject to conformity determinations - e.g., an action that includes major new or modified stationary sources that require a permit under the new source review or prevention of significant deterioration provisions of the federal Clean Air Act.

As Santa Barbara County has been designated a “serious” ozone non-attainment area, General Conformity determinations are triggered for nonexempt federal actions whose emissions exceed

50 tons/year of any ozone precursor. The following criteria are used to determine the conformity of such federal actions [1]:

1. The action is in conformity if its emissions are specifically identified and accounted for in the applicable SIP [2].

2. If the emissions from the action are fully offset so there is no net emissions increase, the action is in conformity.

3. Where EPA has approved a revision to an area's attainment or maintenance demonstration after 1990, an action is in conformity if the emissions from the action, together with all other emissions in the non-attainment or maintenance area, do not exceed the emissions budgets specified in the applicable SIP. This criterion is known as the "budget" test.

4. Where EPA has not approved a revision to an area's attainment or maintenance demonstration after 1990, an action is in conformity if its emissions do not increase emissions with respect to baseline emissions. For Santa Barbara County, the baseline emissions reflect the historical activity levels that occurred in the geographic area affected by the federal action in the calendar year 1990. The baseline emissions are the total direct and indirect emissions calculated for future years using the historic activity levels and appropriate emission factors for future years [3]. This is known as the "build/no build" test.

8.4 POLLUTION PREVENTION PROGRAMS

8.4.1 INNOVATIVE TECHNOLOGY GROUP

The Innovative Technology Group (ITG) was established in 1988 in connection with conditions of approval for the development of two new oil and gas facilities. The ITG program promotes the development, testing, and application of clean fuels and energy projects to reduce emissions

[1] For further detail, see Title 40, Code of Federal Regulations, Part 51.858.
[2] The applicable SIP means the portion or portions of the SIP, or its most recent revision, which has been approved by EPA under Section 110 of the Clean Air Act.
[3] The future years are defined at 40 CFR 51.859(d).

of NOx and ROC. To date, ITG has implemented over 25 programs to demonstrate low emissions technology for both mobile and stationary sources. Present and past projects have included low emission natural gas engines for trucks, buses, cars and marine vessels, promoting alternative fuels, purchasing and scrapping older and more polluting automobiles, low NOx gas turbines, fuel cells, and low emitting agricultural boilers and booster pumps. The APCD, by contracting with the Institute for Research and Technical Assistance (IRTA), has also sponsored several projects as part of the pollution prevention initiative that focused on reducing the use of ozone-depleting substances or solvents. IRTA helped fifteen regulated businesses ranging from aerospace to biotechnology to find appropriate substitutes for polluting materials and processes.

Reductions in ozone precursors from ITG projects have amounted to over 1300 tons. Funding for ITG programs comes from several sources, including contributions from oil and gas development projects as part of their permitting requirements, motor vehicle surcharge fees collected with annual vehicle registration, and from mitigation requirement associated with CEQA. The continued success of the ITG program lies in our ability to locate and secure additional funding mechanisms to continue implementing clean air projects and partnerships. The APCD is committed to the continued application of innovative ways of reducing pollution from a wide range of sources.

8.4.2 BUSINESS ASSISTANCE PROGRAM

The Business Assistance Program helps regulated businesses access various APCD resources in order to cooperatively achieve protection of public health and the environment. The APCD has a dedicated Business Assistance Line staffed by the Business Assistance Representative who acts a guide to the staff and business resources within the APCD. Assistance is provided with permit compliance, permit applications, pollution prevention and educational site visits. This service is also provided through the Internet via electronic mail and informational brochures. Periodically, customer service surveys are conducted to measure how effective the APCD has been in areas such as permit processing, inspections and complaint responses, and how service can be improved.

8.4.3 PUBLIC OUTREACH PROGRAM

The Public Outreach Program helps individuals, businesses and organizations understand air pollution issues and the need for pollution control. The program provides information to companies in regulated industries to help them meet permit requirements and appreciate the need to comply with these requirements. Outreach efforts also help companies take voluntary actions to reduce pollution.

In addition, information provided by the Public Outreach Program assists policy-makers, representatives of community organizations, and individuals in the community-at-large in making policy and consumer decisions that will result in reduced air pollution. Outreach efforts under this program promote alternative transportation choices to reduce mobile-source pollution.

8.4.4 TAKE A VACATION FROM YOUR CAR

A new public education initiative termed *Take a Vacation From Your Car: An Outreach Program for Visitors and Tourists to Santa Barbara* will promote alternative transportation choices for tourists and visitors to the area. Working together with many partners, APCD will develop and launch a coordinated program to encourage visitors to “take a vacation from their cars”—both in traveling to Santa Barbara, and in traveling around the city once they have arrived.

Potential project partners include Amtrak, the City Conference and Visitors Bureau, the local chapter of the American Lung Association, the Santa Barbara Industrial Association, the Metropolitan Transit District, the Santa Barbara Bicycle Coalition, the County of Santa Barbara, the City of Santa Barbara, Traffic Solutions (a program of the Santa Barbara County Association of Governments), bicycle rental and tour operators, shuttle operators, hotels and motels, and other interested parties.

A key goal of the program will be to position car-free travel as an attractive feature of a vacation. Reducing vehicle emissions from tourists and visitors is important for a number of reasons:

- Visitor-generated pollution occurs at the highest levels during smog season, e.g. April through October.
- Visitor-generated pollution occurs primarily in the southern portion of the county; the portion of the county that is in nonattainment of the federal ozone standard.
- Increased traffic from visitors contributes to congestion and additional pollution.

A 1996 study by the City Conference and Visitors Bureau found that approximately 55% of visitors to Santa Barbara are from Southern California. Some fly into the Santa Barbara municipal airport; some take the train. Amtrak reports the majority of train travelers to Santa Barbara come from the Los Angeles area.

Many visitors, however, drive their own cars on Highway 101. According to a 1995 Santa Barbara County Association of Governments (SBCAG) report, 60.9 % of traffic on Highway 101 during the Sunday peak period (when weekend travelers are returning home) is traffic from inside Santa Barbara County to a location outside the county. Other visitors come from other parts of California and the U.S., and a substantial number (an estimated 15%) are foreign tourists. Many visitors in all groups rent cars when they arrive.

Santa Barbara is an ideal location for a mobile-source outreach program targeting tourists and visitors. Mild weather conditions, attractive walking and bicycling paths, and a good bus transit system make the city an optimal destination for visitors interested in “taking a vacation from their cars.”

A number of diverse efforts are already underway in this area. The Bicycle Federation of America held its biennial conference “Pro Bike, Pro Walk ‘98” in Santa Barbara in September of 1998, marking the first time this meeting has been held in California. Several local bicycle companies offered special programs in connection with this conference, which received international attention in the cycling community.

Traffic Solutions recently sponsored production of a Santa Barbara County Bike Map, a detailed map of bike paths, with additional cycling information. The City of Santa Barbara has stressed

the need for bicycle and pedestrian paths in its Circulation Element, and in plans for the downtown waterfront area, and encourages transit-oriented development. The Metropolitan Transit District has one of the largest fleets of electric buses in the country; its downtown electric shuttle has a low (25 cents) fare and a popular route. The transit district will soon unveil a new kiosk, developed with funds from the APCD and Caltrans. The kiosk has interactive touch-screen displays, bus maps, and visitor information. Two prototypes have been developed; locations under consideration for permanent and/or portable installations include the airport, the Amtrak station, and downtown shopping centers and hotels.

Amtrak has been promoting service to Santa Barbara for some time. Amtrak California (a joint program of Amtrak and Caltrans) just began renovation of the Santa Barbara train station, with a completion target date of April 1999. Amtrak also just announced a $100 million investment to purchase new passenger trains for the San Diegan corridor (San Diego-Los Angeles-Santa Barbara-San Luis Obispo). The new trains are expected to be in service in 2000.

The project began development in July of 1998 and will be designed to be supported on an ongoing basis by partners, via incorporation of elements into existing programs.

8.4.5 CLEAN CITIES PROGRAM

The APCD is part of a local coalition working towards a Clean Cities designation issued by the U.S. Department of Energy. The program is a voluntary, locally based government/industry partnership that will expand the use of alternatives to gasoline and diesel fuel. Clean Cities works directly with local businesses and government to shepherd them through the goal-setting, coalition-building and commitment process necessary to establish the foundation for a viable alternative fuels market. The APCD is among the stakeholders who are jointly developing a Clean Cities program plan which will include Clean Cities Goals, organizational structure, analysis of the local alternative fuel vehicle market, and commitments from fleet operators and others who will purchase and maintain alternative fuel vehicles and invest in refueling infrastructure.

8.5 APCD ENVIRONMENTAL REVIEW PROGRAM

The APCD's environmental review program consists of the following:

1) As a lead agency, the APCD analyzes and prepares environmental documents on its own discretionary activities, such as, air quality plans, rule development activities and discretionary APCD permits which do not require a land use or other agency permit.
2) As a responsible or cooperating agency, the APCD reviews environmental documents prepared by other lead agencies or jurisdictions under CEQA or NEPA to reduce or avoid impacts to air quality and to ensure that the lead agency's environmental document is adequate to fulfill the CEQA requirements for APCD permits.
3) As the local agency with jurisdiction over the air resources of the County, the APCD is a concerned or trustee agency under CEQA and NEPA. The APCD provides guidance to mitigate adverse impacts to air quality from development projects in the county as well as offshore sources.

Every development project that is not exempt from CEQA must be analyzed to disclose the potential significant adverse environmental effects of the project, to identify alternatives to the projects and to indicate the manner in which those significant adverse effects can be mitigated or avoided.

State guidelines implementing CEQA require all environmental impact reports to include a discussion of any inconsistencies between a proposed project and applicable general plans and regional plans, the latter of which include air quality management plans such as the CAP. The discussion is intended to identify projects which would run counter to the efforts identified as desirable by agencies in regional plans to solve large-scale environmental problems such as air and water pollution. This analysis may lead to projects being modified to reduce any inconsistencies. To be consistent with the CAP, the direct and indirect emissions associated with a project subject to CEQA must be accounted for in the CAP's emissions growth assumptions. Additionally, the project has to be consistent with policies adopted in the CAP.

The determination of what constitutes a significant adverse effect is made by the jurisdiction with the primary permitting authority over a proposed project, usually an incorporated city, a county agency, or a state agency (implementing CEQA) or a federal agency (implementing NEPA). The APCD, as an independent local agency, has its own environmental review guidelines to implement CEQA. The APCD provides guidance on how to quantify and mitigate adverse project-related air quality impacts, and how to determine consistency with the CAP.

Consistency with land use and population forecasts in local and regional plans, including the Clean Air Plan is required under CEQA for all proposed projects subject to 1994 CAP consistency determinations include a wide range of activities such as commercial, industrial, residential, and transportation projects. By definition, consistency with the CAP means that direct and indirect emissions associated with the project are accounted for in the CAP's emissions growth assumptions and the project is consistent with policies adopted in the CAP.

8.6 LAND USE PLANNING

Certain land use-related emissions are exempt from APCD rules and regulations but are regulated wholly or in part by the county and incorporated cities through their General Plan policies, zoning ordinances or by other agencies through their regulations, or indirectly through the provisions of CEQA and NEPA.

General plans and local ordinances are guides for land use development. The APCD comments on the draft general plan amendments, in particular the land use, circulation and housing elements, in order to effect changes in proposed land use policies which conflict with the APCD's policies. The APCD strongly encourages local governments to incorporate in their local policy documents the planning and designing of communities to minimize their impacts on air quality and to maximize the use of less polluting designs and technologies.

The County of Santa Barbara, in 1981 adopted an *Air Quality Supplement to the Land Use Element* as part of the Comprehensive Plan for the unincorporated areas of the County. This document included land use control measures and policy recommendations for reducing the use

of the automobile and decreasing vehicle miles traveled. In early 1993, the APCD prepared and introduced a model Air Quality Element (AQE) to the seven cities and the County for incorporation into their general plans. Although few jurisdictions have adopted a separate air quality element in their general plans, policies consistent with the AQE have been adopted by many of these jurisdictions.

These policies include promoting mixed land uses and increased land use densities in conjunction with transit- and pedestrian-oriented designs to help reduce the number of automobile trips and vehicle miles traveled. Energy efficiencies in project design such as low emission construction materials, energy efficient appliances, use of solar energy and landscaping are also encouraged not only to reduce the emissions of ozone precursors but also to reduce stratospheric ozone depleting and green house gas emissions.

8.7 MOBILE SOURCE/TRANSPORTATION CONTROL POLICIES

With the continued growth of the number of motor vehicles, particularly registered passenger cars, light duty trucks, commercial trucks and buses, increasing attention will have to be paid to controlling emissions from these sources. On-road mobile source emissions will continue to represent a large share of the County's emission inventory relative to all other source categories.

At the heart of this problem is a highly mobile society that has become exceedingly dependent on the private automobile for its transportation needs. Although much of this dependence can be attributed to the inherent advantages afforded by private vehicles, the lack or absence of viable alternatives to driving to meet the needs of our mobile society cannot be overlooked as a partial explanation. Other contributing factors are land use and development policies that stipulate design standards that promote auto use at the expense of other modes. In recognition of this, federal and state legislators made some significant transportation policy changes, first in 1991 with the passage of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) and again in 1997 when the California legislature passed Senate Bill 45. ISTEA was reauthorized in June 1998 as the Transportation Equity Act for the 21st Century (TEA-21). These bills delegate considerably more authority to regional agencies such as SBCAG with respect to how federal

and state transportation dollars are spent. With these changes, a greater opportunity now exists to more strongly tie in the on-road mobile source emission control strategy of the 1998 CAP with the policies and goal of the Regional Transportation Plan's transportation planning and programming policies.

There are also several local issues related to reducing emissions from on-road mobile sources that must be addressed as an integral part of this CAP. These issues include the need to reduce emissions by controls on the vehicle, to promote the use of alternative fuels, to reduce vehicle trips and improve the efficiency of the transportation system, to promote other forms of public transit, and to address the relationship between land use decisions and air quality impacts. These issues are discussed in greater detail below.

8.7.1 REDUCING EMISSIONS BY VEHICLE CONTROLS

As the light duty fleet becomes cleaner, there is a need to consider other on-road emission sources and evaluate additional emission reduction strategies. Emission controls for on-road mobile source are the responsibility of both the ARB and USEPA. As identified in Chapter 5, there are two potential strategies that can be implemented locally to more expeditiously obtain additional emission reductions from light duty on-road vehicles: 1) Enhanced vehicle inspection and maintenance (Smog Check), and 2) Old car buy-back program. This plan currently identifies enhancements to our local Smog Check program as a contingency measure and re-establishes an old car buy-back program. In addition, given that medium and heavy-duty vehicles are a significant source of emissions, more emphasis will be focused on programs that can reduce emissions from these sources. As already discussed, the Innovative Technology Group has and will continue to pursue projects and programs that will address medium and heavy duty vehicles through both engine retrofit/replacement and the introduction and promotion of alternative fuels.

8.7.2 ALTERNATIVE FUELS

The application of clean fuel technologies requires an approach that addresses the distribution and implementation challenges. Our experience over the past few years has revealed that the promotion and integration of alternative fuels into the existing infrastructure can be difficult. For example, the promotion of compressed natural gas technologies requires a consistent quality and supply of the fuel in order to be successful. The infrastructure aspects of product delivery must be dealt with up-front (i.e., CNG fueling infrastructure must be available before vehicles are purchased). In addition, our experience with retrofitting vehicles has had limited success. Therefore, priority should be given to transportation investments for fueling infrastructure followed by the purchase "new" alternative fuel vehicles versus retrofit vehicles.

Public transit is also encouraged to reduce emissions of its bus fleet. The use of alternative fuels (e.g., CNG, electric), for transit services will help achieve clean air goals. Since electric buses for transit services emit zero emissions, it is highly desirable to encourage cost-effective fleet acquisition strategies that replace all internal combustion engines with electric.

8.7.3 TRAVEL DEMAND MANAGEMENT AND SYSTEM EFFICIENCY

Single occupancy vehicle trips during peak traffic hours generate significant emissions and contribute to local street congestion. The stop-and-go traffic associated with congestion further increases the magnitude of the emissions as well as the number of incidents and accidents. These problems can be addressed with improvements to the efficiency of the transportation system and continued implementation of the travel demand management program. Projects such as signal synchronization and the application of smart technology in bus routing, schedule information, and ticket distribution can reduce congestion and the associated emissions. Travel demand management programs such as the Traffic Solutions Rideshare program offer alternatives to the single occupancy vehicle. Further, technological solutions (e.g., telecommuting) also provide alternatives to trip making. Chapter 5 of this Clean Air Plan outlines each of these programs to reduce the impacts associated with the single occupancy and mandates their continuation.

8.7.4 PROMOTING TRANSIT

A shift from single occupancy vehicles to public transit will reduce congestion. In addition, a concurrent shift in aggregate public transit fleet fueling to alternative fuels (i.e., electric, CNG) will also offer significant air quality benefits over time**.** The continued utilization of higher emitting gasoline and diesel fueled transit vehicles will compromise transit's contribution to air quality improvement as the percentage of newer and cleaner passenger autos/trucks grows as a result of fleet turnover. Hence, to reduce congestion and air pollution, efforts should be taken to promote the eligibility of transit projects for federal Congestion Mitigation and Air Quality (CMAQ) and state motor vehicle surcharge funds which emphasize alternative fuels. New or expanded transit services employing alternatively fueled vehicles should be emphasized. Clean, expanded transit operations will require additional funding. Co-operative efforts to identify these funding sources should be undertaken.

8.7.5 LAND USE STRATEGIES

Land use and infrastructure decisions impact trip generation, trip length, mode choice, and air quality. Local land use decisions are the purview of local agencies and is not under APCD regulatory authority. Over the next 20 years, the population of Santa Barbara County is forecast to increase by 22% from the existing population of 400,000. Federal law mandates the use of consistent assumptions about future growth, developed in SBCAG's regional growth forecast, in the Clean Air Plan and the Regional Transportation Plan. Both the increases in local population and the land use decisions required to accommodate the anticipated growth will significantly impact the level of emissions in the county and the resultant air quality.

The interrelationship of transportation, land use strategies and motor vehicle emissions is discussed in the California Air Resources Board 's study "Transportation-Related Land Use Strategies to Minimize Motor Vehicle Emissions: An Indirect Source Research Project (June 1995)". Nine strategies to reduce the reliance on motor vehicles by increasing the convenience, access to and use of public transit, walking and alternative travel modes were identified:

- Strong downtowns – downtowns or central business districts can become focal points for regional transit systems and encourage pedestrian travel within the downtown.
- Concentrated activity centers – combining higher-density development appropriately into concentrated nodes provides opportunities for pedestrian and transit travel.
- Mixed-use development – locating compatible land uses within walking distance of each other can result in a higher level of walking and more transit use compared to single use projects.
- Infill and redevelopment – the infill, redevelopment and reuse of vacant or underused parcels within an already developed area encourages walking as well as higher rates of transit use because activities are located closer together.
- Increased density near transit stations – intensifying land uses within ¼ to ½ mile of existing or planned high-capacity transit stations and incorporating direct pedestrian access increases transit use rates.
- Increased density near transit corridors – intensifying land uses within walking distance of a transit corridor also encourages transit use.
- Pedestrian/bicycle facilities – increasing pedestrian accessibility by providing adequate, direct sidewalks and paths, protection from fast vehicular traffic and other pedestrian amenities, provides alternatives to the use of vehicles.
- Interconnected street networks –providing direct routes for vehicles, pedestrians and bicycles can result in safer environments for bicyclists and pedestrians while maintaining travel times for vehicles.
- Strategic parking facilities – the amount and cost of parking should vary by land use type and proximity to transit service.

The study concludes that implementing these strategies could reduce vehicle emissions in an urban area by as much as 30%. As an example, for an urban household whose annual vehicle miles traveled (VMT) is 13,000 to 16,000 miles, the associated annual vehicle emissions are 40-50 pounds of ROG and 35-43 pounds of NO_x. By implementing increased mixed used development (i.e., mixed use residential and commercial development), encouraging infill and densification and increasing density near transit corridors (i.e., compact residential and

commercial uses within ¼ to ½ mile of major transit corridors), annual household VMT could be reduced to below 10,000 miles with ROG and NO_x emissions reduced to below 31 and 27 pounds per year, respectively.

To address this issue, SBCAG should continue in its role of preparing the regional growth forecasts and producing technical studies such as the jobs-housing study. SBCAG should also model, based on data provided by local agencies, alternative growth and development scenarios to assess the impacts of new growth on the transportation system. To mitigate the impacts of motor vehicle emissions from the local development process, the APCD Board should direct the Community Advisory Council to work with APCD staff to further explore potential mitigation options such as indirect source review and voluntary emission reduction programs. This effort should include examining the scope, cost and effectiveness of existing mitigation programs and result in recommendations for the APCD Board to adopt.

8.8 CONGESTION MANAGEMENT PROGRAM

With the passage of Proposition 111 in 1990, new requirements for the transportation planning process require urbanized counties, such as Santa Barbara County, to prepare, adopt, and biennially update a Congestion Management Program (CMP). The intent of the CMP legislation was to address the problem of increasing congestion on California's highways and principal arterials through a coordinated approach involving state, regional, county, and city transportation and land use agencies, transit providers and air pollution control districts. The CMP was also intended to facilitate an integrated approach to programming transportation improvements. By creating a forum for state, regional, and local transportation and land use agencies to address regional and multi-jurisdictional issues related to congestion, land development, and air quality, the CMP ensures that limited transportation funds are more efficiently invested.

The CMP legislation requires member agencies to prepare deficiency plans for CMP system facilities located within their jurisdictions that fail to meet the CMP traffic Level-of-Service (LOS) standard. Santa Barbara County's CMP LOS standard is LOS D. The legislation requires that deficiency plans to either mitigate the deficiency at its location through capital

improvements or alternatively, implement system-wide improvements that benefit circulation and air quality. The APCD has developed a list of 12 strategies that may be pursued when a jurisdiction elects to implement system-wide improvements in lieu of capital improvements. If a CMP facility exceeds the LOS standard and does not have a Congestion Management Agency-approved deficiency plan, then the local jurisdiction in which the facility is located is at risk of losing new gas tax revenues provided by Proposition 111.

There are two primary purposes deficiency plans serve in the CMP process. First, they ensure a jurisdiction will not be found in nonconformance with the CMP for exceeding the CMP traffic LOS standard. Secondly, they serve to increase the funding priority of any improvement identified through the deficiency planning process. This greatly increases the likelihood that a local jurisdiction will obtain funding to implement congestion relief or air quality benefiting projects. Some of the competitive funding programs which explicitly consider, as part of the project selection criteria, whether proposed projects are identified in a CMP deficiency plan include: the federal Surface Transportation Program; the federal Congestion Mitigation and Air Quality program; the State Regional Improvement Program and, Santa Barbara County's vehicle registration fee program administered by the Air Pollution Control District.

8.9 CONCLUSIONS

Attainment of air quality standards will not occur with only the efforts of the APCD. Implementation of programs by the federal and state governments and a cooperative local effort must continue. As described in this chapter, many local programs and the actions of various jurisdictions can have both positive and negative impacts on air quality. Open communication and agreement on the common goal of clean air must occur to maximize the community’s efforts to meet clean air standards.

CHAPTER 9

RATE-OF-PROGRESS

9. RATE-OF-PROGRESS

9.1 INTRODUCTION

This chapter documents that this 1998 CAP will achieve a 24% reduction in emissions of reactive organic gases (ROG) in the period from 1990 to 1999, as required by the Federal Clean Air Act Amendments (FCAAA) of 1990. The overall 24% reduction is a combination of the 15% emission reduction requirement for the period from 1990 to 1996 for "moderate" nonattainment areas under Section 182(b)(1) of the FCAAA and the 9% emission reduction requirement for the period from 1996 to 1999 for "serious" nonattainment areas under Section 182(c)(2)(B). This chapter describes how the 1999 ROG emission target is calculated as based upon USEPA Guidance. The conclusion of this chapter compares the forecast of 1999 ROG emissions to the 1999 target.

9.2 1990 RATE-OF-PROGRESS BASE YEAR INVENTORY

The 1990 Rate-of-Progress Base Year Inventory is derived from the 1990 Annual Base Year Emission Inventory using the method described in Section 1 of Chapter 6. Since most violations of the federal ozone standard occur during summer (May through October), area source and on-road vehicle emissions must be adjusted for seasonal variation in emission rates. The point source annual emission inventory is also converted to an average operating day inventory by dividing the process emissions from each facility by the number of days that the facility operated in the base year.

As specified in the federal Clean Air Act Amendments, the Rate-of-Progress Base Year inventory includes only anthropogenic (man-made) ozone precursor emissions occurring in the non-attainment area. Because natural source emissions such as biogenic (vegetative) sources, oil and gas seeps, and wildfires are not currently regulated through implementation of emission control measures, they are removed from the seasonally adjusted emission inventory. Table 9-1 shows the Santa Barbara County Rate-of-Progress Base Year emission inventory of ROG, NO_x and CO

in tons per summer day for 1990. On the average, there were 79.32 tons of ROG, 62.19 tons of NO_x and 474.18 tons of CO emitted into the air in Santa Barbara County each summer day in 1990. Figure 9-1 shows the relative contribution of the major source categories to the 1990 Santa Barbara County Rate-of-Progress emission inventory.

As outlined below, On-Road Motor Vehicles are the most significant source of ozone precursor emissions, accounting for over half of ROG emissions, almost two thirds of NO_x emissions and over 90% of CO planning day emissions in 1990. Oil and gas production fugitive hydrocarbons, consumer products and pesticides are important sources of ROG emissions, while a significant quantity of NO_x emissions is produced by commercial and industrial mobile equipment, and oil and gas production internal combustion engines. The following bullets highlight the major emission sources for each pollutant.

ROG emissions:

- 60% are Mobile Sources, 26% are Stationary Sources and 14% are Area-Wide Sources.
- On-Road Motor Vehicles contribute 55%, of which 94% are from light duty passenger cars and light duty trucks.
- 15% are related to Petroleum Production and Marketing.
- Over 13% are related to Solvent Evaporation, of which about 33% are from Consumer Products and another 33% are from Pesticides.

NO_x emissions:

- 81% are Mobile Sources, 18% are Stationary Sources.
- 62% are from On-Road Motor Vehicles, of which 75% are from light duty passenger vehicles and light duty trucks.
- 19% are from Other Mobile Sources, of which 71% are from Commercial/Industrial Mobile and Farm Equipment.
- 18% are from Fuel Combustion at stationary sources, of which 56% are related to Oil and Gas Production.

CO emissions:

- 97% are Mobile Sources.
- Over 90% are from On-Road Motor Vehicles, of which 66% from light duty passenger cars and 27% are from light duty trucks.

9.3 1999 ROP TARGET

To determine the emission reduction target for 1999, a series of adjustments were made to the 1990 base year ROG emission inventory. First, adjustment to the ROG emission inventory is required to ensure that the emission reductions resulting from federal programs are not credited towards the 24% ROG emission reduction target as per USEPA guidance. The ROG emission inventory will be reduced by 22.60 tons per day in 1999 as a result of federal motor vehicle standards and reduced gasoline vapor pressure. The calculation of this adjustment was performed by ARB. Those emission reductions are subtracted from the 1990 base year ROG emission inventory of 79.32 tons of ROG per day to produce the 1990 adjusted base year ROG emission inventory. The quantity of ROG emissions in the 1990 adjusted base year inventory is 56.72 tons per average summer weekday. This value is used to calculate the 1999 ROG emissions target value for the 1998 Clean Air Plan.

As described in Section 1 of this chapter, the 1998 Clean Air Plan is required to demonstrate that ROG emissions will be reduced 24% from the 1990 adjusted base year inventory. 24% of 56.72 tons of ROG per day is 13.61 tons. Subtracting the emissions reduction target of 13.61 tons from the 1990 adjusted base year inventory of 56.72 tons produces a 1999 ROG emission target of 43.11 tons of ROG per day, as illustrated in Table 9-2. Details of the equations used to calculate this target are presented below.

1) Base Year Inventory = $P_b + A_b + M_b + N_b$
2) 1990 ROP Base Year Inventory = $P_b + A_b + M_b$
3) Adjusted Base Year Inventory = $P_b + A_b + M_{1990,1999f} - C_{rvp}$

4) 24% Reduction = Adjusted Base Year Inventory x 0.24

5) Total Reduction = $24\%_{Reduction} + (M_{1990,1990f} - M_{1990,1999f}) + C_{rvp}$

6) 1999 Target Value = 1990 ROP Base Year Inventory - Total Reduction

Where:

P_b = Stationary source 1990 base year inventory

A_b = Area-wide source and other mobile source 1990 base year inventory

M_b = On-road 1990 base year inventory

N_b = Natural source 1990 base year inventory

$M_{1990,1990f}$ = On-road inventory w/1990 activity data and 1990 federal motor vehicle controls

$M_{1990,1999f}$ = On-road inventory w/1990 activity data and 1999 Federal Motor Vehicle Control Program (FMVCP)

C_{rvp} = Emission reductions due to the Federal Reid Vapor Pressure (RVP) limits on gasoline

9.4 FORECAST 1999 ROP INVENTORY

As described in Chapter 6, the 1999 inventory of ROG emissions is forecast by applying estimates of the changes in the level of pollution producing activities to the 1996 Planning Emission Inventory. In addition, emission reductions resulting from local controls adopted by the APCD Board of Directors after 1990 and from state-wide regulations adopted by the California Air Resources Board (ARB) are estimated and subtracted from the emission inventory. All ROG Emission Reduction Credits (ERC) which were banked before 1990 are added to the 1999 ROG emission inventory forecast. All of the banked ROG ERC balance is from Vandenberg Air Force Base. Since the banked ROG ERC balance is only 0.003 tons per day, it has little impact on the resulting forecast of ROG emissions. Table 6-2 in Chapter 6 shows the 1999 Santa Barbara County Rate-of-Progress Inventory.

Figure 9-2 shows the relative contribution of the major source categories to the 1999 Santa Barbara County Rate-of-Progress emission inventory. As outlined below, On-Road Motor

Vehicles are the most significant source of ozone precursor emissions, accounting for 44.8% of ROG emissions in 1999. Oil and gas production fugitive hydrocarbons, consumer products and pesticides are also important sources of ROG. The following bullets highlight the major emission sources of ROG.

- 52% are Mobile Sources, 22% are Stationary Sources and 27% are Area-Wide Sources.
- On-Road Motor Vehicles contribute 45%, of which 66% are from light duty passenger cars and 26% are from light duty trucks.
- 8% are related to Petroleum Production and Marketing.
- 21% are related to Solvent Evaporation, of which about 36% are from Consumer Products and another 34% are from Pesticides.

Compared to the 1990 Base Year Inventory, the relative contribution of ROG emissions from Mobile Sources is reduced from 60% to 55% of the 1999 inventory, primarily through reductions in the On-Road Vehicles category. The relative contribution of ROG emissions from the Petroleum Production and Marketing category is reduced from 15% to 8%. Although the total ROG emissions from solvent evaporation decrease from 1990 to 1999, they do not decrease as rapidly as these other categories, so the relative contribution of ROG emissions from this category increases from 13% to 21% of the 1999 inventory.

9.5 CONCLUSIONS

Application of activity indicator forecasts and control measures to the 1996 Santa Barbara County ROG emission inventory indicates that 1999 ROG emissions will be reduced to 38.93 tons per day. This is below the 1999 target of 43.11 tons per day by 4.18 tons per day. The amended ROG emission inventory is below the target value as required by the FCAAA. This process has demonstrated that the required 24% ROG reduction will be achieved. Table 9-3 summarizes the 1999 ROG emission forecast, and compares it to the 1999 ROG emission target.

TABLE 9-2

1999 ROG TARGET VALUE CALCULATION

1990 ROP Base Year ROG Planning Inventory (Tons Per Day)	
Stationary Sources	20.35
Area-wide Sources	11.74
Other Mobile	3.41
On-road Vehicles [(a)]	43.82
Total	79.32
1990 Adjusted Base Year ROG emission inventory (TPD)	
Stationary Sources	20.35
Area-wide Sources	11.74
Other Mobile	3.41
On-road Vehicles [(a)]	21.22
Total	56.72
Emission Reductions in 1999	
24% Adjusted Base Year	13.61
FMVCP & RVP [(a)]	22.60
Total	36.21
1999 Target Value	
1990 ROP Base Year	79.32
Emission Reductions	36.21
Target	43.11

[(a)] Calculation performed by ARB and SBCAG.

TABLE 9-3

1999 FORECAST ROG EMISSIONS

1999 Forecast Inventory	Tons Per Day
Stationary Sources	8.75
Area-wide Sources	10.14
Other Mobile	2.56
On-road Vehicles (a)	17.41
Inventory Total	38.93
Pre-1990 Banked ERCs	0.003
ROP Total	38.93
Target Value and Forecast Inventory Totals	
1999 Forecast Inventory	38.93
1999 Target Value	43.11
Difference	4.18

(a) Emission estimate from SBCAG

Figure 9-1
1990 Santa Barbara County
Planning ROG Emission Forecast

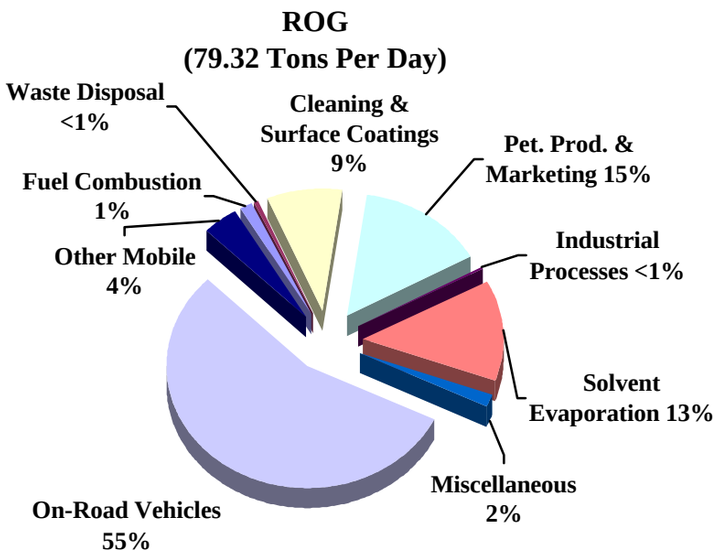
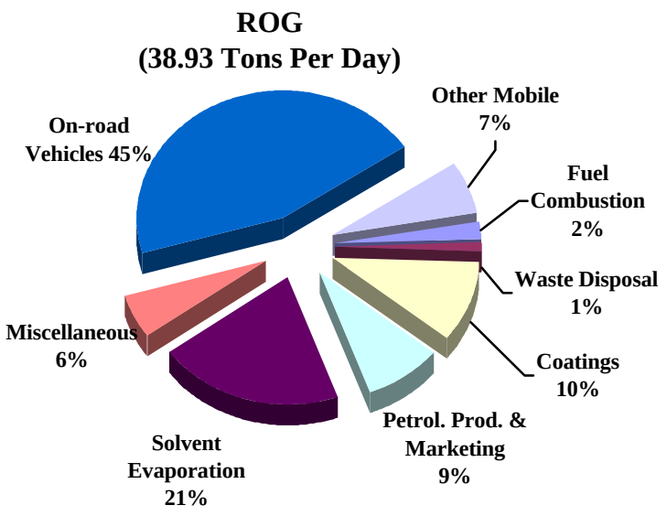


Figure 9-2
1999 Santa Barbara County
Planning ROG Emission Forecast



CHAPTER 10

STATE AND FEDERAL CLEAN AIR ACT REQUIREMENTS

10. STATE AND FEDERAL CLEAN AIR ACT REQUIREMENTS

10.1 INTRODUCTION

This 1998 Clean Air Plan (1998 CAP) is being prepared by the Santa Barbara County Air Pollution Control District (APCD) to satisfy various mandates of the 1990 federal Clean Air Act Amendments and the California Clean Air Act of 1988. This chapter presents an overview of all state and federal clean air act requirements and discusses how the work completed in conjunction with this 1998 CAP complies with all applicable requirements.

10.2 1990 FEDERAL CLEAN AIR ACT AMENDMENTS

This section outlines the submittals that are required from the APCD to satisfy the provisions of the 1990 federal Clean Air Act Amendments (FCAAA) as a "serious" ozone nonattainment area.

Section 176(c) Conformity – The United States Environmental Protection Agency (USEPA) was required to develop criteria and procedures by November 15, 1991 for determining the conformity of transportation and non-transportation (general) projects requiring federal agency approval with applicable nonattainment plans. These criteria and procedures were intended to ensure that such projects do not: cause or contribute to a new air quality standard violation; increase the frequency or severity of an existing violation; or delay timely attainment of a standard or any required interim emission reduction milestone. The USEPA promulgated the transportation conformity regulation on November 24, 1993, and the general conformity regulation on November 30, 1993. The transportation conformity regulation was amended in August 1995, November 1995, and August 1997.

Under the provisions of the FCAAA and the promulgated November 1993 regulations, Santa Barbara County was required to adopt its own transportation conformity rule by November 24, 1994, and a general conformity regulation by November 30, 1994. The APCD Board of Directors adopted Rule 701, Transportation Conformity, and Rule 702, General Conformity, on October 20,

1994. Rule 701 was revised in August 1998 in response to requirements in the August 1997 set of federal transportation conformity amendments.

Section 182(a)(1) Emission Inventory - The APCD was required to prepare a comprehensive 1990 base year emission inventory and submit this inventory to the USEPA by November 15, 1992. Section 172(c)(3) also requires that any nonattainment plan must include a comprehensive emission inventory.

ARB submitted this inventory to the USEPA on behalf of the APCD by November 15, 1992. However, the USEPA found the submittal incomplete due to the lack of a public hearing. A 1990 baseline inventory of the sources of pollution in Santa Barbara County was prepared as part of the 1994 Clean Air Plan and submitted to the USEPA by November 15, 1994. On January 8, 1997, the EPA approved this submittal, which satisfied the mandates of Section 182(a)(1).

This 1998 CAP uses a recently developed 1996 emissions inventory to update the 1990 inventory and to forecast 1999 and 2005 emissions. These inventories have been through the public review process and represent the best available current information.

Section 182(a)(3) Emission Inventory Updates - The APCD was required to adopt a rule by November 15, 1992, requiring sources emitting 25 or more tons of volatile organic compounds (VOC) or NOx per year to submit annual emission statements. The first emission statements were required by November 15, 1993.

On October 20, 1992, the APCD Board adopted Rule 212, Emission Statements, which required all stationary sources with permitted emissions, in the aggregate, of 10 tons or more of reactive organic compounds and nitrogen oxides to submit a written statement documenting the actual emissions of these pollutants. The first statements were required by Rule 212 to be submitted to the APCD by July 1, 1993. These statements were submitted to the EPA by the November 15, 1993 deadline.

Section 182(b)(1) 1990-1996 Rate-of-Progress – This section required a plan that provided for a minimum 15 percent reduction in VOC emissions between 1990 and 1996. These plans were due to the USEPA by November 15, 1993. Section 172(c)(2) required that the Plan demonstrate "reasonable further progress," defined under Section 171(1) to be annual incremental reductions as required to ensure attainment of national air quality standards by the applicable attainment date.

The APCD submitted a 1993 Rate-of-Progress Plan to the USEPA by November 15, 1993. This plan was found to be incomplete by USEPA and was amended as part of the 1994 Clean Air Plan, which was approved by the USEPA on January 8, 1997.

Section 182(b)(2) and 182(f) Reasonably Available Control Technology - The APCD had to adopt rules by November 15, 1992 requiring Reasonably Available Control Technology (RACT) on sources of VOC emissions. On April 7, 1994, the EPA notified the APCD of the last remaining VOC RACT deficiency – Graphic Arts. A graphic arts VOC RACT rule (Rule 354) was adopted by the APCD and submitted to the USEPA on July 13, 1994.

As a “serious” nonattainment area, the APCD must apply NOx RACT to all sources that emit, or have the potential to emit 25 tons per year on NOx. All review of our permitted sources indicates that all sources that emit, or have the potential to emit 25 tons per year of NOx have been subject to RACT under our existing rules.

Section 182(b)(3) Gasoline Vapor Recovery - This section mandated that the APCD adopt a rule by November 15, 1992 requiring gasoline vapor recovery systems.

This requirement was satisfied by adoption of APCD Rule 316, Storage and Transfer of Gasoline, (adopted 10/71 and most recently revised 4/97).

Section 182(c)(1) Enhanced Ozone Monitoring – The USEPA was required to promulgate regulations for enhanced monitoring of ozone, VOC and NOx, by May 15, 1992. The EPA adopted the required regulations on February 12, 1993.

Since Santa Barbara County was recently classified as a “serious” ozone nonattainment area, the APCD is in the process of developing an enhanced monitoring program. The APCD submitted a work-plan/proposal to the USEPA on August 7, 1998 for the enhanced ozone monitoring program, known as the Photochemical Assessment Monitoring System (PAMS). The USEPA approved the work-plan/proposal on August 12, 1998. The APCD is currently developing a PAMS network plan to be submitted to the USEPA by March 1999.

Section 182(c)(2)(A) Attainment Demonstration - This 1998 CAP must demonstrate attainment of the federal 1-hour ozone standard by November 15, 1999 based on photochemical grid modeling. Section 172(c)(1) also requires attainment of the standard, but does not specify the model to be used for the demonstration.

Chapter 7 and Appendix D of this 1998 CAP document the photochemical modeling conducted by the ARB. Based on information presented in Chapter 7, the APCD has demonstrated that the federal 1-hour ozone standard will be attained by November 15, 1999.

Section 182(c)(2)(B) Post-1996 Rate-of-Progress - The APCD must submit a plan to the USEPA by January 9, 1999, that provides for at least a 9 % reduction in VOC emissions from 1996 through 1999. This is in addition to the 15 % reduction required by 1996 under Section 182(b)(1) for a total reduction of 24 % by November 15, 1999.

Based on the calculations presented in Chapter 9, the APCD will be able to achieve the identified emission reduction targets.

Section 182(c)(3) Enhanced Vehicle Inspection and Maintenance – This provision required the state of California to submit an enhanced inspection and maintenance program to reduce ROG and NOx emissions from on-road motor vehicles by November 15, 1992.

ARB submitted a State Implementation Plan (SIP) revision to EPA committing to adopt an enhanced inspection and maintenance program by November 15, 1993. In March 1994, the Governor signed into law a three-bill legislative package that met USEPA requirements. Santa

Barbara County does not meet the population requirements specified in the FCAAA and is not mandated to implement this program. However, the APCD continues to monitor the implementation of the enhancements to Smog Check II and has currently identified this as a contingency measure in this 1998 CAP.

Sections 182(c)(4) and 246 Clean Fuel Vehicle Fleet Programs – The ARB was to submit a program to require the use of clean fuel vehicles in centrally-fueled fleets comprising 10 or more vehicles located in serious and above ozone nonattainment areas by May 15, 1994.

On November 13, 1992, the ARB submitted a "opt-out" request to the USEPA per Section 182(c)(4)(B), in light of California's ongoing low emission vehicle control program. The USEPA conditionally approved this request on November 29, 1993, and indicated that the ARB needed to submit a complete SIP revision and additional information to receive full approval. On May 11, 1994, the ARB submitted the required revision and supplemental information.

Section 182(c)(5) Transportation Control Measures - The APCD is required to demonstrate by November 15, 1999, and each third year thereafter whether current vehicle use, emissions and congestion levels are consistent with levels assumed in the attainment demonstration. All forecast on-road vehicle activity estimates used as inputs to the attainment demonstration are described in Appendix C of this 1998 CAP. Also in included in Appendix C is a discussion on how these vehicle activity estimates will be monitored and tracked. If the actual levels exceed the projected levels, then the APCD is required to submit, within 18 months, a plan revision to implement additional transportation control measures to augment those described in Chapter 5. The APCD anticipates that it will submit the required demonstration by November 15, 1999.

Sections 182(c)(9) and 172(c)(9) Contingency Measures - Nonattainment plans need to include contingency measures to ensure that anticipated progress toward attaining national air quality standards occurs as anticipated. Section 172(c)(9) requires contingency measures to be undertaken if an area fails to make "reasonable further progress" or attain air quality standards by the required target date. Section 182(c)(9) requires contingency measures be implemented in serious and above

ozone nonattainment areas if any emission reduction milestone is missed. Contingency measures must be structured so that they can be implemented without additional rulemaking activities.

Contingency measures are discussed in Chapters 4 and 5.

Section 182(g)(2) and (3) Milestone Compliance Demonstration – These sections require the APCD to submit a demonstration to the US EPA within 90 days of each emission reduction target milestone date, indicating whether or not emissions have been reduced consistent with the targets outlined in the 1998 CAP. If the APCD determines that any milestone has been missed, the APCD can request reclassification as a severe ozone nonattainment area, implement appropriate contingency measures, or adopt an economic incentive program.

The APCD anticipates that it will make the applicable submittals to the USEPA by February 15, 1999.

10.3 CALIFORNIA CLEAN AIR ACT MANDATES

As indicated previously, an integral objective of this 1998 CAP is to satisfy the requirements of the California Clean Air Act. The APCD is required to submit a triennial progress report and a triennial update to the 1991 Air Quality Attainment Plan under the provisions of the California Clean Air Act (CCAA). Recognizing that many of the required submittals duplicate those mandated by the FCAAA, the APCD has developed this 1998 CAP to address all state and federal planning requirements.

10.3.1 TRIENNIAL PROGRESS REPORT

Section 40924(b) of the California Health and Safety Code (H&SC) requires the APCD to conduct an assessment of its air quality control program every three years, starting in 1994. This assessment must address the expected and revised emission reductions scheduled for adoption during the previous three years. This triennial report must also include an assessment of progress based on monitored pollutant levels, modeled techniques and air quality indicators.

The emission control measures are presented in Chapters 4 and 5. In addition, Table 10-1 summarizes the APCD's rule activity from 1995 to 1997. A summary of ambient air quality data for Santa Barbara County is presented in Chapter 2 and the air quality indicators report is the responsibility of the ARB.

10.3.2 TRIENNIAL PLAN REVISION

H&SC Section 40925(a) requires the APCD to review and revise its attainment plan at least once every three years, beginning in 1994. The review and revisions are to correct for any deficiencies in meeting the interim measures of progress incorporated into the plan pursuant to **Section 40914** [emission reductions], and to incorporate new data or projections.

Correct Deficiencies in Meeting Interim Measures of Progress: The APCD has not identified any significant deficiencies in meeting the 1991 AQAP rule adoption schedule. Chapters 4 and 5 present a discussion of the stationary source and transportation control measures as well as an updated adoption schedule for each proposed control measure.

Incorporate New Data and Projections: This plan includes a reassessment of emission growth forecasts and control measure effectiveness estimates presented in Chapters 4, 5, and 6.

10.3.3 OVERALL PLAN REQUIREMENTS

Sections 40912 through 40922 of the H&SC specify overall requirements that apply to any plan submitted to the ARB to satisfy the CCAA requirements. Those CCAA requirements applicable to Santa Barbara County are discussed below.

Transport Mitigation (H&SC Section 40912): Santa Barbara County has been identified as a transport contributor (as part of the South Central Coast Air Basin) to the South Coast Air Basin. The APCD has satisfied the transport mitigation requirements through the application of Best Available Retrofit Control Technology (BARCT) requirements by January 1, 1994.

Cost Effective Strategy (H&SC Section 40913(b)): A cost effectiveness analysis of the control measures is included in Chapter 4 and Appendix C of the 1991 AQAP and Appendix B of this 1998 CAP.

Annual Emissions Reduction (H&SC Section 40914): The APCD must demonstrate a reduction in APCD emissions of five percent or more per year for each nonattainment pollutant averaged over every consecutive three-year period. In the 1991 AQAP, the APCD identified every feasible control measure in lieu of the 5 % annual emission reduction requirement. This 1998 CAP also addresses every feasible measure in Chapters 4 and 5.

Contingency Measures (H&SC Section 40915): Contingency measures are to be implemented in the event the ARB finds that the APCD fails to meet interim goals or maintain adequate progress towards attainment. Proposed contingency measures are discussed in Chapters 4 and 5.

Moderate Air Pollution Areas (H&SC Section 40918(a)): The attainment plan must include the following:

(1) A stationary source control program which achieves no net emission increases for sources which emit or have the potential to emit 25 tons per year of any nonattainment pollutant;
(2) Stationary sources which emit more than 250 tons per year must be equipped with best available retrofit control technology;
(3) Reasonable available transportation control measures;
(4) Provisions to develop an area-wide source and indirect source programs;
(5) An emissions inventory system; and
(6) Public education programs.

APCD Regulations II (Permits) and III (Prohibitions) fulfill the first two requirements. Transportation control measures are described in Chapter 5 of this document fulfill the third requirement. The APCD has an inventory system in place that was utilized to prepare the emissions inventory presented in Chapter 3 to fulfill the fifth requirement. The fourth and sixth

requirement are fulfilled with the APCD public education, area-wide and indirect source, and other programs, which are described in Chapter 8.

Control Measure Cost-Effectiveness (H&SC Section 40922): Analysis of control measure cost effectiveness was included in Chapter 4 of the 1991 AQAP and in Appendix B of this 1998 CAP.

10.4 CONCLUSIONS

This 1998 CAP was prepared by the Santa Barbara County APCD to address all applicable state and federal mandates and to provide for expeditious attain of the state and federal 1-hour ozone standards. Specifically, this 1998 CAP complies with Section 182(c) of the FCAAA and all applicable sections of the California Health and Safety Code.

Table 10 - 1

Santa Barbara County APCD Rule Activity from 1995-1997
Summary of Measures (Rules Adopted or Implemented)

Rule #	CAP ID#	Description	Adoption Date	Implementation Date	Comments
331	R-PG-1	Oil and Gas Fugitive Emissions Inspection and Maintenance	December 1991	September 1995	
316	R-PM-1 R-PM-2 R-PM-3	Gasoline Bulk Plants/Phase I/Phase II	November 1990	January 1992	The April 1997 Revision updated references to modified Regulation II/VIII .
325	R-PT-2	Crude Oil Production and Separation	January 1994	July 1996	
326	R-PT-2	Storage of Reactive Organic Compound Liquids	December 1993	June 1995	
323	R-SC-1	Architectural Coatings	July 1996	September 1997	The March 1995 modifications: 1) Added a definition of reactive organic compounds (ROC) 2) Revised the equivalent source test provision regarding APCO discretion include ARB and EPA approval. 3) Added a test method for determining exempt solvents. The July 1996 revision deleted the ROC definition and added a reference to Rule 102.
330	R-SC-2	Surface Coating of Metal Parts and Products	April 1995	April 1995	The April 1995 rule modifications: 1) Streamlined recordkeeping provisions 2) Revised the 20 gallon per coating per year exemption limiting it to 200 gallons total 3) Eliminated the 180 gram/liter limit on baked coatings
339	R-SC-4	Motor Vehicle and Mobile Equipment Coating Operations	April 1997	January 1996	The April 1997 Revision updated references to modified Regulation II/VIII. The December 1994 modification: 1) Increased some of the 1995 ROC limits 2) Restricted the use of precoats 3) Eliminated the 5% limit on the use of specialty coatings 4) Increased the maximum area that can be painted outside a booth. The changes had a neutral effect on emissions reductions committed to in the SIP.
351	R-SC-5	Surface Coating of Wood Products	September 1995 August 1998 (pending)	August 1999	The August 1998 revision delays the 1999 limits to 2005 and provides an exemption for coatings used on wood products used in automobiles.
321	R-SL-2	Control of Degreasing Operations	July 1997 August 1997	August 1997	The April 1997 revision revised a reference to Rule 205.C. to Rule 102. The district made major changes to Rule 321 in July 1997 to be consistent with the CARB RACT/BARCT guidance document
333	N-IC-1 N-IC-3	Stationary IC Engines – Gas Fired Stationary IC Engines – Diesel Fired	December 1991 April 1997	1994 (1995 for OCS)	The April 1997 Revision updated references to modified Regulation II/VIII.
342	N-XC-4 N-XC-5 N-XC-6	Industrial/Commercial Boilers/	April 1997	March 1996	The April 1997 Revision updated references to modified Regulation II/VIII

Table 10 - 1

CHAPTER 11

STATE MANDATED TRIENNIAL PROGRESS REPORT AND TRIENNIAL PLAN REVISION

11. STATE MANDATED TRIENNIAL PROGRESS REPORT AND TRIENNIAL PLAN REVISION

11.1 INTRODUCTION

The California Clean Air Act (CCAA) requires that we report our progress in meeting state mandates and revise our 1991 Air Quality Attainment Plan (1991 AQAP) to reflect changing conditions. The deadlines for both the Triennial Progress Report and the Triennial Plan Revision generally coincide with the Federal Clean Air Act requirements detailed in this 1998 CAP. The APCD has been working with ARB to lessen the burden of complying with these various state and federal mandates by minimizing potential duplications of effort and inconsistencies. This chapter reflects these efforts by summarizing how the development and adoption of the 1998 CAP satisfies the triennial update requirements of the California Clean Air Act. Our 1994 CAP addressed both state and federal requirements by identifying how the work performed for our specific federal mandates also satisfied our state mandates.

Santa Barbara County is the only area in California to have been reclassified to a “serious” nonattainment area under Section 181 (b)(2) of the federal Clean Air Act. This new federal mandate has placed a significant burden on the APCD’s planning resources resulting in an increased need to address both state and federal requirements simultaneously. Although the requirements of the CCAA are not identical to the requirements of the Federal Clean Air Act Amendments, our federal requirements necessitate a complete revision to our 1994 Clean Air Plan which will cover many of the state mandates to update the 1991 AQAP. And, while the 1998 CAP does not take federal credit for certain measures documented in this 1998 CAP, the county's "Air Pollution Control Strategy" includes "all feasible measures" pursuant to state requirements. Therefore, the planning process documented in this 1998 CAP is directly applicable to the state mandates.

This chapter will discuss each state triennial requirement and refer to the chapters in this document where the information complying with state requirements can be found. There are two major items required to be in the triennial update (Sections 40924 and 40925 of the

California Health and Safety Code): a Triennial Progress Report and a Triennial Plan Revision. The Triennial Progress Report must assess the overall effectiveness of an air quality program and the extent of air quality improvement resulting from the plan. The Triennial Plan Revision must correct for deficiencies in meeting the interim measures of progress and incorporate new data or projections into the plan.

11.2 TRIENNIAL PROGRESS REPORT

The Triennial Progress Report must assess the overall effectiveness of our air quality program and the extent of air quality improvement resulting from the plan. This CAP examines the emission reductions achieved from existing regulations. It also examines the change in the rate of emissions related to changes in population, industrial activity, and vehicle use.

The control strategy presented in the 1991 AQAP failed to produce the state mandated 5% per year emission reductions, so the plan was approved under the "all feasible measures" option. The most relevant measure of progress is how well the APCD has maintained the schedule of adoption of all feasible controls as presented in that plan. Chapters 4 and 5 of this CAP detail the County's "Air Pollution Control Strategy" documenting that all feasible measures are being adopted as expeditiously as practicable. In addition, Table 10-1 summarizes our rule-making activity from 1995 to 1997 while Table 11-1 provides the most recent expected emission reductions from these rules that were either adopted or implemented between 1995 and 1997 [H&SC section 49024(b)(2)].

State law [H&SC section 40924(b)(1)] also requires that we assess the extent of air quality improvement achieved during the preceding three years, based upon:

1) Ambient pollutant measurements,
2) Best available modeling techniques, and
3) Air quality indicators.

A summary of ambient air quality data for Santa Barbara County is presented in Chapter 2. Chapter 7 includes an attainment demonstration based on the best available modeling techniques, which covers the second measure of air quality improvement. The air quality indicators report is the responsibility of the ARB.

11.3 TRANSPORTATION PERFORMANCE STANDARDS

The CCAA requires areas classified as having a "moderate" air quality classification for the state one-hour ozone standard, such as Santa Barbara County, to meet the following transportation performance standard: “substantial reduction in the rate of increase in passenger vehicle trips and miles traveled.”[1] ARB has defined substantial reduction in two ways:

1) Holding growth in VMT and trips to the same growth rate as population; and,

2) Reducing the rate of growth in VMT 50 percent below the average annual VMT growth rate experienced during the 1980's.

As shown in Figure 11-1, the annual VMT growth rate has been less than the annual population growth rate experienced in Santa Barbara County since 1990 with the exception of 1993. Also since 1990, the annual VMT growth rate has been below 50 percent of the VMT growth rate (except 1993) experienced in Santa Barbara County during the 1980's (5.6 percent). Based on this information, Santa Barbara County is currently meeting the CCAA transportation performance standard mandated for moderate nonattainment areas.

11.4 TRIENNIAL PLAN REVISION

To satisfy these state Triennial Plan Revision requirements, Table 11-2 identifies what is required and how the APCD submittal complies with the requirement.

[1] Recognizing the close relationship between vehicle trip making activity and VMT, VMT is considered a surrogate for vehicle trips by ARB for CCAA performance standard monitoring

TABLE 11-1

Summary of Emission Reductions for Rule Activity from Rules Adopted or Implemented from 1995-1997

Rule #	CAP ID#	Description	1996 ROG Emission Reductions tons/summer day [1]	1999 ROG Emission Reductions Tons/summer day [2]
331	R-PG-1	Oil and Gas Fugitive Emissions Inspection and Maintenance	3.69	2.36
316	R-PM-1 R-PM-2 R-PM-3	Gasoline Bulk Plants/Phase I/Phase II	0.16	0.325
325	R-PT-2	Crude Oil Production and Separation	0.11	0.116
326	R-PT-2	Storage of Reactive Organic Compound Liquids	(Refer to Rule 325)	(Refer to Rule 325)
323	R-SC-1	Architectural Coatings	0.19	0.116
330	R-SC-2	Surface Coating of Metal Parts and Products	0.06	0.164
339	R-SC-4	Motor Vehicle and Mobile Equipment Coating Operations	0.45	0.537
351	R-SC-5	Surface Coating of Wood Products	0.04	0.007
321	R-SL-2	Control of Degreasing Operations	0.07	0.059
342	N-XC-4 N-XC-5 N-XC-6	Industrial/Commercial Boilers/	0.11 (NO_x)	0.238 (NO_x)

[1] From Table 4-2 of the 1994 Clean Air Plan
[2] From Chapter 4 of the 1998 Clean Air Plan

TABLE 11-2

TRIENNIAL PLAN REVISION REQUIREMENTS

CCAA Mandate	APCD Submittal
Emission Inventory	The updated 1990 annual base-year inventory is presented in Chapter 3.
Air Quality Analysis	ARB Trend Report will provide this analysis.
Control Measures	The control measure strategy is substantially the same as that presented in the 1991 AQAP and is fully described in Chapter 4 and Chapter 5.
Transportation Performance Standards	Discussed in Section 11.3.
Emission Reductions/All Feasible Measures	All feasible measures have been incorporated into this plan as described in Chapter 4 and Chapter 5.
Expeditious Adoption/Implementation	The schedule of adoption and implementation is provided in Chapter 4 and 5.
Transport	All feasible control measures are described in Chapter 4 and Chapter 5.
Cost-Effectiveness	A cost effectiveness analysis of the control measures is included in Chapter 4 and Appendix C of the 1991 AQAP and Appendix B of this 1998 CAP.
Population Exposure	The ARB Trend Report will quantify population exposure to pollutants.
Contingency Measures	The schedule of adoption of the control measures is included in Chapters 4.6 and 5.6.
Public Education	APCD public education efforts are outlined in Chapter 8.

PUBLIC COMMENTS

ENVIRONMENTAL DEFENSE CENTER

Marc Chytilo

OCTOBER 30, 1998

October 30, 1998

Mr. Tom Murphy
Santa Barbara County Air Pollution Control District
26 Castilian Drive, B-23
Goleta, CA 93117

RE: Comments to Draft 1998 Clean Air Plan

Dear Mr. Murphy:

Please accept these comments from the Environmental Defense Center (EDC), a public interest law firm active in air quality and other environmental and public health issues in the tri-county region.

EDC acknowledges and applauds the substantial amount of effort involved in creating this plan. The 1998 plan contains substantial improvements in several critical elements of the State Implementation Plan (SIP) element and has been produced in a methodical and coordinated fashion employing-the talents of a number of other agencies. The people of Santa Barbara County have benefited from your labors.

Unfortunately, we believe that the plan has significant problems, some due to limitations of technology and data (modeling, episode data, biogenic emissions factors), some due to very tight timelines inherent in the Clean Air Act, EPA's inaction, and the District's failure to "get ahead of the curve" when non-attainment was imminent, and still others due to the content of the plan itself.

EDC believes that the plan fails to meet its fundamental purpose of assuring attainment of the ozone ambient air quality standard by the II/ 1 5/99 deadline. The plan does not contain sufficient control strategies necessary to reduce emissions of air pollution quickly enough to ensure that locally generated air pollution will not cause further violations of the one-hour ozone national ambient air quality standard. Reliance on a preliminary draft of EPA's misguided and legally flawed ozone transport policy to avoid a further reclassification of the County further exacerbates the non- attainment problem. If Santa Barbara County fails to meet the attainment deadline for serious areas, it should begin the implementation of control strategies adequate to ensure that the attainment deadline for severe areas will be met.

Consequently, EDC believes that, as proposed, the plan fails to meet the minimum standards imposed by the Clean Air Act and that EPA will be required to reject the plan as inadequate and run the sanctions clock, order specific "fix-ups" and/or promulgate a federal implementation plan.

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I: LEGAL SUFFICIENCY ISSUES

1. Inadequate Margin of Safety for Attainment Demonstration

Sections 171 and 172 of the Clean Air Act define reasonable further progress for attainment planning and prediction purposes as the emissions reductions necessary to attain the relevant ambient air quality standard as expeditiously as practicable, but no later than the attainment date. Section 172(c)(2) requires a § 171 RFP demonstration, specifically the annual and periodic emissions reductions that will reduce the formation of ozone in Santa Barbara County so as to provide for" (§ 172(c)(6)) attainment of the health-based national ambient air quality standard for ozone as expeditiously as practicable, but no later than November 15, 1999, based on the previous three years' data.

For various reasons, the accuracy of the model used for the attainment demonstration is large, considerably in excess of 0.03 ppb. For all practical purposes, the model simply predicts possible attainment of the 1 hour ozone NAAQS with absolutely no room for the slightest error, any unanticipated conditions, any consideration of transport or nominal excess emissions. Statistically, given the large error in the model, there is a very high probability that Santa Barbara will exceed the standard. Given the fact of at least two exceedences at two separate stations as of fall 1998, and an unusually "clean" air year in 1997, the plan predicts that Santa Barbara will exceed the 1 hour ozone NAAQS and again be reclassified. The plan is legally inadequate.

EDC contends that the plan is currently inadequate because it fails to demonstrate attainment, if at all, with an adequate margin of safety. § 172(c)(6) mandates that the plan include sufficient control measures to "provide for" attainment of the standard by the applicable date, in this case 11/15/99. This is a central concept in the Clean Air Act. The United States Supreme Court ruled in the seminal case *Train v. Natural Resources Defense Council,* 95 S. Ct. 1470 (1975) that "the principle [governing the conditions for approval of the SIP] is that the plan provide for the attainment of the national primary ambient air quality standard." Train, 95 S. Ct. at 1475-1476. There are no assurances that the plan has provided for attainment, and many indications that it has not.

Section 110(a)(1) mandates a plan which "provides for implementation, maintenance and enforcement of such" NAAQS in each district and state. Implicit in this authority is adequate control strategies to ensure that the NAAQS will be attained and maintained. The 1998 SBC CAP fails to comport with this mandate in barely demonstrating attainment, which provides no buffer or margin of safety to ensure attainment and/or continued maintenance of the standard.

EDC strongly questions whether EPA may approve a SIP which might provide for attainment, or which may provide for attainment. Given the central nature of the issue to CAA compliance, EDC believes that the term "provide for" connotes a certainty of actualization, not mere speculation and aspiration. In light of Santa Barbara County's previous bare demonstration of attainment in the 1994 CAP and subsequent non-attainment, EDC believes that EPA will be compelled to disapprove the 1998 CAP if it attempts to show that it "provides for attainment" by such a thin margin. Thus, we urge the District to fortify the plan to provide additional emissions reductions which ensure that the standard will be both attained and maintained.

2. The monitoring network is inadequate

The draft plan lacks an adequate discussion of the District's monitoring program, network and future plans. The reclassification of the County to serious requires substantial revisions to the monitoring network which should be analyzed in the plan, not deferred to future analysis.

SBCAPCD's additional duties as a serious area include the duty to enhance and improve its monitoring network. § 182(c)(1). This includes both SLAMS and PAMS networks. EDC believes that the District's SLAMS responsibilities include a duty to locate a permanent monitoring station in the elevated foothill region of the south coast. 40 C.F.R. Part 58, appendix D, section 2.5. The urban scale criteria define the need for a station located to measure the high concentrations downwind of the area having the highest precursor emissions. Note that this criteria does not define the areas of highest ozone concentrations; it is those areas of highest concentration downwind of the highest precursor emissions. This clearly mandates a' station in the Riviera or other elevated foothill region downwind from the City of Santa Barbara's urban core. The 1998 CAP is deficient for its failure to include this aspect of the improved and enhanced monitoring network.

The attainment demonstration model predicts that the highest ozone concentrations in Santa Barbara County will occur east of the City of Santa Barbara. (1998 CAP Appendix D- 1). There is a well established (and uncontroverted) pattern a higher ozone concentrations at elevated areas in Santa Barbara County. (Various APCD staff reports on 1997 Riviera monitoring station.) The CAP should include a more extensive monitoring network section (or separate chapter) which addresses - the potential sites for location of monitoring stations in conformity with state and federal requirements and considering our unique local conditions, in particular the relationship between elevation, ozone concentration and monitoring station location.

The development of the PAMS network is particularly important for the District. PAMS data is intended to assist in delineating transport factors, exposure assessment, individual source contribution to exceedence episodes and in developing more accurate attainment demonstrations. 40 C.F.R.Part 58,AppendixD,§ 4.1(a). PAMS data will address urban toxic air pollution control and planning for attainment of the 8 hour ozone standard, including speciation of air pollution constituents. The plan must include a description of this crucial program and its components.

Criteria for the PAMS network again militates towards the installation of a station downwind from the urbanized areas in the south county. Id., at § 4.2. Design criteria for the PAMS network are based on selection of an array of site locations relative to ozone precursor source areas and predominant wind directions associated with high ozone events.

3. New Source Review rule adequacy

EDC questions whether the current NSR rule is adequate to control emissions growth in Santa Barbara County, particularly with WSPA's legislation exemption for industrial abandonment activities from offset requirements (AI3 3047). Minimally, these emissions must be included in the emissions inventory. Optimally, the SIP must define a method for controlling these emissions as a matter of federal law. EDC suggests that the District direct EPA to promulgate a federal rule to expressly preempt this odious authority and include the emissions reductions in the 1998 CAP as the South Coast Air Quality Management District did with the 1994 CAP.

Additionally, emissions reductions may be obtained simply by increasing the offset ratios included in the New Source Review rule. Since the expansion of major sources typically involves substantial capitalization, it is appropriate to assign these emissions reductions responsibilities to those who are profiting from polluting activities and can incorporate these costs into their business decisions.

II: INVENTORY ISSUES

1. Adequacy of emissions inventory

The act requires that a SIP contain "enforceable emissions limitation and other control measures, means or techniques ... as may be necessary to meet the applicable requirements of [the Act]." § 110(a)(2)(A). The plan must contain a program of enforcement of these measures. § 110(a)(2)(C).

While the CAP and Santa Barbara County's air pollution control strategies have relied heavily on control of stationary sources in recent years, that component of the emissions inventory is declining in relative significance. The mobile sources sector has concomitantly increased, and threatens to further increase as the County's population increases unchecked.

The CAP emissions inventory must be modified to include enhanced specificity of the components of the mobile sources inventory. EDC is gravely concerned that rapid growth in various portions of the County will cause exceedences of the emissions that are calculated into the attainment model. EDC believes that the emissions inventory is an enforceable element of the SIP and should be stated with adequate detail to ensure that the public and land use planning authorities can track progress in controlling emissions and in emissions growth.

2. Pesticide State Implementation Plan emissions inventory issues

The Santa Barbara County emissions inventory is influenced by the pesticide methyl bromide, among others. Methyl bromide emissions during the peak ozone season have the potential to substantially affect air quality, although there is currently considerable controversy over methyl bromide's relative reactivity. While currently set at 100% reactive, it is probably much lower. Since it would be adjusted in the baseline inventory in any case, there is no demonstration significance although the model would be more accurate if more accurate numbers are used.

3. Kelp Cutting ships: emissions inventory category

Substantial emissions are believed associated with periodic activities by ships engaging in cutting kelp in tidelands. EDC understands that the Department of Fish and Game and/or State Lands Commission regulate these activities, and emissions inventory information may be obtained from those agencies. These emissions are believed significant since the activities involve extensive maneuvering and other internal combustion engine-intensive activities.

4. Biogenic emissions

The emissions inventory grossly overstates biogenic emissions, which then confuses decision makers and members of the public and regulated community. First, the biogenic emissions ignore the role of biogenics as ozone and ozone precursor sinks. Professor Tom Cahill of University of Colorado Davis opines that vegetation in California sequesters and absorbs more as ozone and ozone precursors than the amount of ozone precursors generated. The emissions inventory should reflect this dynamic rather than simply reporting the calculated emissions rate.

Second, the numbers reported as biogenic emissions in the Santa Barbara County draft emissions inventory appear to be wildly inaccurate. While Ventura County's inventory reports-biogenic emissions of approximately 1400 tpy and San Luis Obispo's emissions inventory approximately 440 tpy, the Santa Barbara County emissions inventory for this category is over 14,000 tpy. There are no distinctions between these three counties which would justify or support this level of

disparity. The plan drafters should secure more accurate information from CARB to enhance the .accuracy of the CAP emissions inventory.

5. On-Road mobile source emissions inventory

The 1998 CAP demonstrates that previous Clean Air Plans have seriously understated the quantity of emissions from the mobile sources sect-or. This perturbs the planning process. The CAP must include a more detailed analysis of the inventory's model enhancements and include a margin of error or range of probable emissions if the emissions inventory cannot be more accurately predicted. EDC questions whether the previous underestimation of this component of the emissions inventory has contributed to the District's difficulty in accomplishing attainment.

III: CONTROL MEASURE ISSUES

The Plan must include additional and more effective control strategies to reduce ozone precursor emissions.

1. Offshore Seep Tents

Representatives of the offshore oil industry have highlighted the significance of "natural" seep emissions in affecting local air quality. See generally the second volume of COLAB's "Conservation Quarterly", Summer 1998, where the history of Santa Barbara channel seeps is purportedly delineated. While EDC notes that there are questions regarding the relative reactivity of these emissions, they do appear to be significant in volume if not ozone formation potential. The benefits from controlling these emissions would be reduced exposure to toxic air pollutants as well as enhanced ambient air quality.

A potential control strategy is to assess a severance tax upon all oil and gas production from Santa Barbara Channel production to fund a series of tents or other seep emission control devices. Following design development, members of the oil industry could bid competitively along with anyone else considered capable of installing and operating such devices. There is a logical and legal nexus between any such assessment: the oil industry is attracted to the channel by the presence of oil deposits. These same deposits contribute to degraded onshore air quality due to uncontrolled seeps. Were it not for the oil and gas which coincidentally contribute to the seeps, the oil industry would not be able to accomplish their production and profits from the oil. This industry should fund the control of these sources.

2. Expedited internal combustion engine controls (Rule 333 enhancement and strengthening)

This is a feasible and effect control measure whose implementation has been delayed inappropriately. It's adoption and implementation should be expedited as an adopted control measure with enforceable adoption and implementation dates.

3. Indirect source review should be included

The Act provides clear authority for the application 'of indirect source review programs at § 110(a)(5). Indirect source review is an essential element of Santa Barbara County's air pollution control strategies, yet is given minor treatment in the draft 1998 CAP. It is feasible and appropriate and provides the only meaningful means to control emissions from the fastest growing sector in the County. In light of the minimal margin of safety, the anticipated population and mobile sources sector growth and the absence of alternative means to contain the emissions from these types of

sources, the plan is inadequate without an indirect source review program. Note that California law requires revisions to develop an area wide source and indirect source programs. Health and Safety Code § 40918(a).

4. Land use-air quality issues

The Environmental Defense Center supports the inclusion of land use and air quality issues in the CAP. As noted above, control of emissions growth from the mobile sources sector will only come through thoughtful and careful integration of air quality and land use planning principles. The California Air Resources Board and other agencies have prepared materials addressing the issue through educational materials that should be made available, along with trainings for planners in each City in the County and the County's Planning and Development Department. Workshops with members of the development community, possibly similar to the Planning and Development Department's design residential unit process this summer, could facilitate air quality sensitive project design from the conception stage, rather than after the -fact. Finally, members of the APCD Board of Directors must serve as air quality ambassadors while in their roles as council members or supervisors and direct the planning process in favor of air quality and air pollution sensitive project approvals.

5. Enhanced CEQA guidance and construction emissions controls.

The District may address a number of difficult air pollution generation issues by engaging more actively in the CEQA environmental review process of all land use, regulatory and land management agencies which affect air quality in the District to better accomplish mitigation of air quality impacts. Most substantial land use projects in Santa Barbara County cause a significant adverse environmental impact even under the current weak thresholds, but this impact is typically overridden due to the absence of an effective mitigation measure to offset or otherwise ameliorate the project's emissions. This applies to either or both the construction and/or operational emissions from these projects. The District should develop and adopt a Emissions Mitigation Program (EMP) whereby the District may impose fees or exact conditions from all projects and entitlements which will provide meaningful and effective mitigation of air pollution from growth sectors in the inventory. Developer fees are a significant source of missed opportunity for the District if an effective mitigation program is in existence.

The District should revise the threshold for construction emissions and establish a considerably smaller threshold (zero) for the trigger point mandating mitigation of air pollution impacts.

Consistency is an essential tool for controlling emissions growth, but is incumbent upon an effective and detailed emissions inventory to application. As noted above, the emissions inventory must be much more detailed and speciated among the various source classifications to effectively serve the CEQA consistency function.

6. Contingency Measures

Contingency measures have an essential role in air quality planning processes. When an area is unable to maintain reasonable further progress or accomplish attainment of a NAAQS, the Act requires that a contingency measure come into force, without further action by the District, to address the shortfall in planned emissions reductions and air quality improvement. Sections 172(c)(9), 182(c)(9) and 187(a)(3) state that contingency measures shall "take effect without further action by the state [or District] or Administrator." EPA anticipated that contingency measures would be implemented during the plan revision process following bump up. (General Preamble, 57

Federal Register 13511/2/,4/16/92.) This obviously has not been done, and the District hangs in the balance between attainment and non-attainment as a result.

The 1994 CAP contained a contingency measure (Enhanced Inspection and Maintenance) which was never enforced or applied. While the District may have had good reason for the refusal to activate the control measure, it was obligated to implement an alternative contingency measure and seek a SIP revision to incorporate that change. Neither event happened and Santa Barbara County has experienced worse air quality as a result. The District cannot delete this contingency measure without substituting another, equally or more effective contingency measure to implement should the next attainment date be missed. Section 110(1).

The single identified stationary source contingency measure, rule 333 revisions, is not a contingency measure, it is a currently feasible and necessary control measures to meet the federal and state ambient air quality standards. The rule 333 revisions are programmed into the District's rule promulgation schedule and clearly constitute a feasible control measure. It does not meet the criteria for contingency measure and must be replaced by a different contingency measure adequate to address the anticipated emissions reductions shortfall in accord with EPA guidance.

6. Transportation control measures.

The CAP must more aggressively view transportation control measures as opportunities to control emissions growth and accomplish emissions reductions. The new emissions inventory information disclosing the larger significance of the mobile sources sector is very troubling, indicating both a substantial CAP deficiency and an essential opportunity to address the problem. The CAP must address TCMs much more aggressively and effectively. The failure to control mobile sources emissions will result in exceeding the ceiling relatively soon and triggering a round of sanctions and further planning obligations. Since this is foreseeable at this time, the 1998 CAP must address these contingencies and include additional TCMs adequate to control emissions from this sector.

7. Eliminate Exemptions

The 1997 amendments to the District New Source Review rule included the continuation and, in some cases, expansion of the categories of exemption sources of air pollution. These exemptions should each be reviewed and eliminated in each instance where any quantity of emissions reductions may be accomplished through a prohibitory rule.

IV: OTHER ISSUES

1. Transport Issues

The CAP recites a flawed draft EPA policy that purports to authorize extensions in attainment dates for areas affected by as little as a single molecule of transported air pollution. (Dick Wilson, EPA AA memo, 7/16/98). This policy is exempt from judicial review until applied, and there has been no Administrative Procedures Act compliance with the announcement of the policy, although it has been promised. This policy clearly has little to no application to the west coast; it was designed to address OTAG issues that are irrelevant to California's situation. It is legally infirm, will be challenged judicially if it is employed, and thus should be ignored.

Nevertheless, EDC recognizes that Santa Barbara County and other Districts are affected by transport. In fact, Santa Barbara County is an upwind District for some areas, as well as being a downwind or receptor area. (CARB) The solution to resolving transport issues is aggressive action by all upwind District to control emissions, not extended attainment dates. This solution has

authority in § 110(a)(2)(D), but EPA has not embraced this duty with vigor. The District has a responsibility to go beyond those emissions reductions necessary to demonstrate attainment in Santa Barbara County but also include additional emissions reductions to reduce the District's transport into other regions. Having demonstrated extra efforts to address transported air pollution, the District will be in a more powerful position to demand that other upwind Districts undertake the same courtesy, or face legal action to force these additional measures.

The 1998 CAP should contain a commitment to SBCAPCD participation in the planning, permitting and enforcement activities of upwind Districts, CARB and EPA, including activities through CAPCOA. The objective of that participation should be the reduction of emissions which may be transported into Santa Barbara County and strengthening of air pollution control programs throughout the state.

2. State Measures

CARB and the South Coast Air Quality Management District were recently found to have failed in their obligations to adopt and implement various control strategies contained in the 1994 California State Implementation Plan. See *Coalition for Clean Air et al, v. South Coast Air Quality Management District*, United States District Court, Central District of California, CV 97-6916 HLH, Order on motion for summary judgment, dated October 5, 1998. The Santa Barbara County 1994 and 1998 Clean Air Plans rely upon some of these control strategies to deliver emissions reductions necessary for attainment. The 1998 CAP emissions inventory must be modified to reflect the recently adjudicated status of these portions of the SIP.

3. Emissions Profiles and growth factors

EDC is concerned that the CAP does not accurately predict and quantify the increases in emissions associated with increased population and economic activity that appears inevitable in the region. Sprawl is occurring, particularly in the north county, with a relatively larger amount of emissions than that which are generated with more compact development patterns. While this may be addressed somewhat through more enlightened land use planning, the CAP should employ a realistic analysis which considers the potential increases in emissions of air pollution. Additional margins of safety in emissions reductions are one mechanism to address this issue, another is to increase the anticipated emissions and impose additional control strategies.

CARB reports that patterns of air polluting behavior are changing. Previously, weekday periods had the highest emissions profiles, but that is changing to higher total amounts of emissions during weekend recreational periods, particularly in areas with extensive internal combustion engine driven recreational opportunities such as Santa Barbara. The inventories and growth factors must use the most accurate and recent data.

The Minerals Management Service has prepared a study examining development scenarios in the tri-county area. The COOGER study, which involves Santa Barbara County representatives and reportedly has included APCD input, along with the prominent involvement of Western States Petroleum Association and the oil industry. The COOGER study predicts substantial amounts of new development in this industrial sector, a conclusion very different from that relied upon in the CAP and reflected in the growth factors. EDC believes that major changes in industrial growth patterns of this type will necessitate subsequent CAP revisions. It is preferable that this growth be included in the CAP emissions inventory and control strategies developed to reduce the significance of these new activities, rather than having to attempt to obtain further controls in response to an oil company's development and production plans.

4. State reclassification

The 1998 CAP must address all requirements for serious areas under the California Clean Air Act by operation of Health and Safety Code § 40918(g). References to moderate areas are not applicable, the District must meet serious requirements. See Health and Safety Code § 40919. These include New Source Review modifications, transportation control measure commitments and revisions, and low emission motor vehicle use by fleets. This should include, but is not limited to, food and other local delivery fleets.

V. CONCLUSION

While the 1998 CAP represents a considerable amount of work and strives to address and resolve difficult air quality issues, it falls short of the level of adequacy. APCD must amend this plan to demonstrate attainment through sufficient emissions reductions of sources of air pollution.

Sincerely,

Marc Chytilo

Chief Counsel
Environmental Defense Center

Cc: Lynne Terry, California Air Resources Board
Mr. David Howekamp, Region IX EPA
Mr. Ken Bigos, Region IX EPA

EDC COMMENTS TO 1998 CAP
APPENDIX: CONTROL MEASURES
OCTOBER 30, 1998

Additional emissions reductions are appropriate to ensure attainment and sustain progress towards meeting all applicable standards. The District has a duty to implement 0 feasible control measures. EDC has the following comment on individual control measures:

I. PROPOSED STATIONARY SOURCE CONTROL MEASURES

1. Rule 333 revisions. This is not a contingency measure, but a feasible control measure. It should be considered a measure for adoption and implementation. Other measures must be identified as contingency measures.

Specific dates for the adoption and implementation of the rule revision must be identified in the CAP for the commitment to be enforceable.

2. Unadopted Statewide Measures. CARB and EPA have delayed adoption and implementation of several of the control measures contained in the 1994 SIP, including M9, MI 0, M I 1, M 12, M 1 3, M 1 4, M 1 5, M 1 6. The 1998 CAP must identify all emissions reductions shortfalls from delayed adoption of statewide measures, identify an enforceable date for their adoption and implementation, and deduct any interim losses in emissions reductions previously anticipated (in 1994 and draft 1998 CAPS) in Santa Barbara County's reasonable further progress and attainment demonstrations.

3. Pesticide Measures. It is unclear why the CAP states that Santa Barbara may not opt into the Pesticide State Implementation Plan emissions reductions. The San Joaquin Valley, a serious area with a 1999 attainment date, takes credit for 1999 emissions reductions from the Pesticide State Implementation Plan emissions reductions. While EDC has serious questions regarding the actual effectiveness of DPR's performance under the Pesticide State Implementation Plan commitments, the significance of pesticide use in Santa Barbara County warrants consideration and inclusion in
the CAP.

II. FURTHER STUDY MEASURES

1. Each further study measure should include a definite schedule for commencement and completion of the further study. Otherwise, these potential control strategies languish until the next planning cycle. The process must be more aggressive and federally enforceable.

2. R-GN-2: Wineries and Breweries. Santa Barbara County is experiencing meteoric growth in the winery population, with a significant increase in brewery numbers also likely to follow. Tens of thousands of acres of land have been converted to wine grapes, and approximately a dozen new wineries have been approved or proposed in the District over the past 18 months. The CAP should reclassify Ns control measure and commit to an adoption schedule so that air pollution control

requirements can be included in site and process design, rather than added on as an afterthought. BACT is preferable to BARCT from a land use planning and air quality perspective.

3. R-GN-6: waste water treatment plants. This is a very common category of source, and one whose emissions are expected to increase as the County's population increases. The feasibility of air pollution control technologies should be well proven, and thus this should also be reclassified to an adoption measure rather than further study measure.

4. R-PG-2, R-PM-5. The CAP recites that these sources are "generally controlled" or "most are already controlled". Additional specificity is necessary to delineate the benefits and costs associated with further controls to determine if adoption is appropriate. EDC has learned of a number of situations where venting occurs on a casual or periodic basis at various oil and gas plants in the District, even though the "general practice" is to route pigging venting or process maintenance gasses through vapor recovery units. A rule may be appropriate to ensure general industrial conformity to appropriate practices and ensure SIP enforceability of these limitations.

5. R-SC-1. The Plan must identify more precisely the changes in VOC profiles for the revised paint rule and demonstrate that cumulative emissions reductions will indeed be accomplished.

6. R-SL-2. Degreasing operations. This South Coast Air Quality Management District rule has considerable potential to address and control Santa Barbara sources. A definitive and aggressive schedule for review, adoption and implementation should be included as a component of the CAP.

7. N-IC-7. Accelerate fleet turnover in 2 stroke engines. Compared to modern 4 stroke engines, 2 stroke engines emit an astronomical quantity of ROC. Some jet skis are reported to emit up to 3 gallons of unburned fuel per hour. This is an important source category for Santa Barbara County and must be controlled.

8. N-IC-8 Airports. This control strategy should be elevated to an adoption measure in light of the substantial increase in airport activities throughout the County. The Santa Barbara airport is in themidstofamajorexpansionandhasalargernumberofcarriersthanjust4yearsago. This trend should be expected to increase. Each carrier may bring their own equipment, and without uniform standards, much higher polluting equipment may find its way to Santa Barbara. A similar trend can be expected to some level at each of the other commercial airports in the District as well as at Vandenberg Air Force Base. Additionally, the mere increase in air traffic will cause additional air pollution emissions. Standards for low- or no-emission airport service vehicles should be adopted.

9. N-XC-12: Direct **fired** external combustion units. The District may expect a significant increase in this category of source as growth and development increases in the region.

III. CONTROL STRATEGIES PROPOSED FOR DELETION

1. R-GN-7 Vacuum Producing Systems. It is unclear why this rule only applies to south county sources. Two new asphalt plants are proposed to construction in the north county and should be adequately controlled through SIP enforceable control measures, including in this aspect.

2. R-PG-3 Pipeline pigging. As noted infra, there are regularly reported releases from routine pigging operations, even though the practice is to route any process gasses through a vapor recovery unit. This rule may still be necessary to address this deficiency through a federally enforceable rule.

3. R-PO-5 Glycol Regeneration - Vents. EDC objects to the lack of federal enforceability in this form of emissions reduction. This emissions reduction (and several others similarly situated) can not be federally recognized as a State Implementation Plan emissions reduction unless a rule is adopted.

4. R-PM-4 pleasure craft refueling. This category of sources should be expected to grow in future years and this growth should be accompanied by uniformization of loading apparatus, allowing controls. The measure should not be deleted, but scheduled for further study measure status.

5. R-PP-3 Abandoned well vents. The County should have a mechanism for identifying these sources. Each is a potential hazardous waste site. The California Division of Oil and Gas is supposed to monitor these sites and should have records. There are a number of collateral benefits from securely capping these wells which, if quantified, would lead to a positive benefit-cost analysis. Deletion is inappropriate, further study measure status is justified.

6. R-PP-4 Vacuum trucks. Vacuum trucks transfer significant quantities of fluids. Volatility may increase as fluids are heated while in the truck tank, and sloshing and physical agitation may increase emissions potential. Crude oil is routinely transported in vacuum trucks in some locations. The measure should not be deleted but moved to further study measure or active adopt classification.

7. N-IC-5 exploratory drilling vessels. The New Source Review program does not generate emissions reductions as required by the Clean Air Act and thus this source should be covered by a prohibitive rule.

8. N-XC-9 Solar water heaters. The Santa Barbara County Board of Supervisors amended the zoning ordinance to eliminate the requirement of solar water heaters in new pools and spas. The rule must be adopted to gain this emissions reduction, or the emissions inventory must be modified. A rule is preferred.

IV. PROPOSEID TRANSPORTATION CONTROL MFASURES

1. T-2 Transportation Demand management Program. This program should be expanded to include the north county, considering the amount of residential growth in the north county and jobs in the south county and thus the amount of commuting. T-22 should be an accepted control strategy, not a contingency measure, with a schedule for adoption and implementation.

2. T-7 Traffic flow improvements. Studies have shown that expanding highway capacity can lead to increased overall emissions since the improved traffic flow opens previously unavailable areas to development and commuter residences. See generally letter from Judith Katz, Acting Director, Air Protection Division, EPA Region 111, to Mr. Arthur Hill, Federal Highway Administrator, attached hereto, referring to "the consensus of expert and legal opinion that expanded road capacity generates changes in travel and land activities". The letter refers to a report and states "[n]umerous analyses demonstrate that highway expansion is likely to increased vehicle trips and vehicle miles traveled, and consequently vehicular emissions." The CAP must consider the vicarious effect of bottleneck elimination at inducing additional VMT.

3. T-10 Bicycling. The emissions reductions calculations should reflect the propensity for bicycle trip to replace short cars trips and thereby avoid cold start and hot soak emissions.

4. T- 1 3 Car retirement. CARB has not funded this control measure and any emissions reductions are speculative. A replacement control strategy should be identified.

5. T- 1 7 Telecommunications. This program should be expanded to allow other County departments and the public to use when not in use by the Probation and Public Defender's office. Substantial additional emissions reductions are available from an expanded program. Emissions reduction credit should be taken from the use of this system before the Board of Supervisors, APCD, Santa Barbara County Association of Governments and Planning Commission.

6. T-14 Activity Centers - indirect source review. This program must be better defined and delineated. It is a mandatory control strategy to reduce the air pollution impacts from the explosive growth being experienced in Santa Barbara County, in particular in the north county, where distances are greater and the urban core is dissipated by sprawl. This measure should be expanded- to include T- I 1, special events. The VMT associated with special events could be easily mitigated.

V. CONTINGENCY MEASURE

1. T-21 Enhanced Inspection and Maintenance is a contingency measure in the 1994 CAP that was not properly implemented. Legislative changes should be described and the forgone emissions reductions potential quantified as best possible. The control strategy should be redesigned to a measure for adoption on a set schedule. Substitute contingency measures must be identified. All contingency measures must identify the mechanism for their adoption and implementation, including an enforceable schedule.

2. T-22 Trip Reduction Programs. This contingency measure must include the mechanism for automatic adoption and implementation per EPA guidance, including an enforceable schedule. (See General preamble.)

October 30, 1998

Ms. Vijaya Jammalamadaka
Santa Barbara County Air Pollution Control District
26 Castilian Drive, Suite B-23
Goleta, California 93117

RE: Comments to ND on Draft 1998 Clean Air Plan

Dear Ms. Jammalamadaka:

Please accept these comments from the Environmental Defense Center (EDC), a public interest law firm active in air quality and other environmental and public health issues in the tri-county region.

EDC acknowledges and applauds the substantial amount of effort involved in creating this plan. We believe that the plan itself falls short of the emissions reductions necessary to provide for attainment of the national ambient air quality standard, and thus involves a significant environmental impact from the continued exposure of members of the public to levels of air pollution in excess of the health-based ambient air quality standard. This is a significant impact.

Similarly, the CAP fails to demonstrate attainment of the state ozone AAQS. This is a significant impact.

Additionally, the ND fails to describe the two identified rules which are expected to involve al least partial relaxation of existing standards, specifically the paint rule and the internal combustion engine rule revision.

Revisions to the paint rule are expected to possibly strengthen the status quo but relax the current APCD rule contained in the 1994 CAP, at least in some respects. While the CAP summarily concludes that there will be net emissions reductions equivalency, that conclusion is not substantiated or quantified. Thus, the skeptical member of the public or decisionmaker cannot understand the logical pathway proposed by the CEQA environmental review document. This information must be explained in greater detail. If this analysis involves speculation or details are not yet resolved, the District should employ a worst case analysis to describe potential adverse impacts.

Revisions to rule 333 involve increases in Nox as a trade-off for ROC emissions reductions. Again, these trade-offs must be quantified and analyzed as a potentially significant impact.

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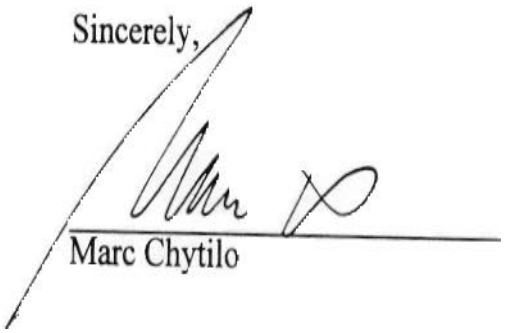
844 E. MAIN ST, VENTURA, CA 93001 - (805) 643-6147 FAX: (805) 643-6148 E-MAIL: edcvent@west.net

Sincerely,



Marc Chytilo

Chief Counsel
Environmental Defense Center

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

Mr. Arthur Hill, Divisional Administrator
Federal Highway Administration
District of Columbia Division
820 First Street, N.E.
Washington, CA 20002

Dear Mr. Hill:

The Environmental Protection Agency (EPA) Region III has reviewed the Conformity Documentation for the Washington region entitled "AIR QUALITY CONFOMITY DETERMINATION OF THE CONSTRAINED LONG RANGE AND THE FY98-2003 TRANSPORATION IMPROVEMENT PROGRAM (TIP) FOR THE WASHINGTON METROPOLITAN REGION." The results of this review are detailed in Enclosure #1.

The conformity determination was reviewed in accordance with the procedures and criteria for review in accordance with the following sections of the Conformity rule: 40 CFR Part 93, Sections 93.110, 93.111, 93.112, 93.113 (b), 93.11. (c).

The EPA has the following comments on this Conformity analysis:

1. The Mass Marketing Campaign does have commitments from the Maryland Department of Transportation (MDOT), the Virginia Department of Transportation (VDOT), and the District of Columbia to support the program: however, it is uncertain who is ultimately responsible for its implementation. In addition, it does not indicate when the program will be evaluated to verify its claims for emissions reductions. This appears to be the case with the other projects: Employer Outreach, Guaranteed Ride Home, and the Telework Research Center.

2. The MDOT memorandum dated May 1, 1997, lists delayed Congestion Mitigation Air Quality (CMAW) projects. It is uncertain if these delays have been programmed into this plan and TIP.

3. There is some uncertainty that the emissions reductions claimed for the Shady Grove West Park and Ride, and the White Oak Park and Ride projects are claimed for the same time frame as the implementation of these projects.

This office has the following general comments regarding future Conformity Determinations:

1. The EPA feels that the recent ruling of the US District Court in Illinois on January 16, 1997. Illustrates the fact that a single set of socioeconomic/land use forecasts used by most agencies when they are doing a build/no build analysis appears to be inadequate because it fails to take into account the consensus of expert and legal opinion that expanded road capacity generates changes in travel and land activities. The Illinois district court ruled the Illinois Department of Transportation (DOT) would need to develop a separate set of socioeconomic/land use forecasts based on what would likely occur with vs. without construction of the proposed extension of the North-South Tollway (Interstate 355) through Will County, Illinois. A portion of the court's opinion states that "… the study relies on only ozone production. As a result, the study does not accurately depict the true ozone-producing effect construction of the tollroad would have…"

2. The 1995 TRB Special Report (SR) 245 on "Expanding Metropolitan Highways: Implications for Air Quality and Energy Use", provides ample evidence of induced travel and land use effects. Numerous analyses demonstrate that highway expansion is likely to increase vehicle trips (VT) and vehicle miles traveled (VMT), and consequently, vehicular emissions. Robert Johnston and Raju Ceerla ("The Effects of New High-Occupancy Vehicle Lanes on Travel and Emissions," Transportation Research A. Vol. 30, No. 1, 1996, attached), concluded that in California metropolitan areas, 60 to 90 percent of increased road capacity is filled with new traffic within 5 years. Therefore, if a three-lane freeway is expanded to four lanes, the 33 percent increase in capacity attracts a 20 percent to 30 percent increase in traffic.

3. Mark Hansen ("Do New Highways Generate Traffic?," Access, UC Berkeley, Fall 1995, attached), concluded that at the metropolitan level, 90 percent of increased road capacity is filled with new traffic within four years. Mark Hansen and Yuanlin Huang ("Road Supply and Traffic in California Urban Areas," Transportation Research A. Vol. 31, No. 3, 1997, attached), found the same 90 percent of increased road capacity is filled with new traffic at the metropolitan level. Todd Litman ("Determining Generated Traffic External Costs," Victoria Transport Policy Institute, March 1997), summarized the results of these and many other studies.

4. The transportation Conformity rule, Section 93, Subsection 93.110, "Criteria and Procedures: Latest Planning Assumption" states that the conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination. The conformity determination must satisfy the requirements of paragraphs (b) through (f) of this section which include assumptions that must be derived from the most recent estimates of current and

future population, employment, travel, and congestion. In addition, these key assumptions must be specified and included in the draft documents for documents and supporting materials used for the interagency and public consultation required by Sec. 93.105.

In summary, based on the requirements of the Transportation Conformity rule and the above mentioned studies, EPA Region III considers the effects of capacity expansion discussed above significant in terms of how it affects projected VMT. In the future, the agencies responsible for carrying out the regional analysis for conformity should include the effects of induced travel demand future TIPs and regional plans.

Please feel free to call Paul Wentworth at (215) 566-2183 to discuss any aspects of the review.

Sincerely,

Judith M. Katz, Acting Director
Air Protection Division

Enclosures

Cc: Mr. Al Lebeau (FTA Region 3)
Mr. Howard Simons (MDOT)
Ms. Sandra Jackson (FHWA, D.C.)
Ms. Dianne Franks (MDE)

CHAPTER 12

PUBLIC PARTICIPATION

12. PUBLIC PARTICIPATION

12.1 INTRODUCTION

The public participation process used in the development of this 1998 Clean Air Plan (1998 CAP) was implemented to assure that the demands of clean air placed on us by the plan are reasonable and capable of being achieved. Also, it is important that members of the public, the regulated industry, and government agencies, have an opportunity to provide input into shaping our present and future strategies to clean the air.

A specific group of people has been organized to serve the goal of providing input on the development of clean air plans. They are known as the **Community Advisory Council**. On May 24, 1994, the Community Advisory Council (CAC) was formed by the Air Pollution Control District Board of Directors (Board). The purpose of the CAC is to provide advice to the Air Pollution Control Officer (APCO) and the Board in matters relating to attainment planning, development and promulgation of air pollution control rules and other associated policy issues. The CAC considers and renders advice on subjects submitted to them by the APCO, the Board, CAC members, and the public. The CAC is chartered to consider issues related to air pollution planning and rulemaking for which the Air Pollution Control District (APCD) has jurisdiction.

The CAC's deliberations and recommendations are to consider, to the extent feasible and reasonable, the effects of APCD planning and rulemaking actions upon public health, the economy, the costs to industry, and the public, along with conformance with the mandates of all applicable local, state, and federal laws. The recommendations of the CAC are advisory in nature and neither the APCO, nor the APCD Board, are bound by CAC recommendations.

Each Board member can appoint two representatives to the CAC. The Board was directed to select CAC members who contain a background related to community interest, professional business, or technical experience. For example a CAC member could have a working knowledge of land use planning, agriculture, petroleum production, medicine, engineering, transportation, environmental conservation, public health, business, or education. Table 12-1 lists all twelve Board members and each of their appointed CAC representatives.

The APCD has specifically sought out input from the CAC on each element of the 1998 CAP as it was being developed over the past year. Starting in January of 1998, APCD staff presented specific portions of the 1998 CAP for the CAC to review and comment on. The CAC also provided recommendations regarding policy and other key issues that altered the direction, and ultimately enhanced the plan's contents. The details of these CAC meetings and the recommendations that occurred are listed in Section 12.2. We have described the significant changes to the CAP pursuant to the CAC process in Section 12.3.

As part of the APCD's continuing commitment to solicit public participation and input into plan development, a series of public workshops was also conducted to present the concepts of the 1998 CAP and the implications of its proposed control measures on the residents and business community of Santa Barbara County. The focus of the public workshops was to allow public commentary on the plan while allowing APCD and SBCAG staff the opportunity to address concerns and answer questions regarding the plan and its contents. The public comments received verbally during the workshops were responded to at that time and are included in Section 12.4. Public notices announcing the date, time, and location of the public workshops were published in area newspapers, including the Santa Barbara News Press, the Santa Maria Times, and the Lompoc Record. A copy of the public notice can be can be found at the end of this chapter.

The public notice announced that the 1998 CAP was available for public review. The public view period was from September 30, 1998, to October 30, 1998. A copy of all written comments on the 1998 CAP that have been submitted by the public, along with the written responses to these comments, is provided in Section 12.4.

Public presentations of the 1998 CAP were conducted at the workshops, before the Board at public hearings, and before the Community Advisory Council. A complete listing of all public workshops and plan presentations is contained in Table 12-2.

12.2 CAC COMMENTS

This section summarizes the highlight of the CAC meetings on the 1998 CAP. For each meeting, the Chapter or Chapters that were presented and discussed are listed, as well as the primary questions, comments,

suggestions, and policy direction that staff received from the CAC members.

January 14, 1998 ***Chapter 1: Introduction.***

An overview of the entire 1998 CAP was provided at this first meeting. This resulted in considerable discussion on many aspects of the plan, including Existing Air Quality; Emission Inventory; Emission Control Measures; and Transportation Control Measures. The CAC also presented numerous ideas on how to improve air quality, which are itemized under the specific chapters that they pertain to.

The main highlight from the discussion on the Introduction was to:

- Expand the text and Table 1-1 regarding the federal and state mandates required in the 1998 CAP.

February 11, 1998 ***Chapter 2: Existing Air Quality***

The CAC provided comments that raised a number of important issues and led to several improvements in this chapter. They include the following:

- Add more descriptive text to the section describing the new federal 8-hour ozone standard.
- Describe in greater detail a discussion about visibility issues in Class 1 areas.
- Add text to discuss how distribution of air pollution affects health and how the control of that air pollution affects the economy.

April 8, 1998 ***Chapter 3: Emission Inventory***

Based on CAC recommendations, the following enhancements were made in the emission inventory chapter.

- Planing Emission Inventories that are used for emission forecasting and rate-of-progress calculations, should be removed and placed into Chapter 6, Emission Forecasting.
- Formatting of pie charts should include percentages for groups and sub-groups.
- The preferred format is to use bullets that display the percentage attributed to each division and major source for each pollutant in each inventory.

June 10, 1998 ***Chapter 4: Emission Control Measures***

Chapter 5: Transportation Control Measures

For Chapter 4, the CAC comments included the following:

- Further Study measures should have an analysis of how and why they're included in the 1998 CAP. There should be a description of these listed measures, what process was used to derive these measures, and their relevance to the CAP.
- Asphalt Roofing. The APCD should investigate the VOC content, emission impacts, and AB2588 impacts of this emission source. Staff should also determine whether or not the ARB or other APCD's in the state have any other emission data for this source.

For Chapter 5, the CAC comments included the following:

- Use rail or other modes of alternative transportation to reduce automobile traffic and still bring tourists into the county.
- Provide hotel room educational materials that would encourage visitors to not drive, but instead explain other ways to get around town.
- Set up package deals that will give tourists information, discounts and incentives to use alternative transportation, such as rail.
- Provide free bus tokens for tourists who choose to ride the bus.
- Coordinate with the transportation operators, hotels, and restaurants, to reduce traffic coming into and going out from the county, as well as traveling within the county.
- Develop an "APCD bed tax fee" to address the environmental impacts of tourism. Possibly re-allocate the existing city/county bed-taxes.
- Use other methods of funding taxes, such as car parking.
- Increase the usage of the electric shuttles.
- Develop free market incentives or rebates for innovative emission reductions, such as city and county property tax credits for telecommuting.
- Promote more telecommuting, especially from the high-tech business sector. Develop the infrastructure needed to increase telecommuting.
- The CAP needs to address emissions from indirect sources such as shopping centers/big-box malls.
- Look at the VEMP model (Voluntary Emission Mitigation Program) to address indirect sources and to collect mitigation fees.

- Seek voluntary mobile emission credits from EPA.
- Address mobile source emissions in the CAP and place less emphasis on stationary sources. The current and future control measures listed are slanted heavily toward reducing stationary source emissions (e.g., Rule 333), and not enough toward mobile and area source emissions.
- Investigate reducing emission impacts from the school districts. The districts have decreased their bus operations, which has increased private (parental) auto usage. Look into seeking funding sources that will reverse this trend and eliminate the excessive quantity of cold starts.
- Expand the Clean Air Express service. Develop tools to do this; expand routes; improve marketing; use incentives; work with traffic solutions. Have SBCAG provide more oversight and responsibility.
- Have SBCAG spend more of their funding on clean air projects like the Clean Air Express.
- Bring back the Old Car Buy Back Program.
- Investigate methods to provide greater options for alternative transportation programs at UCSB and incentives, especially to faculty and staff to reduce their VMT and daily trips.
- Pursue Enhanced I & M; Provide the CAC with more data to investigate this issue.
- The issue of Land Use and Air Quality should be included in the CAP. This discussion would include the transit implications/impacts from various housing and commercial developments. Also, we should be educating the county and city planners about the air quality impacts from land use projects. APCD staff should investigate this issue and report back to the CAC, or address it in a future chapter (i.e., Chapter 8).

August 12, 1998 ***Chapter 6: Emission Forecasting***
Chapter 8: Implementation Support Activities

For Chapter 6, the CAC comments resulted in changes in the 1998 CAP to include the following:

- Upgrade the activity indicator for petroleum wells to include abandoned wells along with producing wells.

For Chapter 8, the CAC comments included the following:

- The APCD should go to the incorporated cities and county for funding. Local government should earmark monies, i.e., bed-tax.

- Develop an Indirect Source Review program as a possible control strategy.
- Should there be an opportunity in the plan to do traffic regional modeling. Seek funding for cities to look at impacts of projects on air quality.
- Provide additional detail in plan on VEMP (voluntary emissions mitigation program - a type of ITG program to limit impacts from land use projects).
- Develop a range of options of land use strategies to benefit air quality.
- Investigate to see if USEPA will give SIP credit for VEMP.
- Explore the relationship of land use to air quality and have staff work with the CAC to develop control measures.

September 9, 1998 ***Chapter 7: Future Air Quality***
Chapter 9: Rate-of-Progress
Chapter 10: State and Federal Clean Air Act Requirements

For Chapter 7, the CAC comments included the following:

- A recommendation was made to not pursue the deadline extension, but rather pressure upwind districts (and have ARB/USEPA take more oversight).
- Revise a sentence in Section 7.7 on page 7-12.

For Chapter 9, the CAC comments included the following:

- Use bullet formatting to display the percentage attributed to each division and major source for each pollutant in each inventory.

For Chapter 10, the CAC comments included the following:

- In the future, the CAC wants to review AQ monitoring documents, such as the Enhanced Ozone Monitoring Plan.

October 14, 1998 ***Draft 1998 Clean Air Plan and Plan Appendices***

Comments from this CAC at this meeting included the following:

- Suggestions to improve the format and text of the Executive Summary.

- Discussion of Biogenics, and their reduced importance to the overall strategy of the 1998 CAP.
- Discussion of Vandenberg Air Force Base and their impact upon the 1998 CAP.
- A request for staff to determine what is the relationship between elevated monitoring stations and increases in ozone concentrations.
- A request to add a section discussing the Complaint Response Program.

12.3 CHANGES TO THE 1998 CAP RESULTING FROM CAC COMMENTS

This section summarizes the significant changes that were made to the plan pursuant to the CAC input summarized in Section 12.2.

- Several improvements were made to the discussion in Chapter 2 of the new 8-hour federal ozone and particulate matter standards that were promulgated by the USEPA on July 18, 1997.

- The discussion and format of the emission inventory chapters were revised significantly.

- Updated VMT and Conformity tracking commitment language was added to Chapter 5.

- An Old Car Buy Back Program is being re-established to address emissions from pre-1974 cars. The California legislature recently exempted model year 1966 through 1973 cars from Smog Check requirements.

- An updated activity indicator for Petroleum Wells is included in Chapter 6.

- Language in Chapter 7 was revised to address the potential for pollution transport that could prevent attainment of the federal 1-hour ozone standard by 1999. The text now states, "…in the event that it is clear that Santa Barbara County was unable to achieve the federal 1-hour ozone standard by 1999 due to the influence of transported pollution, supported by an analysis of monitoring and meteorological data, we may request that the USEPA evaluate our local air quality circumstances and extend our attainment date."

- The "Take a Vacation From Your Car" program is being explored and identified in Chapter 8 in response to CAC concerns about vehicle emissions associated with tourism.

- Section 8.7.5 of the Plan was modified to ask the Board to direct the CAC to explore Indirect Source Review (ISR) and Voluntary Emissions Mitigation Program options to address the issue of the impacts of land use decisions on local air quality. This effort would result in specific recommendations for the Board to consider.

- A stand-alone Chapter 10 has been added to specifically identify all mandatory requirements under the California Clean Air Act and the Federal Clean Air Act Amendments along with a summary of how the Plan complies with each mandate.

12.4 1998 CLEAN AIR PLAN PUBLIC WORKSHOPS

This section summarizes all public comments and staff responses from the public workshops. These were held on October 21st and 22nd in Santa Barbara and Santa Maria, respectively. The workshop comments are organized in this section by the chapter of the plan that they pertain to.

WORKSHOP COMMENTS

Executive Summary:

- Can you add a breakdown of the natural sources to the Executive Summary? *(Tom Banigan, Santa Barbara Industrial Association)*

  The Community Advisory Council (CAC) discussed this issue and approved a motion to replace the word "locally" with the word "human" in the Executive Summary on page EX-5 and decided not to add a chart summarizing natural sources.

Chapter 1: Introduction:

- What is the date that Santa Barbara County has to be in compliance with the federal 1-hour ozone standard? *(Kevin Wright, Torch Operating Company)*

  November 15, 1999

- What is the approval process of the 1998 Clean Air Plan (1998 CAP) by USEPA? *(Kevin Wright, Torch Operating Company)*

  The USEPA (United States Environmental Protection Agency) has 6 months completeness review then 12 months to approve.

- Is the Air Pollution Control District (APCD) optimistic that we will achieve the standard? *(Rita Green, Citizens Planning Association)*

  Yes, but it will be close, as shown in the air quality modeling in Chapter 7.

- Does the APCD have an official position or opinion on Proposition 7 (The Clean Air Initiative, to be voted upon on November 3rd)? *(Tom Becker, Cars Are Basic)*

  We, as APCD staff, are not allowed to provide opinions on ballot measures. However, the APCD Board of Directors has endorsed the initiative.

- If Proposition 7 passes, will the APCD receive any funds from it? *(Tom Becker, Cars Are Basic)*

  No. Proposition 7 deals with people who receive tax credits for participating in clean fuel projects.

- If Proposition 7 passes, what will be the APCD's involvement? What will be the process and how will it work? *(Olga Howard, Citizens Planning Association)*

  The APCD's Innovative Technologies Group will work with local partners to develop projects that will receive the tax credits.

- Please describe the Community Advisory Council (CAC). Who are they, where and when do they meet? *(Rita Green, Citizens Planning Association)*

  Each of the twelve APCD board members gets to choose two representatives for the CAC, for a total of 24 members. The CAC meets every second Wednesday of each month to provide input on APCD rules and plans.

- How does VAFB's ENVVEST program relate to the CAP? *(Rita Green, Citizens Planning Association)*

ENVVEST is not specifically dealt with in the CAP; however their emissions are reflected in our emission inventories in Chapters 3 and 6.

Chapter 2: Existing Air Quality:

- What percentage of all pollutants is from transported into our air basin on a typical summer day? *(Tom Becker, Cars Are Basic)*

  At this time, there is insufficient information to quantify a percentage.

- How do we influence the USEPA to extend the attainment deadline beyond 1999 if we can't quantify transport-related emissions? *(Tom Becker, Cars Are Basic)*

  We will provide a summary of the information available to document the impacts of transport. This may also be supplemented with data collected during the 1997 Southern California Ozone Study (SCOS).

- Does the federal government give us any credit for dealing with the transport emissions in the shipping lanes in the Outer Continental Shelf (OCS)? *(Tom Becker, Cars Are Basic)*

  No. The issue is currently being debated by an ARB task force set up to discuss channel shipping.

- Has the APCD added any new monitoring stations? *(Rita Green, Citizens Planning Association)*

  No.

- Is the air quality monitoring station at Paradise Road still active? *(Rita Green, Citizens Planning Association)*

  Yes.

- How many PM 2.5 stations does Santa Barbara County have? *(Tom Becker, Cars Are Basic)*

  Zero. However, two stations have been scheduled for installation in 1999.

- How soon is the impact of wildfires addressed in air quality monitoring? *(Tom Banigan, Santa*

Barbara Industrial Association)

PM10 monitoring is on a six-day cycle, which provides evidence of the impact of fires on air quality. It can take a couple of weeks to process the PM10 data. Fires are intermittent and very difficult to track and quantify.

- The CAP states that the SCCCAMP (South Central Coast Cooperative Aerometric Monitoring Program) data was used for the air quality modeling in the plan. Does this model address the North County, and if not, how will the North County be addressed? *(Kevin Wright, Torch Operating Company)*

  Only a portion of the North County was addressed by SCCCAMP, but the entire county will be addressed by SCOS. These data will be used in developing the next federal clean air plan due in 2003.

- Was data from the 1984 SCCCAMP study used in the COOGER (California Offshore Oil and Gas Energy Resources) study? *(Rita Green, Citizens Planning Association)*

  No. The COOGER Study is based on socio-economics.

Chapter 3: Emission Inventory:

- Assuming that the 1994 CAP was written to attain the standard in 1996 and the 1998 CAP meant to attain the standard in 1999, what emission inventories were used in each plan to determine their attainment? *(Kevin Wright, Torch Operating Company)*

  The 1994 CAP used 1990 to forecast 1996 and 2006. The 1998 CAP uses 1996 to adjust 1990 and forecast 1999 and 2005.

- What was the impact of recalculating the 1990 base year emission inventory using 1996 data? *(Tom Banigan, Santa Barbara Industrial Association)*

  Mobile source emissions increased due to more accurate motor vehicle inventory and estimation of motor vehicle emissions. The stationary source emissions did not change very much.

- Was the new CAPCOA (California Air Pollution Control Officers Association) fugitive hydrocarbon emission factor methodology included in the plan? *(Suzanne Noble, Western States Petroleum Association)*

  No. The implementation of the Correlation Equation methodology for quantification of fugitive emissions from valves and connections in hydrocarbon service in the petroleum production and processing industry requires that sources submit data (e.g., revised component counts and leak rates). The sources have not yet collected this data and submitted it to the APCD.

- What % of ROG from natural sources was from biogenics and from seeps? *(Tom Becker, Cars Are Basic)*

  The total Natural Sources emission estimate for 1996 was 29,295 tons of ROG. Biogenic ROG emissions are estimated to be 22,532 tons per year or 77%; geogenic emissions are estimated to be 6,163 tons per year or 21%; emissions from wildfires are estimated to be 599 tons per year or 2%.

- Has the pumping of oil and gas reduced the seeps? *(Tom Becker, Cars Are Basic)*

  There is insufficient evidence to conclusively make a correlation with oil production and seep emissions.

- What is the reactivity of biogenics and seeps compared to something such as gasoline? *(Tom Becker, Cars Are Basic)*

  Reactivity varies for all ROG species. Please refer to the ARB reactivity profiles.

- Where do I find information on reactivity? *(Tom Becker, Cars Are Basic)*

  ARB speciation profiles are the most appropriate source of information.

- What methodology was used to calculate seep emissions? *(Suzanne Noble, Western States Petroleum Association)*

  We did an exhaustive literature review and developed our best estimate of seep emissions.

- The seep calculation appears to be extremely low. WSPA believes additional high quality data was available to be used. *(Suzanne Noble, Western States Petroleum Association)*

  We have reviewed all available data to our knowledge.

- The CAP states how the most recent emission inventory techniques and information available is being used. Is this true for calculating the emissions from the seeps? What data is this based upon? Did it take into account the extensive study recently done by UCSB (University California at Santa Barbara)? *(Kevin Wright, Torch Operating Company)*

  The APCD staff has reviewed recent information that has been produced by UCSB's Institute for Crustal Studies and was unable to glean any additional information on seep emission estimates.

- What are the seep emissions data based upon? *(Kevin Wright, Torch Operating Company)*

  Primarily the Coal Oil Point Project Environmental Impact Report, prepared September 1986.

- What study was used? *(Suzanne Noble, Western States Petroleum Association)*

  Refer to the previous response.

- How were the solvent evaporation emissions developed in the emission inventory? Did we use permitted or actual data? *(Charles Lester, Nusil Technology)*

  The 1996 emission inventory is based on actual data.

- Why was there an increase in solvent evaporation emissions from 13% in Figure 9-1 to 21% in Figure 9-2? *(Charles Lester, Nusil Technology)*

  The actual amount of evaporation was roughly the same in both pie charts, however the relative contribution changed due to changes made in other categories.

Chapter 4: Emission Control Measures:

- Will the APCD have to wait for EPA to adopt the CAP before we can implement any of the new rules that are included in the CAP? *(Kevin Wright, Torch Operating Company)*

  No. We will be going forward with the proposed control measures once our Board adopts the plan.

- Is it really going to do any good trying to implement this emission reduction strategy since the natural source emissions are so large and uncontrollable. *(Tom Becker, Cars Are Basic)*

  We feel that the emission reduction strategies that have been implemented pursuant to the California Clean Air Act and the Federal Clean Air Act Amendments of 1990 have be very effective in improving air quality. While the air quality (ozone) has been steadily improving in Santa Barbara County, the best example of the effectiveness of controlling anthropogenic emissions is in the Los Angeles area where air quality has improved tremendously since the 1950's.

- The CARB control measures M13, M14, and M15 are not applicable to your plan and should be deleted. These measures are only applicable to areas classified as Extreme (i.e., South Coast Air Quality Management District). *(Ron Nunes, California Air Resources Board)*

  We have requested ARB to provide us with guidance of the statewide measures. These measures will be revised appropriately, as information becomes available.

- Are the M16 ROG and NOx emission data reversed for 2005? *(Ron Nunes, California Air Resources Board)*

  The change has been noted and corrected.

- Verify ROG and NOx data for 1999 and 2005 for M9 and M10. *(Ron Nunes, California Air Resources Board)*

  The data has been verified.

- What is the latest information on the revised version of Rule 333? *(Suzanne Noble, Western States Petroleum Association)*

  The draft rule and staff report will be available November 1998. This will only affect 2005 data

only (not 1999 due to a two year implementation period).

- Since we have CO levels well below the standard, could the APCD implement rules that could aggressively reduce NOx at the expense of increasing CO? *(Tom Becker, Cars Are Basic)*

  This has already been done in the implementation of Rule 333, Control of IC Engines, where NOx controls have resulted in increases in CO. However, it's best to minimize these "trade-offs" when proposing control measures.

- Clarify the use of Reasonably Available Control Technology (RACT) and Best Available Control Technology (BACT) vs. "all feasible measures." *(Tom Banigan, Santa Barbara Industrial Association)*

  All feasible controls relate to the overall air pollution control strategy to examine every cost-effective and appropriate measure in the Clean Air Plan. RACT, BARCT (Best Available Retrofit Control Technology), and BACT are assessed on a case-by-case basis as part of the NSR permitting process while RACT and BARCT are implemented through specific stationary source control measures. The APCD does BARCT for any source greater than 250 tons per year, otherwise we use RACT.

Chapter 5: Transportation Control Measures:

- What was the change in motor vehicle population and the change in the SBCAG (Santa Barbara Association of Governments) inputs used to develop the Motor Vehicle Emission Inventory? *(Suzanne Noble, Western States Petroleum Association)*

  The fleet demographics (i.e., vehicle age distribution) for the county's light-duty auto and light-duty truck population were updated using actual Santa Barbara County DMV data.

- Are SUVs, (Sport Utility Vehicles), considered to be classified as medium-duty trucks or light-duty trucks? *(Tom Becker, Cars Are Basic)*

  ARB is currently investigating the need to create a new vehicle type category within the on-road mobile source inventory to specifically identify the emission contribution of SUVs. Currently, SUVs are part of the inventory but not identified specifically as its own category. Depending

on a SUVs gross vehicle weight and configuration, it could be classified within the 1998 CAP on-road emission inventory as either a medium-duty or a light-duty truck.

- Is the light-duty auto category affected by the SUV population increase? *(Tom Becker, Cars Are Basic)*

  No. SUVs are classified as either light-duty and medium-duty trucks.

- Regarding TCM #7; where is the list of traffic improvements in Santa Barbara County and what improvements are planning to done? *(Tom Becker, Cars Are Basic)*

  A total of ten, regionally significant traffic flow improvements projects were credited towards the 1994 Clean Air Plan as part of this TCM (Transportation Control Measure). In order for the 1998 CAP to benefit from this TCM, new traffic flow improvement projects that could be completed by 1999 had to be identified. Although there are approximately 20 such projects currently programmed, none of them will be fully constructed and operational by 1999. Hence, no traffic flow improvements were credited in this 1998 CAP.

- What is the amount of money allocated for traffic flow improvements? *(Tom Becker, Cars Are Basic)*

  According to the RTP (Regional Transportation Plan), there is $187,240,000 programmed and an additional $329,158,000 planned for road and bikeway system improvement projects over the next 20 years. Taken as a whole, there is approximately $1,000,000,000 of total physical improvements for road, transit, airport, and railway system projects scheduled over the next 20 years. However, the funding depends on TEA-21 (Transportation Equity Act), and is subject to change.

- Why doesn't Goleta or Santa Barbara have a public CNG (Compressed Natural Gas) fueling facility? *(Tom Becker, Cars Are Basic)*

  So Cal Gas is currently installing a public facility in downtown Santa Barbara.

- Have the safety concerns of high-pressure CNG tanks been addressed? *(Tom Becker, Cars Are Basic)*

Yes they have. Safety issues are addressed during the permitting process.

- What is being done about the issue of MTBE (Methyl Tertiary-Butyl Ether) in reformulated gas, especially in light of the leak that recently took place in Santa Monica and contaminated the ground water there? *(Tom Becker, Cars Are Basic)*

  ARB is working to change the gas oxygenate standards to allow alternatives to MTBE.

- How successful is the Old Car Buy Back (OCBB) program and how do you measure it's success? *(Tom Becker, Cars Are Basic)*

  From 1993 to 1996, the OCBB program was very successful as estimated on a cost per ton basis. Of the 1,191 vehicles that were scrapped, 528 (44 percent) were determined to be "gross" emitters – typically emitting 6 to 10 times the normal amount of pollutants.

- Who is "Parson's, Inc."? *(Tom Becker, Cars Are Basic)*

  The APCD's OCBB program consultant.

- Does the oil and gas industry receive offset credits for contributing to the OCBB program? *(Tom Becker, Cars Are Basic)*

  No. All benefits from the OCBB program go to clean air.

- Why is there a difference in the estimated emission reductions in measure T-21 in the 1994 CAP compared with the 1998 CAP? *(Tom Becker, Cars Are Basic)*

  The ARB estimated the effectiveness of T-21 for the 1994 CAP for a 1997 implementation year. The MVEI7G 1.0c model, developed by the California Air Resources Board, was used to estimate T-21 for the 1998 CAP for a 2005 implementation year. Also, the MVEI7G 1.0c model does not reflect the legislative changes made to the Inspection and Maintenance Bill, which may reduce the effectiveness of the original program. Consequently, using the MVEI7G 1.0c model exaggerates the benefits of this program. This shortcoming is stated in the draft document. These data will be revised when the data are available.

- Do the 2005 mobile source emission inventory emission reductions include contingency measures?

(Tom Becker, Cars Are Basic)

No.

- Does the mobile source emission inventory include tourist vehicles? *(Tom Becker, Cars Are Basic)*

  Yes.

- What is the percentage of tourist vehicles compared to the total number of cars? *(Tom Becker, Cars Are Basic)*

  On an average summer weekday, SBCAG's Santa Barbara Traffic Model calculated approximately 11%.

- If a summer weekend model was used then what % from tourist vehicles *(Tom Becker, Cars Are Basic)*

  Given that the SBCAG travel model was not designed to address this question it is difficult to say. However, a traffic license plate video survey in 1994, revealed that 60% of vehicles headed south-bound on Highway 101 at San Ysidro Road on a summer Sunday afternoon were from areas south of Santa Barbara.

- Will controlling transportation emissions be more of a problem since the population of cars and VMT continues to increase? *(Olga Howard, Citizens Planning Association)*

  In some areas, the emissions attributable to growth in vehicle activity is estimated to outpace the emissions savings accrued from the cleaner vehicle fleet after the year 2005. Past modeling performed for Santa Barbara County by SBCAG reveals that NOx emissions from motor vehicles will begin to rise again after 2010 while ROG will continue to decrease but a much slower rate. These trends will definitely place more importance on controlling transportation-related emissions especially in terms of future transportation conformity determinations. If regional transportation planning agencies (SBCAG) can not demonstrate that future year emissions from on-road mobiles sources are within the limits established by Clean Air Plan (called emission budgets), federal transportation dollars for new road capacity projects identified in regional transportation plans and programs will be withheld.

- What is the percentage of diesel emissions that contribute to our air pollution problems? *(Olga Howard, Citizens Planning Association)*

  Based on the 1996 on-road mobile source emission inventory, approximately 23 percent of the NOx emissions are from diesel.

- What more can we do about it? *(Olga Howard, Citizens Planning Association)*

  Included as part of Chapter 8 is a Mobile Source Control Policy section, which describes long term directives to reduce on-road mobile sources of pollution including diesel emissions. Specifically, the policies support the continued work of the APCD's Innovative Technology Group (ITG) to pursue projects and programs that will reduce emission from medium and heavy duty diesel vehicles through both engine retrofit/replacement and the introduction and promotion of alternative fuels. Chapter 8 also includes policies, which promote expanded transit services that use alternative fuels (e.g., electric, CNG). These policies are anticipated to provide direction to both public and private agencies to pursue non-diesel fueled vehicle projects as well as potentially influence funding decisions that implement these policy directives.

- Is it likely that the APCD get more authority or control over mobile sources? *(Tom Becker, Cars Are Basic)*

  No.

- Are mandatory ride share programs going to come back? *(Tom Banigan, Santa Barbara Industrial Association)*

  No. However, large employers (those with 100+ employees) located in "severe" or "extreme" nonattainment areas must reduce emissions from their workforce equivalent to what would have been achieved if a mandatory employer-based trip reduction program was in place. To achieve this goal, an employer could always voluntarily implement such a program. If Santa Barbara County does not achieve the federal 1-hour ozone standard by November 1999, EPA may bump the county's nonattainment designation from "serious" to "severe" thus triggering the need for large employers countywide to address this requirement. This measure is described in the 1998 CAP as contingency measure T-22.

- Are the current problems with diesel fuel addressed in the plan? How is it regulated in this plan? How does it affect achieving air quality standards? *(Rita Green, Citizens Planning Association)*

  Oxides of Nitrogen (NOx) and Reactive Organic Gases (ROG) emissions from diesel powered vehicles are addressed in the plan. Particulate emissions and air toxics from diesel vehicles are not. Emissions from diesel vehicles are controlled through the ARB via vehicle emission technology measures and typical local demand management strategies that reduce the need to take a vehicle trip.

- Was a cost-effective analysis done on Enhanced Inspection & Maintenance? *(Tom Becker, Cars Are Basic)*

  No. Please refer to the ARB and BAR (Bureau of Automotive Repair) for information on this program.

- Since my 1972 Volkswagon Bug is no longer required to comply with the Smog Check, are the emissions from my car not accounted for in the plan? It doesn't seem to be any dirtier when I used to have Smog Check done then compared to now. Why is it assumed that my car is getting dirtier? *(Olga Howard, Citizens Planning Association)*

  Although pre-1973 vehicle model years are now exempt from smog check, your vehicle's emissions are still accounted for in the plan. Generally, as vehicles age the emission control devices will degrade causing the vehicle to emit more. However, proper care and maintenance should allow a vehicle to run cleaner longer, as demonstrated by your vehicle's good performance.

- Are newer model years exempt as well? *(Carolyn Einung)*

  No. However, smog checks will not be required for the first four years of a new vehicle's life. So for instance, a 1997 model year vehicle would not be required to have its first smog check until the year 2001.

- How does the SBCAPCD compare with other air pollution control districts in regards to the level of regulatory authority upon land use planning? *(Tom Banigan, Santa Barbara Industrial Association)*

  We would characterize our level of effort as being typical of other Air Districts. However, some

do go further such as the San Luis Obispo Air Pollution Control District whose efforts are exemplary in the area of land use design guidelines.

- The Orcutt Community Plan has a built-in growth cap to limit housing. However, recent growth and plans for additional housing has exceeded this cap. Local officials explained that cap will need to be revised to allow for more growth. How can this be allowed? What will be done about this? *(Olga Howard, Citizens Planning Association)*

  Like the APCD, SBCAG has little authority over land use decisions. SBCAG develops the county's regional growth forecasts in a bottom-up fashion basing its growth assumptions on local area general plans and input from the local jurisdictions. Like all forecasts, it is a snapshot and is based on the most recent information available. SBCAG does monitor the accuracy of its regional growth forecasts by tracking actual data on population, employment, and housing, as it becomes available. As of 1998, the 1994 Regional Growth Forecasts is tracking quite well. However, as local land use policies change by altering the maximum allowable growth or the rate at which growth will be allowed, the need to revise these forecasts may be warranted. Historically, SBCAG has updated its regional growth forecasts every five to six years. SBCAG is currently in the process of updating its growth forecasts and is anticipating a draft document in late 1999. Consequently, this 1998 Clean Air Plan is based on the growth assumptions of the 1994 Regional Growth Forecast, which does not reflect recent changes to the Orcutt Community Plan. However, staff does not consider this to be problematic in terms of emission forecast validity/accuracy given that the 1998 Clean Air Plan only forecasts out to 1999 and the ramifications of the revised Orcutt Community Plan will probably not have an impact for a number of years.

- ARB needs documentation for changes in MVEI inputs done by SBCAG. *(Ron Nunes, California Air Resources Board)*

  This documentation has been included as part of Appendix C (Page C-32; model enhancement #1-4). However, text will be added to further clarify what modifications were made by SBCAG.

Chapter 6: Emission Forecasting:

- How good was the last forecast in the 1994 Clean Air Plan? *(Charles Lester, Nusil Technology)*

  The emission reductions were greater than we predicted in the 1994 plan. The inventory data and methodologies have changed considerably since the last plan. Remember that the inventory is just a "snap-shot" viewpoint.

- Is there any future OCS activity that is detailed in the Forecast Chapter? *(Kevin Wright, Torch Operating Company)*

  We applied an activity factor of unity (1) to the future OCS emissions.

- Is the forecast of OCS a flat, declining or increasing projection? *(Suzanne Noble, Western States Petroleum Association)*

  Refer to the previous response.

- Were the Point Arguello emission reductions taken into account into the forecasting of emissions? *(Suzanne Noble, Western States Petroleum Association)*

  No. These emissions were grown with the activity indicators documented in Chapter 6 of the 1998 Clean Air Plan.

- Is OCS drilling and exploration accounted for anywhere in the CAP? *(Kevin Wright, Torch Operating Company)*

  No.

Chapter 7: Future Air Quality:

- Is there any way in the future that the northern and southern portions of Santa Barbara County could become reclassified as different attainment classifications? Is there any current political movement happening? *(Tom Becker, Cars Are Basic)*

  This issue was addressed by the APCD during our recent reclassification to "Serious" nonattainment for the federal 1-hour ozone standard. EPA denied our request and reclassified the entire county as a Serious nonattainment area. However, APCD staff will continue to negotiate with EPA on this issue.

- Are there any other districts with a split attainment classifications *(Tom Becker, Cars Are Basic)*

  Yes.

Chapter 8: Implementation Support Activities:

- Has a cost-benefit analysis been done on the APCD's pollution prevention programs? How much time, money, and tons of pollution have been reduced? *(Suzanne Noble, Western States Petroleum Association)*

  Pollution prevention programs are difficult to quantify. However, all Innovative Technology Group programs quantify reductions on a cost per ton basis.

- Are there any plans for expansion of re-power programs for boats and booster pumps? *(Tom Becker, Cars Are Basic)*

  Yes. New plans include Clean Air Express buses, marine vessels, boilers, booster pumps; and other clean fuel vehicle programs. We are currently prioritizing these programs for cost-effectiveness.

- How does conformity affect Vandenberg Air Force Base (VAFB) after the attainment date of November 15, 1999 passes? *(Kevin Wright, Torch Operating Company)*

  The general conformity requirements of the 1990 Clean Air Act will not change for Santa Barbara County after 1999. The federal conformity regulation will be applicable to all of Santa Barbara County until the county is formally designated by EPA as an attainment area (not to be confused with a maintenance area) of all federal air quality standards.

  If we attain the federal 1-hour ozone standard, then the emissions contained in the plan for VAFB will remain valid. If we don't attain the federal 1-hour ozone standard, then we might have to prepare another plan, which would have to address VAFB emissions.

- What was the significance and reasons why VAFB identified their emissions in the CAP? *(Kevin Wright, Torch Operating Company)*

The primary motivation for VAFB to fully disclose its expected future emissions is to reduce the risk of violating conformity. Incorporation of this new information will not compromise the 1998 CAP from meeting the rate-of-progress requirement.

- Will OCS drilling and exploration after 1999 involve general conformity? *(Kevin Wright, Torch Operating Company)*

  No. General conformity applies only to federal funded projects.

Chapter 9: Rate-of-Progress:

- Is the calculation to achieve Rate-of-Progress (ROP) taking the total reactive organic gases minus federal controls and subtracting 24% off the remainder? *(Tom Becker, Cars Are Basic)*

  This is generally correct. We can take credit for state motor vehicle controls, but not federal controls.

- If the requirement of a 24% reduction is exceeded, then do we get credit/rewarded? Are there incentives for exceeding the 24%?*(Tom Becker, Cars Are Basic)*

  Rate-of-Progress is a minimum reduction for ROG specified by the Federal Clean Air Act Amendments. There are no incentives for exceeding this requirement besides improving our ability to actually attain the federal 1-hour ozone standard.

- Is there a penalty for not meeting the 24% rate-of-progress requirements? *(Tom Becker, Cars Are Basic)*

  Yes. These penalties include sanctions, federal implementation plans, or offsets.

- Has the rate-of-progress from the 1994 CAP been included into this plan? *(Rita Green, Citizens Planning Association)*

  This plan combines the 15% requirement in the 1994 CAP with the 9% requirement for serious areas for a total required reduction of 24%

- Where are we now and how do we look for making the Rate-of-Progress by 1999? *(Tom Becker,*

Cars Are Basic)

Chapter 9 documents our Rate-of-Progress calculations documenting that we exceeded our statutory requirement for a 24% reduction in emissions of reactive organic gases.

- Why not worry about controlling NOx instead of focusing only on ROG for the Rate-of-Progress calculations? *(Tom Becker, Cars Are Basic)*

  The Federal Clean Air Act Amendments of 1990 mandated specific reductions in ROG according to an area's nonattainment classification. However, our overall emission reduction strategy implements reductions for both ROG and NOx.

- Does the ROP calculation include the Outer Continental Shelf emissions? *(Suzanne Noble, Western States Petroleum Association)*

  No. EPA directed us not to include emissions from the OCS in the ROP calculations.

Chapter 10: State and Federal Clean Air Act Requirements:

- For the CCAA Triennial Update, the ARB requests the APCD to place all of the components into one chapter for an easier review to determine compliance. *(Ron Nunes, California Air Resources Board)*

  The CCAA is addressed throughout the plan and specifically in Chapter 10. However, to address this concern, we will prepare an additional new chapter in the plan to deal with this issue. Chapter 11 will address the state mandated Triennial Progress Report and plan revision requirements.

12.5 WRITTEN COMMENTS AND RESPONSES ON THE 1998 CLEAN AIR PLAN

This section provides all written comments received on the 1998 Clean Air Plan and accompanying staff responses to these comments.

PUBLIC COMMENTS

ENVIRONMENTAL DEFENSE CENTER

Marc Chytilo

OCTOBER 30, 1998

October 30, 1998

Mr. Tom Murphy
Santa Barbara County Air Pollution Control District
26 Castilian Drive, B-23
Goleta, CA 93117

RE: Comments to Draft 1998 Clean Air Plan

Dear Mr. Murphy:

Please accept these comments from the Environmental Defense Center (EDC), a public interest law firm active in air quality and other environmental and public health issues in the tri-county region.

EDC acknowledges and applauds the substantial amount of effort involved in creating this plan. The 1998 plan contains substantial improvements in several critical elements of the State Implementation Plan (SIP) element and has been produced in a methodical and coordinated fashion employing-the talents of a number of other agencies. The people of Santa Barbara County have benefited from your labors.

Unfortunately, we believe that the plan has significant problems, some due to limitations of technology and data (modeling, episode data, biogenic emissions factors), some due to very tight timelines inherent in the Clean Air Act, EPA's inaction, and the District's failure to "get ahead of the curve" when non-attainment was imminent, and still others due to the content of the plan itself.

EDC believes that the plan fails to meet its fundamental purpose of assuring attainment of the ozone ambient air quality standard by the II/ 1 5/99 deadline. The plan does not contain sufficient control strategies necessary to reduce emissions of air pollution quickly enough to ensure that locally generated air pollution will not cause further violations of the one-hour ozone national ambient air quality standard. Reliance on a preliminary draft of EPA's misguided and legally flawed ozone transport policy to avoid a further reclassification of the County further exacerbates the non- attainment problem. If Santa Barbara County fails to meet the attainment deadline for serious areas, it should begin the implementation of control strategies adequate to ensure that the attainment deadline for severe areas will be met.

Consequently, EDC believes that, as proposed, the plan fails to meet the minimum standards imposed

by the Clean Air Act and that EPA will be required to reject the plan as inadequate and run the sanctions clock, order specific "fix-ups" and/or promulgate a federal implementation plan.

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I: LEGAL SUFFICIENCY ISSUES

1. Inadequate Margin of Safety for Attainment Demonstration

Sections 171 and 172 of the Clean Air Act define reasonable further progress for attainment planning and prediction purposes as the emissions reductions necessary to attain the relevant ambient air quality standard as expeditiously as practicable, but no later than the attainment date. Section 172(c)(2) requires a § 171 RFP demonstration, specifically the annual and periodic emissions reductions that will reduce the formation of ozone in Santa Barbara County so as to provide for" (§ 172(c)(6)) attainment of the health-based national ambient air quality standard for ozone as expeditiously as practicable, but no later than November 15, 1999, based on the previous three years' data.

For various reasons, the accuracy of the model used for the attainment demonstration is large, considerably in excess of 0.03 ppb. For all practical purposes, the model simply predicts possible attainment of the 1 hour ozone NAAQS with absolutely no room for the slightest error, any unanticipated conditions, any consideration of transport or nominal excess emissions. Statistically, given the large error in the model, there is a very high probability that Santa Barbara will exceed the standard. Given the fact of at least two exceedences at two separate stations as of fall 1998, and an unusually "clean" air year in 1997, the plan predicts that Santa Barbara will exceed the 1 hour ozone NAAQS and again be reclassified. The plan is legally inadequate.

EDC contends that the plan is currently inadequate because it fails to demonstrate attainment, if at all, with an adequate margin of safety. § 172(c)(6) mandates that the plan include sufficient control measures to "provide for" attainment of the standard by the applicable date, in this case 11/15/99. This is a central concept in the Clean Air Act. The United States Supreme Court ruled in the seminal case *Train v. Natural Resources Defense Council*, 95 S. Ct. 1470 (1975) that "the principle [governing the conditions for approval of the SIP] is that the plan provide for the attainment of the national primary ambient air quality standard." Train, 95 S. Ct. at 1475-1476. There are no assurances that the plan has provided for attainment, and many indications that it has not.

Section 110(a)(1) mandates a plan which "provides for implementation, maintenance and enforcement of such" NAAQS in each district and state. Implicit in this authority is adequate control strategies to ensure that the NAAQS will be attained and maintained. The 1998 SBC CAP fails to comport with this mandate in barely demonstrating attainment, which provides no buffer or margin of safety to ensure attainment and/or continued maintenance of the standard.

EDC strongly questions whether EPA may approve a SIP which might provide for attainment, or which may provide for attainment. Given the central nature of the issue to CAA compliance, EDC believes that the term "provide for" connotes a certainty of actualization, not mere speculation and aspiration. In light of Santa Barbara County's previous bare demonstration of attainment in the 1994 CAP and subsequent non-attainment, EDC believes that EPA will be compelled to disapprove the 1998 CAP if it attempts to show that it "provides for attainment" by such a thin margin. Thus, we urge the District to fortify the plan to provide additional emissions reductions which ensure that the standard will be both attained and maintained.

2. The monitoring network is inadequate

The draft plan lacks an adequate discussion of the District's monitoring program, network and future plans. The reclassification of the County to serious requires substantial revisions to the monitoring network which should be analyzed in the plan, not deferred to future analysis.

SBCAPCD's additional duties as a serious area include the duty to enhance and improve its monitoring network. § 182(c)(1). This includes both SLAMS and PAMS networks. EDC believes that the District's SLAMS responsibilities include a duty to locate a permanent monitoring station in the elevated foothill region of the south coast. 40 C.F.R. Part 58, appendix D, section 2.5. The urban scale criteria define the need for a station located to measure the high concentrations downwind of the area having the highest precursor emissions. Note that this criteria does not define the areas of highest ozone concentrations; it is those areas of highest concentration downwind of the highest precursor emissions. This clearly mandates a station in the Riviera or other elevated foothill region downwind from the City of Santa Barbara's urban core. The 1998 CAP is deficient for its failure to include this aspect of the improved and enhanced monitoring network.

The attainment demonstration model predicts that the highest ozone concentrations in Santa Barbara County will occur east of the City of Santa Barbara. (1998 CAP Appendix D- 1). There is a well established (and uncontroverted) pattern a higher ozone concentrations at elevated areas in Santa Barbara County. (Various APCD staff reports on 1997 Riviera monitoring station.) The CAP should include a more extensive monitoring network section (or separate chapter) which addresses the potential sites for location of monitoring stations in conformity with state and federal requirements and considering our unique local conditions, in particular the relationship between elevation, ozone concentration and monitoring station location.

The development of the PAMS network is particularly important for the District. PAMS data is intended to assist in delineating transport factors, exposure assessment, individual source contribution to exceedence episodes and in developing more accurate attainment demonstrations. 40 C.F.R. Part 58,Appendix D,§ 4.1(a). PAMS data will address urban toxic air pollution control and planning for attainment of the 8 hour ozone standard, including speciation of air pollution constituents. The plan must include a description of this crucial program and its components.

Criteria for the PAMS network again militates towards the installation of a station downwind from the urbanized areas in the south county. Id., at § 4.2. Design criteria for the PAMS network are based on selection of an array of site locations relative to ozone precursor source areas and predominant wind directions associated with high ozone events.

3. New Source Review rule adequacy

EDC questions whether the current NSR rule is adequate to control emissions growth in Santa Barbara County, particularly with WSPA's legislation exemption for industrial abandonment activities from offset requirements (AB 3047). Minimally, these emissions must be included in the emissions inventory. Optimally, the SIP must define a method for controlling these emissions as a matter of federal law. EDC suggests that the District direct EPA to promulgate a federal rule to expressly preempt this odious authority and include the emissions reductions in the 1998 CAP as the South Coast Air Quality Management District did with the 1994 CAP.

Additionally, emissions reductions may be obtained simply by increasing the offset ratios included in the New Source Review rule. Since the expansion of major sources typically involves substantial capitalization, it is appropriate to assign these emissions reductions responsibilities to those who are profiting from polluting activities and can incorporate these costs into their business decisions.

II: INVENTORY ISSUES

1. Adequacy of emissions inventory

The act requires that a SIP contain "enforceable emissions limitation and other control measures, means or techniques ... as may be necessary to meet the applicable requirements of [the Act]." § 110(a)(2)(A). The plan must contain a program of enforcement of these measures. § 110(a)(2)(C).

While the CAP and Santa Barbara County's air pollution control strategies have relied heavily on control of stationary sources in recent years, that component of the emissions inventory is declining in relative significance. The mobile sources sector has concomitantly increased, and threatens to further increase as the County's population increases unchecked.

The CAP emissions inventory must be modified to include enhanced specificity of the components of the mobile sources inventory. EDC is gravely concerned that rapid growth in various portions of the County will cause exceedences of the emissions that are calculated into the attainment model. EDC believes that the emissions inventory is an enforceable element of the SIP and should be stated with adequate detail to ensure that the public and land use planning authorities can track progress in controlling emissions and in emissions growth.

2. Pesticide State Implementation Plan emissions inventory issues

The Santa Barbara County emissions inventory is influenced by the pesticide methyl bromide, among others. Methyl bromide emissions during the peak ozone season have the potential to substantially affect air quality, although there is currently considerable controversy over methyl bromide's relative reactivity. While currently set at 100% reactive, it is probably much lower. Since it would be adjusted in the baseline inventory in any case, there is no demonstration significance although the model would be more accurate if more accurate numbers are used.

3. Kelp Cutting ships: emissions inventory category

Substantial emissions are believed associated with periodic activities by ships engaging in cutting kelp in tidelands. EDC understands that the Department of Fish and Game and/or State Lands Commission regulate these activities, and emissions inventory information may be obtained from those agencies. These emissions are believed significant since the activities involve extensive maneuvering and other internal combustion engine-intensive activities.

4. Biogenic emissions

The emissions inventory grossly overstates biogenic emissions, which then confuses decision makers and members of the public and regulated community. First, the biogenic emissions ignore the role of biogenics as ozone and ozone precursor sinks. Professor Tom Cahill of University of Colorado Davis opines that vegetation in California sequesters and absorbs more as ozone and ozone precursors than the amount of ozone precursors generated. The emissions inventory should reflect this dynamic rather than simply reporting the calculated emissions rate.

Second, the numbers reported as biogenic emissions in the Santa Barbara County draft emissions inventory appear to be wildly inaccurate. While Ventura County's inventory reports biogenic emissions of approximately 1400 tpy and San Luis Obispo's emissions inventory approximately 440 tpy, the Santa Barbara County emissions inventory for this category is over 14,000 tpy. There are no distinctions between these three counties which would justify or support this level of

disparity. The plan drafters should secure more accurate information from CARB to enhance the .accuracy of the CAP emissions inventory.

5. On-Road mobile source emissions inventory

The 1998 CAP demonstrates that previous Clean Air Plans have seriously understated the quantity of emissions from the mobile sources sect-or. This perturbs the planning process. The CAP must include a more detailed analysis of the inventory's model enhancements and include a margin of error or range of probable emissions if the emissions inventory cannot be more accurately predicted. EDC questions whether the previous underestimation of this component of the emissions inventory has contributed to the District's difficulty in accomplishing attainment.

III: CONTROL MEASURE ISSUES

The Plan must include additional and more effective control strategies to reduce ozone precursor emissions.

1. Offshore Seep Tents

Representatives of the offshore oil industry have highlighted the significance of "natural" seep emissions in affecting local air quality. See generally the second volume of COLAB's "Conservation Quarterly", Summer 1998, where the history of Santa Barbara channel seeps is purportedly delineated. While EDC notes that there are questions regarding the relative reactivity of these emissions, they do appear to be significant in volume if not ozone formation potential. The benefits from controlling these emissions would be reduced exposure to toxic air pollutants as well as enhanced ambient air quality.

A potential control strategy is to assess a severance tax upon all oil and gas production from Santa Barbara Channel production to fund a series of tents or other seep emission control devices. Following design development, members of the oil industry could bid competitively along with anyone else considered capable of installing and operating such devices. There is a logical and legal nexus between any such assessment: the oil industry is attracted to the channel by the presence of oil deposits. These same deposits contribute to degraded onshore air quality due to uncontrolled seeps. Were it not for the oil and gas which coincidentally contribute to the seeps, the oil industry would not be able to accomplish their production and profits from the oil. This industry should fund the control of these sources.

2. Expedited internal combustion engine controls (Rule 333 enhancement and strengthening)

This is a feasible and effect control measure whose implementation has been delayed inappropriately. It's adoption and implementation should be expedited as an adopted control measure with enforceable adoption and implementation dates.

3. Indirect source review should be included

The Act provides clear authority for the application of indirect source review programs at § 110(a)(5). Indirect source review is an essential element of Santa Barbara County's air pollution control strategies, yet is given minor treatment in the draft 1998 CAP. It is feasible and appropriate and provides the only meaningful means to control emissions from the fastest growing sector in the County. In light of the minimal margin of safety, the anticipated population and mobile sources sector growth and the absence of alternative means to contain the emissions from these types of

sources, the plan is inadequate without an indirect source review program. Note that California law requires revisions to develop an area wide source and indirect source programs. Health and Safety Code § 40918(a).

4. Land use-air quality issues

The Environmental Defense Center supports the inclusion of land use and air quality issues in the CAP. As noted above, control of emissions growth from the mobile sources sector will only come through thoughtful and careful integration of air quality and land use planning principles. The California Air Resources Board and other agencies have prepared materials addressing the issue through educational materials that should be made available, along with trainings for planners in each City in the County and the County's Planning and Development Department. Workshops with members of the development community, possibly similar to the Planning and Development Department's design residential unit process this summer, could facilitate air quality sensitive project design from the conception stage, rather than after the fact. Finally, members of the APCD Board of Directors must serve as air quality ambassadors while in their roles as council members or supervisors and direct the planning process in favor of air quality and air pollution sensitive project approvals.

5. Enhanced CEQA guidance and construction emissions controls.

The District may address a number of difficult air pollution generation issues by engaging more actively in the CEQA environmental review process of all land use, regulatory and land management agencies which affect air quality in the District to better accomplish mitigation of air quality impacts. Most substantial land use projects in Santa Barbara County cause a significant adverse environmental impact even under the current weak thresholds, but this impact is typically overridden due to the absence of an effective mitigation measure to offset or otherwise ameliorate the project's emissions. This applies to either or both the construction and/or operational emissions from these projects. The District should develop and adopt a Emissions Mitigation Program (EMP) whereby the District may impose fees or exact conditions from all projects and entitlements which will provide meaningful and effective mitigation of air pollution from growth sectors in the inventory. Developer fees are a significant source of missed opportunity for the District if an effective mitigation program is in existence.

The District should revise the threshold for construction emissions and establish a considerably smaller threshold (zero) for the trigger point mandating mitigation of air pollution impacts.

Consistency is an essential tool for controlling emissions growth, but is incumbent upon an effective and detailed emissions inventory to application. As noted above, the emissions inventory must be much more detailed and speciated among the various source classifications to effectively serve the CEQA consistency function.

6. Contingency Measures

Contingency measures have an essential role in air quality planning processes. When an area is unable to maintain reasonable further progress or accomplish attainment of a NAAQS, the Act requires that a contingency measure come into force, without further action by the District, to address the shortfall in planned emissions reductions and air quality improvement. Sections 172(c)(9), 182(c)(9) and 187(a)(3) state that contingency measures shall "take effect without further action by the state [or District] or Administrator." EPA anticipated that contingency measures would be implemented during the plan revision process following bump up. (General Preamble, 57

Federal Register 13511/2/,4/16/92.) This obviously has not been done, and the District hangs in the balance between attainment and non-attainment as a result.

The 1994 CAP contained a contingency measure (Enhanced Inspection and Maintenance) which was never enforced or applied. While the District may have had good reason for the refusal to activate the control measure, it was obligated to implement an alternative contingency measure and seek a SIP revision to incorporate that change. Neither event happened and Santa Barbara County has experienced worse air quality as a result. The District cannot delete this contingency measure without substituting another, equally or more effective contingency measure to implement should the next attainment date be missed. Section 110(1).

The single identified stationary source contingency measure, rule 333 revisions, is not a contingency measure, it is a currently feasible and necessary control measures to meet the federal and state ambient air quality standards. The rule 333 revisions are programmed into the District's rule promulgation schedule and clearly constitute a feasible control measure. It does not meet the criteria for contingency measure and must be replaced by a different contingency measure adequate to address the anticipated emissions reductions shortfall in accord with EPA guidance.

6. Transportation control measures.

The CAP must more aggressively view transportation control measures as opportunities to control emissions growth and accomplish emissions reductions. The new emissions inventory information disclosing the larger significance of the mobile sources sector is very troubling, indicating both a substantial CAP deficiency and an essential opportunity to address the problem. The CAP must address TCMs much more aggressively and effectively. The failure to control mobile sources emissions will result in exceeding the ceiling relatively soon and triggering a round of sanctions and further planning obligations. Since this is foreseeable at this time, the 1998 CAP must address these contingencies and include additional TCMs adequate to control emissions from this sector.

7. Eliminate Exemptions

The 1997 amendments to the District New Source Review rule included the continuation and, in some cases, expansion of the categories of exemption sources of air pollution. These exemptions should each be reviewed and eliminated in each instance where any quantity of emissions reductions may be accomplished through a prohibitory rule.

IV: OTHER ISSUES

1. Transport Issues

The CAP recites a flawed draft EPA policy that purports to authorize extensions in attainment dates for areas affected by as little as a single molecule of transported air pollution. (Dick Wilson, EPA AA memo, 7/16/98). This policy is exempt from judicial review until applied, and there has been no Administrative Procedures Act compliance with the announcement of the policy, although it has been promised. This policy clearly has little to no application to the west coast; it was designed to address OTAG issues that are irrelevant to California's situation. It is legally infirm, will be challenged judicially if it is employed, and thus should be ignored.

Nevertheless, EDC recognizes that Santa Barbara County and other Districts are affected by transport. In fact, Santa Barbara County is an upwind District for some areas, as well as being a downwind or receptor area. (CARB) The solution to resolving transport issues is aggressive action by all upwind District to control emissions, not extended attainment dates. This solution has

authority in § 110(a)(2)(D), but EPA has not embraced this duty with vigor. The District has a responsibility to go beyond those emissions reductions necessary to demonstrate attainment in Santa Barbara County but also include additional emissions reductions to reduce the District's transport into other regions. Having demonstrated extra efforts to address transported air pollution, the District will be in a more powerful position to demand that other upwind Districts undertake the same courtesy, or face legal action to force these additional measures.

The 1998 CAP should contain a commitment to SBCAPCD participation in the planning, permitting and enforcement activities of upwind Districts, CARB and EPA, including activities through CAPCOA. The objective of that participation should be the reduction of emissions which may be transported into Santa Barbara County and strengthening of air pollution control programs throughout the state.

2. State Measures

CARB and the South Coast Air Quality Management District were recently found to have failed in their obligations to adopt and implement various control strategies contained in the 1994 California State Implementation Plan. See *Coalition for Clean Air et al, v. South Coast Air Quality Management District*, United States District Court, Central District of California, CV 97-6916 HLH, Order on motion for summary judgment, dated October 5, 1998. The Santa Barbara County 1994 and 1998 Clean Air Plans rely upon some of these control strategies to deliver emissions reductions necessary for attainment. The 1998 CAP emissions inventory must be modified to reflect the recently adjudicated status of these portions of the SIP.

3. Emissions Profiles and growth factors

EDC is concerned that the CAP does not accurately predict and quantify the increases in emissions associated with increased population and economic activity that appears inevitable in the region. Sprawl is occurring, particularly in the north county, with a relatively larger amount of emissions than that which are generated with more compact development patterns. While this may be addressed somewhat through more enlightened land use planning, the CAP should employ a realistic analysis which considers the potential increases in emissions of air pollution. Additional margins of safety in emissions reductions are one mechanism to address this issue, another is to increase the anticipated emissions and impose additional control strategies.

CARB reports that patterns of air polluting behavior are changing. Previously, weekday periods had the highest emissions profiles, but that is changing to higher total amounts of emissions during weekend recreational periods, particularly in areas with extensive internal combustion engine driven recreational opportunities such as Santa Barbara. The inventories and growth factors must use the most accurate and recent data.

The Minerals Management Service has prepared a study examining development scenarios in the tri-county area. The COOGER study, which involves Santa Barbara County representatives and reportedly has included APCD input, along with the prominent involvement of Western States Petroleum Association and the oil industry. The COOGER study predicts substantial amounts of new development in this industrial sector, a conclusion very different from that relied upon in the CAP and reflected in the growth factors. EDC believes that major changes in industrial growth patterns of this type will

necessitate subsequent CAP revisions. It is preferable that this growth be included in the CAP emissions inventory and control strategies developed to reduce the significance of these new activities, rather than having to attempt to obtain further controls in response to an oil company's development and production plans.

4. State reclassification

The 1998 CAP must address all requirements for serious areas under the California Clean Air Act by operation of Health and Safety Code § 40918(g). References to moderate areas are not applicable, the District must meet serious requirements. See Health and Safety Code § 40919. These include New Source Review modifications, transportation control measure commitments and revisions, and low emission motor vehicle use by fleets. This should include, but is not limited to, food and other local delivery fleets.

V. CONCLUSION

While the 1998 CAP represents a considerable amount of work and strives to address and resolve difficult air quality issues, it falls short of the level of adequacy. APCD must amend this plan to demonstrate attainment through sufficient emissions reductions of sources of air pollution.

Sincerely,

Marc Chytilo

Chief Counsel

Environmental Defense Center

Cc: Lynne Terry, California Air Resources Board
Mr. David Howekamp, Region IX EPA
Mr. Ken Bigos, Region IX EPA

EDC COMMENTS TO 1998 CAP

APPENDIX: CONTROL MEASURES
OCTOBER 30, 1998

Additional emissions reductions are appropriate to ensure attainment and sustain progress towards meeting all applicable standards. The District has a duty to implement all feasible control measures. EDC has the following comment on individual control measures:

I. PROPOSED STATIONARY SOURCE CONTROL MEASURES

1. Rule 333 revisions. This is not a contingency measure, but a feasible control measure. It should be considered a measure for adoption and implementation. Other measures must be identified as contingency measures.

Specific dates for the adoption and implementation of the rule revision must be identified in the CAP for the commitment to be enforceable.

2. Unadopted Statewide Measures. CARB and EPA have delayed adoption and implementation of several of the control measures contained in the 1994 SIP, including M9, M10, M11, M12, M13, M14, M15, M16. The 1998 CAP must identify all emissions reductions shortfalls from delayed adoption of statewide measures, identify an enforceable date for their adoption and implementation, and deduct any interim losses in emissions reductions previously anticipated (in 1994 and draft 1998 CAPS) in Santa Barbara County's reasonable further progress and attainment demonstrations.

3. Pesticide Measures. It is unclear why the CAP states that Santa Barbara may not opt into the Pesticide State Implementation Plan emissions reductions. The San Joaquin Valley, a serious area with a 1999 attainment date, takes credit for 1999 emissions reductions from the Pesticide State Implementation Plan emissions reductions. While EDC has serious questions regarding the actual effectiveness of DPR's performance under the Pesticide State Implementation Plan commitments, the significance of pesticide use in Santa Barbara County warrants consideration and inclusion in the CAP.

II. FURTHER STUDY MEASURES

1. Each further study measure should include a definite schedule for commencement and completion of the further study. Otherwise, these potential control strategies languish until the next planning cycle. The process must be more aggressive and federally enforceable.

2. R-GN-2: Wineries and Breweries. Santa Barbara County is experiencing meteoric growth in the winery population, with a significant increase in brewery numbers also likely to follow. Tens of thousands of acres of land have been converted to wine grapes, and approximately a dozen new wineries have been approved or proposed in the District over the past 18 months. The CAP should reclassify this control measure and commit to an adoption schedule so that air pollution control

requirements can be included in site and process design, rather than added on as an afterthought. BACT is preferable to BARCT from a land use planning and air quality perspective.

3. R-GN-6: waste water treatment plants. This is a very common category of source, and one whose emissions are expected to increase as the County's population increases. The feasibility of air pollution control technologies should be well proven, and thus this should also be reclassified to an adoption measure rather than further study measure.

4. R-PG-2, R-PM-5. The CAP recites that these sources are "generally controlled" or "most are already controlled". Additional specificity is necessary to delineate the benefits and costs associated with further controls to determine if adoption is appropriate. EDC has learned of a number of situations where venting occurs on a casual or periodic basis at various oil and gas plants in the District, even though the "general practice" is to route pigging venting or process maintenance gasses through vapor recovery units. A rule may be appropriate to ensure general industrial conformity to appropriate practices and ensure SIP enforceability of these limitations.

5. R-SC-1. The Plan must identify more precisely the changes in VOC profiles for the revised paint rule and demonstrate that cumulative emissions reductions will indeed be accomplished.

6. R-SL-2. Degreasing operations. This South Coast Air Quality Management District rule has considerable potential to address and control Santa Barbara sources. A definitive and aggressive schedule for review, adoption and implementation should be included as a component of the CAP.

7. N-IC-7. Accelerate fleet turnover in 2 stroke engines. Compared to modern 4 stroke engines, 2 stroke engines emit an astronomical quantity of ROC. Some jet skis are reported to emit up to 3 gallons of unburned fuel per hour. This is an important source category for Santa Barbara County and must be controlled.

8. N-IC-8 Airports. This control strategy should be elevated to an adoption measure in light of the substantial increase in airport activities throughout the County. The Santa Barbara airport is in themidstofamajorexpansionandhasalargernumberofcarriersthanjust4yearsago. This trend should be expected to increase. Each carrier may bring their own equipment, and without uniform standards, much higher polluting equipment may find its way to Santa Barbara. A similar trend can be expected to some level at each of the other commercial airports in the District as well as at Vandenberg Air Force Base. Additionally, the mere increase in air traffic will cause additional air pollution emissions. Standards for low- or no-emission airport service vehicles should be adopted.

9. N-XC-12: Direct fired external combustion units. The District may expect a significant increase in this category of source as growth and development increases in the region.

III. CONTROL STRATEGIES PROPOSED FOR DELETION

1. R-GN-7 Vacuum Producing Systems. It is unclear why this rule only applies to south county sources. Two new asphalt plants are proposed to construction in the north county and should be adequately controlled through SIP enforceable control measures, including in this aspect.

2. R-PG-3 Pipeline pigging. As noted infra, there are regularly reported releases from routine pigging operations, even though the practice is to route any process gasses through a vapor recovery unit. This rule may still be necessary to address this deficiency through a federally enforceable rule.

3. R-PO-5 Glycol Regeneration - Vents. EDC objects to the lack of federal enforceability in this form of emissions reduction. This emissions reduction (and several others similarly situated) can not be federally recognized as a State Implementation Plan emissions reduction unless a rule is adopted.

4. R-PM-4 pleasure craft refueling. This category of sources should be expected to grow in future years and this growth should be accompanied by uniformization of loading apparatus, allowing controls. The measure should not be deleted, but scheduled for further study measure status.

5. R-PP-3 Abandoned well vents. The County should have a mechanism for identifying these sources. Each is a potential hazardous waste site. The California Division of Oil and Gas is supposed to monitor these sites and should have records. There are a number of collateral benefits from securely capping these wells which, if quantified, would lead to a positive benefit-cost analysis. Deletion is inappropriate, further study measure status is justified.

6. R-PP-4 Vacuum trucks. Vacuum trucks transfer significant quantities of fluids. Volatility may increase as fluids are heated while in the truck tank, and sloshing and physical agitation may increase emissions potential. Crude oil is routinely transported in vacuum trucks in some locations. The measure should not be deleted but moved to further study measure or active adopt classification.

7. N-IC-5 exploratory drilling vessels. The New Source Review program does not generate emissions reductions as required by the Clean Air Act and thus this source should be covered by a prohibitive rule.

8. N-XC-9 Solar water heaters. The Santa Barbara County Board of Supervisors amended the zoning ordinance to eliminate the requirement of solar water heaters in new pools and spas. The rule must be adopted to gain this emissions reduction, or the emissions inventory must be modified. A rule is preferred.

IV. PROPOSEID TRANSPORTATION CONTROL MFASURES

1. T-2 Transportation Demand management Program. This program should be expanded to include the north county, considering the amount of residential growth in the north county and jobs in the south county and thus the amount of commuting. T-22 should be an accepted control strategy, not a contingency measure, with a schedule for adoption and implementation.

2. T-7 Traffic flow improvements. Studies have shown that expanding highway capacity can lead to increased overall emissions since the improved traffic flow opens previously unavailable areas to development and commuter residences. See generally letter from Judith Katz, Acting Director, Air Protection Division, EPA Region III, to Mr. Arthur Hill, Federal Highway Administrator, attached hereto, referring to "the consensus of expert and legal opinion that expanded road capacity generates changes in travel and land activities". The letter refers to a report and states "[n]umerous analyses demonstrate that highway expansion is likely to increased vehicle trips and vehicle miles traveled, and consequently vehicular emissions." The CAP must consider the vicarious effect of bottleneck elimination at inducing additional VMT.

3. T-10 Bicycling. The emissions reductions calculations should reflect the propensity for bicycle trip to replace short cars trips and thereby avoid cold start and hot soak emissions.

4. T- 13 Car retirement. CARB has not funded this control measure and any emissions reductions are speculative. A replacement control strategy should be identified.

5. T- 17 Telecommunications. This program should be expanded to allow other County departments and the public to use when not in use by the Probation and Public Defender's office. Substantial additional emissions reductions are available from an expanded program. Emissions reduction credit should be taken from the use of this system before the Board of Supervisors, APCD, Santa Barbara County Association of Governments and Planning Commission.

6. T-14 Activity Centers - indirect source review. This program must be better defined and delineated. It is a mandatory control strategy to reduce the air pollution impacts from the explosive growth being experienced in Santa Barbara County, in particular in the north county, where distances are greater and the urban core is dissipated by sprawl. This measure should be expanded- to include T-11, special events. The VMT associated with special events could be easily mitigated.

V. CONTINGENCY MEASURE

1. T-21 Enhanced Inspection and Maintenance is a contingency measure in the 1994 CAP that was not properly implemented. Legislative changes should be described and the forgone emissions reductions potential quantified as best possible. The control strategy should be redesigned to a measure for adoption on a set schedule. Substitute contingency measures must be identified. All contingency measures must identify the mechanism for their adoption and implementation, including an enforceable schedule.

2. T-22 Trip Reduction Programs. This contingency measure must include the mechanism for automatic adoption and implementation per EPA guidance, including an enforceable schedule. (See General preamble.)

October 30, 1998

Ms. Vijaya Jammalamadaka
Santa Barbara County Air Pollution Control District
26 Castilian Drive, Suite B-23
Goleta, California 93117

RE: Comments to ND on Draft 1998 Clean Air Plan

Dear Ms. Jammalamadaka:

Please accept these comments from the Environmental Defense Center (EDC), a public interest law firm active in air quality and other environmental and public health issues in the tri-county region.

EDC acknowledges and applauds the substantial amount of effort involved in creating this plan. We believe that the plan itself falls short of the emissions reductions necessary to provide for attainment of the national ambient air quality standard, and thus involves a significant environmental impact from the continued exposure of members of the public to levels of air pollution in excess of the health-based ambient air quality standard. This is a significant impact.

Similarly, the CAP fails to demonstrate attainment of the state ozone AAQS. This is a significant impact.

Additionally, the ND fails to describe the two identified rules which are expected to involve al least partial relaxation of existing standards, specifically the paint rule and the internal combustion engine rule revision.

Revisions to the paint rule are expected to possibly strengthen the status quo but relax the current APCD rule contained in the 1994 CAP, at least in some respects. While the CAP summarily concludes that there will be net emissions reductions equivalency, that conclusion is not substantiated or quantified. Thus, the skeptical member of the public or decisionmaker cannot understand the logical pathway proposed by the CEQA environmental review document. This information must be explained in greater detail. If this analysis involves speculation or details are not yet resolved, the District should employ a worst case analysis to describe potential adverse impacts.

Revisions to rule 333 involve increases in Nox as a trade-off for ROC emissions reductions. Again, these trade-offs must be quantified and analyzed as a potentially significant impact.

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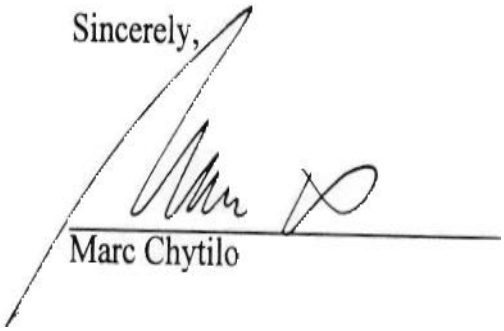
Sincerely,



Marc Chytilo

Chief Counsel
Environmental Defense Center

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

Mr. Arthur Hill, Divisional Administrator
Federal Highway Administration
District of Columbia Division
820 First Street, N.E.
Washington, CA 20002

Dear Mr. Hill:

The Environmental Protection Agency (EPA) Region III has reviewed the Conformity Documentation for the Washington region entitled "AIR QUALITY CONFOMITY DETERMINATION OF THE CONSTRAINED LONG RANGE AND THE FY98-2003 TRANSPORATION IMPROVEMENT PROGRAM (TIP) FOR THE WASHINGTON METROPOLITAN REGION." The results of this review are detailed in Enclosure #1.

The conformity determination was reviewed in accordance with the procedures and criteria for review in accordance with the following sections of the Conformity rule: 40 CFR Part 93, Sections 93.110, 93.111, 93.112, 93.113 (b), 93.11. (c).

The EPA has the following comments on this Conformity analysis:

1. The Mass Marketing Campaign does have commitments from the Maryland Department of Transportation (MDOT), the Virginia Department of Transportation (VDOT), and the District of Columbia to support the program: however, it is uncertain who is ultimately responsible for its implementation. In addition, it does not indicate when the program will be evaluated to verify its claims for emissions reductions. This appears to be the case with the other projects: Employer Outreach, Guaranteed Ride Home, and the Telework Research Center.

2. The MDOT memorandum dated May 1, 1997, lists delayed Congestion Mitigation Air Quality (CMAQ) projects. It is uncertain if these delays have been programmed into this plan and TIP.

3. There is some uncertainty that the emissions reductions claimed for the Shady Grove West Park and Ride, and the White Oak Park and Ride projects are

claimed for the same time frame as the implementation of these projects.

This office has the following general comments regarding future Conformity Determinations:

1. The EPA feels that the recent ruling of the US District Court in Illinois on January 16, 1997. Illustrates the fact that a single set of socioeconomic/land use forecasts used by most agencies when they are doing a build/no build analysis appears to be inadequate because it fails to take into account the consensus of expert and legal opinion that expanded road capacity generates changes in travel and land activities. The Illinois district court ruled the Illinois Department of Transportation (DOT) would need to develop a separate set of socioeconomic/land use forecasts based on what would likely occur with vs. without construction of the proposed extension of the North-South Tollway (Interstate 355) through Will County, Illinois. A portion of the court's opinion states that "… the study relies on only ozone production. As a result, the study does not accurately depict the true ozone-producing effect construction of the tollroad would have…"

2. The 1995 TRB Special Report (SR) 245 on "Expanding Metropolitan Highways: Implications for Air Quality and Energy Use", provides ample evidence of induced travel and land use effects. Numerous analyses demonstrate that highway expansion is likely to increase vehicle trips (VT) and vehicle miles traveled (VMT), and consequently, vehicular emissions. Robert Johnston and Raju Ceerla ("The Effects of New High-Occupancy Vehicle Lanes on Travel and Emissions," Transportation Research A. Vol. 30, No. 1, 1996, attached), concluded that in California metropolitan areas, 60 to 90 percent of increased road capacity is filled with new traffic within 5 years. Therefore, if a three-lane freeway is expanded to four lanes, the 33 percent increase in capacity attracts a 20 percent to 30 percent increase in traffic.

3. Mark Hansen ("Do New Highways Generate Traffic?," Access, UC Berkeley, Fall 1995, attached), concluded that at the metropolitan level, 90 percent of increased road capacity is filled with new traffic within four years. Mark Hansen and Yuanlin Huang ("Road Supply and Traffic in California Urban Areas," Transportation Research A. Vol. 31, No. 3, 1997, attached), found the same 90 percent of increased road capacity is filled with new traffic at the metropolitan level. Todd Litman ("Determining Generated Traffic External Costs," Victoria Transport Policy Institute, March 1997), summarized the results of these and many other studies.

4. The transportation Conformity rule, Section 93, Subsection 93.110, "Criteria and Procedures: Latest Planning Assumption" states that the conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination. The conformity determination must satisfy the requirements of paragraphs (b) through (f) of this section which include assumptions that must be derived from the most recent estimates of current and

Future population, employment, travel, and congestion. In addition, these key assumptions must be specified and included in the draft documents for documents and supporting materials used for the interagency and public consultation required by Sec. 93.105.

In summary, based on the requirements of the Transportation Conformity rule and the above mentioned studies, EPA Region III considers the effects of capacity expansion discussed above significant in terms of how it affects projected VMT. In the future, the agencies responsible for carrying out the regional analysis for conformity should include the effects of induced travel demand future TIPs and regional plans.

Please feel free to call Paul Wentworth at (215) 566-2183 to discuss any aspects of the review.

Sincerely,

Judith M. Katz, Acting Director
Air Protection Division

Enclosures

Cc: Mr. Al Lebeau (FTA Region 3)
Mr. Howard Simons (MDOT)
Ms. Sandra Jackson (FHWA, D.C.)
Ms. Dianne Franks (MDE)

APCD RESPONSE TO PUBLIC COMMENTS

ENVIRONMENTAL DEFENSE CENTER

Marc Chytilo

- ***Comments on the Draft 1998 Clean Air Plan***

1. *Comment:* Page 1: Plan Approval

   Response: This 1998 Clean Air Plan (1998 CAP) has received extensive input from our Community Advisory Council (CAC) and addresses the specific requirements of Section 182(c) for serious nonattainment areas. In addition, the Plan complies with the California Clean Air Act requirements for attaining the state ozone standard that is more protective of public health. The Plan identifies every feasible measure that can be implemented in the county within the timelines imposed by both state and federal requirements. While there are many uncertainties in the methodologies outlined in the Plan, they represent our best estimates available and they comply with state and federal guidelines.

2. *Comment:* Page 2: I: Legal Sufficiency Issues
   Section: 1. Inadequate Margin of Safety for Attainment Demonstration

   Response: The attainment demonstration is provided in Chapter 7. Photochemical modeling performed for this Plan provides a "weight of evidence" demonstration that the strategy proposed in this Plan will provide attainment by the statutory date of 1999. Further, the APCD continues to develop and implement additional measures to continue to reduce emissions toward achieving both the new federal 8-hour standard and the existing 1-hour state ozone standard. APCD staff believe that this Plan provides for expeditious attainment of the federal 1-hour ozone standard.

3. *Comment:* Pages 2 and 3 I: Legal Sufficiency Issues
Section 2. The Monitoring Network is Inadequate: (1st and 2nd Paragraphs)

Response: The enhanced monitoring referred to in § 182(c)(1) is the Photochemical Assessment Monitoring Station program the APCD is in the process of developing. The USEPA has scheduled us to begin monitoring July 1, 1999 in accordance with the statewide California Alternative Program recommended by the ARB and approved by the USEPA. The only mention of SLAMS in the PAMS Implementation Manual relates to collecting PAMS data in accordance with SLAMS/NAMS requirements and the fact that a PAMS site maybe located within a SLAMS station if it is appropriately located to meet the PAMS site objective.

The APCD submitted a SLAMS/PSD Network Review to the USEPA as required in 40 CFR § 58.20(d) in January of 1994. The review, network, and quality assurance procedures have been used by the USEPA as examples for other agencies to follow. In July of this year, the APCD submitted an update to our 1994 Network Review due to a number of station closures and mothballing. We are currently awaiting the USEPA's comments. The review and update include the monitoring being performed at the elevated Las Flores Canyon (LFC) Site 1. The Riviera monitoring study conducted during the 1997 ozone season, in concert with the SCOS, showed that LFC Site 1 had comparable and/or slightly higher ozone readings than the Riviera monitor. Based on that study, the APCD's conclusion was that the LFC Site 1 data could be used in lieu of simultaneously collecting ozone data at an elevated Riviera site. However, should the LFC Site 1 be closed, the APCD would need to site another elevated ozone monitoring station to address that SLAMS monitoring objective.

4. *Comment:* Page 3 I: Legal Sufficiency Issues
Section 2. PAMS Monitoring Network: (3rd and 4th Paragraphs)

Response: The APCD is in agreement with EDC's statement that the PAMS program is particularly important to the APCD and is in the process of developing a program that addresses our PAMS monitoring mandate. The APCD has already been collecting upper air radar wind profiler data at the Santa Barbara Airport since July 1, 1998, as part of the PAMS program.

The PAMS implementation timeline calls for completing a review of existing VOC, ambient air, meteorological, and emissions inventory data by the end of January 1999 to determine site location. We will also be reviewing several sampling methodologies to determine an appropriate monitoring scheme. A PAMS network plan will be prepared and equipment purchased by the end of March 1999 with monitoring commencing on July 1, 1999. The APCD intends to keep the Community Advisory Council regularly apprised of our progress in order to allow input to the PAMS implementation process.

5. *Comment:* Page 3: I: Legal Sufficiency Issues
Section 3. New Source Review Rule Adequacy: (1st Paragraph)

Response: Pursuant to §42301.13 of the California Health and Safety Code, the APCD may not require offsets through the New Source Review permitting process or otherwise for emissions resulting from any activity related to, or involved in, the demolition or removal of a stationary source. Notwithstanding this requirement, equipment used in demolition activities may require permits and emission controls. Also, nothing in this law prohibits other agencies from requiring offsets to mitigate environmental impacts identified through the CEQA process. Finally, offsets may be required under the provisions of federally enforceable New Source Review rules. The inconsistency between state and federal law makes it difficult to determine with certainty whether or not offsets would be required.
The APCD's NSR rule was revised extensively in 1997 during an extensive public participation process, which involved the CAC. The environmental documentation for this revision concluded the revisions did not constitute a rule

relaxation and in some cases, required stricter controls.

6. *Comment:* Page 3: I: Legal Sufficiency Issues
Section 3. New Source Review Rule Offset Ratios: (2nd Paragraph)

Response: As generally applied, the offset ratios in the APCD New Source Review rule are the most stringent in the State. We allow an offset ratio of 1.2:1, (which is less stringent than Ventura County APCD's offset ration of 1.3:1), if the offset providing source is within 7.5 miles of the source requiring offsets. However, all other emissions subject to the offset provisions of NSR must be offset at a ratio of at least 1.5:1. Offsets traded between areas located on opposite sides of the Santa Ynez Mountains are applied at a ratio of 6:1.

7. *Comment:* Page 4: II: Inventory Issues
Section 1. Adequacy of Emissions Inventory: (1st and 2nd Paragraphs)

Response: The on-road mobile source portion of the inventory was prepared using the most recently ARB/USEPA approved emissions model (MVEI 7G) as well as updated transportation activity data and vehicle speed profiles (i.e., VMT by speed class distributions) from SBCAG's travel demand model. In addition, Santa Barbara County specific light-duty auto and truck model year age distribution data from the DMV were included to improve the accuracy of the emission estimates.

8. *Comment:* Page 4: II: Inventory Issues
Section 1: Adequacy of Emissions Inventory: (3rd Paragraph)

Response: The 1998 CAP emissions inventory satisfies state and federal emission inventory requirements. Additionally, SBCAG's regional growth forecasts that form the basis for the area and on-road mobile source portions of the inventory are annually tracked. As of 1997/98, the population and employment projections are tracking extremely well on a countywide basis. The growth implications from

recent changes to local jurisdiction general plans although not reflected in the current growth forecast, should not have an impact until after 1999 given the lag between permitting and project completion.

SBCAG will incorporate all the recent growth policy changes countywide when it updates its growth forecast in 1999 which will be incorporated in future SIP updates (i.e., 2003).

9. *Comment:* Page 4: II: Inventory Issues
Section 2. Pesticide State Implementation Plan emissions inventory issues

Response: The pesticides portion of the inventory was provided by the Department of Pesticide Regulation. The reactivity emissions of the pesticides are consistent with the profiles provided by ARB.

10. *Comment:* Page 4: II: Inventory Issues
Section 3. Kelp Cutting ships: emissions inventory category

Response: Emissions from kelp cutting vessels are not specifically accounted for in the inventory. Due to the periodic nature of this activity, it may not be feasible to accurately estimate future emissions from these vessels. However, the APCD will request ARB to look into these emissions.

11. *Comment:* Page 4: II: Inventory Issues
Section 4. Biogenic emissions: (Biogenics as Ozone Sinks - 1st paragraph)

Response: EDC is correct in asserting that biogenics can act as ozone precursors sinks. However, there is no accepted methodology to accurately account for this effect.

12. *Comment:* Pages 4 and 5 II: Inventory Issues
Section 4. Biogenic emissions: (Inventory - 2nd paragraph)

Response: The biogenics inventory was develop using a biogenic emission inventory system (BEIS) with county specific data. These estimates reflect the most recently accepted estimation methodology, but are subject to a high degree of uncertainty. However, discussions with Ventura APCD staff indicate that their most recent estimate of biogenic emissions for Ventura County is 21,400 tons which relates much more closely to our estimate. It is also possible that new emission estimates will result from the Southern California Ozone Study (SCOS). When and if new emission estimates are available, they will be included in future Plan updates.

13. *Comment:* Page 5: II: Inventory Issues
Section 5. On-Road mobile source emissions inventory: (1^{st} – 3^{rd} sentences)

Response: See Response to Comment #7

14. *Comment:* Page 5: II: Inventory Issues
Section 5. On-Road mobile source emissions inventory: (4^{th} sentence)

Response: A more detailed description of the methodological and data enhancements used by SBCAG to improve the accuracy of the on-road mobile source inventory will be incorporated into Appendix C. The past underestimation of motor vehicle emissions has long been suspected as a reason for the attainment problems for many areas statewide. The continued refinement of this very important aspect of the county's planning inventory will remain an on-going priority of the APCD/SBCAG and ARB. Clearly, the more accurate the planning inventory is, the more effective the planning process will be in developing a comprehensive control strategy which best addresses the air quality problem.

15. *Comment:* Page 5: III: Control Measure Issues
Section 1. Offshore Seep Tents: (Control of Seep Emissions)

Response: The knowledge of emissions from offshore seeps is inadequate for the

development of strategies to control that source of air pollution emissions. The emissions from the seeps vary widely, both spatially and temporally. Furthermore, there are no scientific studies published that quantify the emissions from seeps with any amount of certainty. Finally, once seep emissions are captured, they must be transported onshore and there processed, (e.g., sulfur removal, de-hydration, CO_2 removal, compression, odorizing, and metering). The siting and design of any such processing facility presents another host of air quality and land use issues. Considering the above noted limitations in our knowledge of seep generated air pollution emission, it is not recommended that control strategy development be attempted.

16. *Comment:* Page 5: III: Control Measure Issues
Section 2: Expedited Internal Combustion Engine Controls
(Rule 333 enhancement and strengthening)

Response: Indeed, the proposed revisions to Rule 333 (Control of Emission from Reciprocating Internal Combustion Engines) represent a control strategy that is both feasible and cost effective. However, implementation this rule cannot occur by 1999 and therefore cannot be relied upon as a control strategy for attainment of the federal standard by 1999. The currently rule development schedule for Rule 333 calls for adoption of this control measure in April of 1999 and implementation phased over a two-year period, delivering the emission reductions by the spring of 2001.

17. *Comment:* Pages 5 and 6: III: Control Measure Issues
Section 3: Indirect Source Review Should Be Included

Response: Chapter 8 addresses the potential development of an indirect source review rule.

18. *Comment:* Page 6: III: Control Measure Issues
Section 4: Land Use-Air Quality Issues

Response: Refer to Chapter 8. Additionally, the APCD provides County and city planning staff training on ARB's land use-transportation program URBEMIS as well as mitigation measures which can be implemented during the planning and CEQA process. Also, as part of the development of the 1998 CAP, the APCD's Community Advisory Committee recommended that the APCD board direct the CAC to develop specific policies to address land use and air quality.

19. *Comment:* Page 6: III: Control Measure Issues
Section 5: Enhanced CEQA Guidance and Construction Emissions Controls: (1st paragraph)

Response: Refer to Chapter 8 for information about the potential development of a voluntary emission reduction program. The APCD's CEQA Guidelines, including significant thresholds for construction and operation phase emissions are scheduled to be revised in 1999. The CAC CEQA Subcommittee will be intimately involved in this process.

20. *Comment:* Page 6: III: Control Measure Issues
Section 5: Enhanced CEQA Guidance and Construction Emissions Controls: (Threshold of Significance - 2nd paragraph)

Response: See response to Comment #19.

21. *Comment:* Page 6: III: Control Measure Issues
Section 5: Enhanced CEQA Guidance and Construction Emissions Controls: (CEQA Consistency - 3rd paragraph)

Response: See Response to Comment #8.

22. *Comment:* Pages 6 and 7: III: Control Measure Issues
Section 6: Contingency Measures: (1st and 2nd paragraphs)

Response: During the development of any air quality plan, we look at the entire realm of control strategies necessary to comply with the statutory requirements. For this 1998 CAP, we assessed the feasibility of implementing Enhanced I/M for Santa Barbara County and found that it had just recently been implemented in the more polluted portions of California (July 1998) after much delay and legislative changes. Because of these factors, there are no program specific data available to address the cost effectiveness associated with implementing this program in Santa Barbara County. Therefore this measure has been retained as a contingency measure until these data are available.

23. *Comment:* Page 7: III: Control Measure Issues
Section 6: Contingency Measures:
(IC Engine Rule as a Contingency Measure - 3rd paragraph)

Response: Staff agree that a revision to our Internal Combustion Engine rule is feasible and necessary to attain the state 1-hour ozone standard. A draft Rule 333 staff report will be released for public comment at the end of November 1998. After adoption in April 1999, Rule 333 will include a 2-year implementation schedule. While the APCD is clearly pursuing a revision to this rule, the timing of the emission reductions (post 1999) do not allow us to take credit for the serious area attainment requirements.

24. *Comment:* Page 7: III: Control Measure Issues
Section 6: Transportation control measures (TCM obligations)

Response: The TCMs identified in the 1998 CAP summarizes all the current projects and programs that can be credited towards the serious area requirements. Delays in the reauthorization of TEA-21 at the federal level combined with the short planning horizon of the plan (i.e., 1996 to 1999) inhibited our ability to solicit

and fund new transportation programs. APCD staff will continue to work with SBCAG during the development of the 1999 FTIP process to identify new TCM projects.

25. *Comment:* Page 7: III: Control Measure Issues
Section 7: Eliminate Exemptions (NSR Exemptions)

Response: The impacts of the exemptions were examined when the APCD's NSR rule was revised in 1997.

26. *Comment:* Page 7: IV: Other Issues
Section 1: Transport Issues (Pollution Transport - 1st paragraph)

Response: Chapter 7 does reflect the draft EPA policy (Dick Wilson EPA memo 7/16/98) that allows for the extension of the attainment dates if there is a clear impact from pollution transported outside an area's jurisdiction. However, the language clearly says that we may ask EPA to consider the impacts of transport but we do not ask that they take any action at this point. This language was specifically identified in a motion approved by our CAC and was included in Chapter 7 verbatim.

27. *Comment:* Pages 7 and 8: IV: Other Issues
Section 1: Transport Issues: (2nd paragraph)

Response: Pursuant to the California Clean Air Act, Santa Barbara County must implement all feasible measures to address the state 1-hour ozone standard. This 1998 CAP represents our assessment and scheduling of every feasible measure to implement to attain and maintain all applicable state and federal standards.

28. *Comment:* Page 8: IV: Other Issues
Section 1: Transport Issues: (Air Quality Coordination - 3rd paragraph)

Response: Staff agree with EDC's assertion that we should participate in the planning,

permitting and enforcement activities of upwind and downwind districts and are indeed actively involved in these activities. Currently our Planning and Technology Supervisor is the Chair of the CAPCOA Planning Managers Committee. Our General Source Division Manager is the Chair of the CAPCOA Engineering Managers Committee. And, our APCO will be the President of CAPCOA for 1999. In addition, APCD staff participate in several CAPCOA committees including, enforcement, vapor recovery, public outreach, fiscal, attorney, and legislature. Clearly APCD staff are active locally and statewide on a range of clean air issues.

29. *Comment:* Page 8: IV: Other Issues
Section 2: State Measures (1994 California SIP Measures)

Response: Staff are aware of the changing nature of the 1994 SIP measures. In this 1998 CAP we are using the most current control factors reflecting the status of the 1994 SIP measures.

30. *Comment:* Page 8: IV: Other Issues
Section 3. Emissions Profiles and growth factors:
(Growth Forecast - 1st paragraph)

Response: The 1998 CAP relies upon the 1994 Regional Growth forecast developed by SBCAG. While SBCAG is currently in the process of updating their growth forecast, an analysis of the 1994 RGF indicates that the near term growth assumptions, (i.e., 1999), are reasonable. The revision being developed by SBCAG will be used in future CAP updates.

31. *Comment:* Page 8: IV: Other Issues
Section 3: Emissions Profiles and growth factors:
(Changing Pollution Characteristics - 2nd paragraph)

Response: Staff acknowledges the variability of emission profiles from weekdays to

weekends. Our inventories are based on an average summer weekday as per USEPA and ARB guidance.

32. *Comment:* Page 8: IV: Other Issues
Section 3: Emissions Profiles and growth factors:
(COOGER Study - 3rd paragraph)

Response: The COOGER study deals with several development scenarios and the onshore constraints for those scenarios. To our understanding, the COOGER study does not specifically forecast growth in onshore oil and gas processing. The 1998 CAP does not assume any growth or decline in offshore oil and gas related emission for 1999 and 2005 since there are no current land use applications filed with the County.

33. *Comment:* Page 9: IV: Other Issues
Section 4: State Reclassification

Response: Pursuant to HSC Section 40918(b) the State Board must take an action to reclassify Santa Barbara County as a serious nonattainment are for the state standard. Since the ARB has taken no such action, Santa Barbara County remains classified as moderate nonattainment area for the state ozone standard subject to the requirements of HSC Section 40918 (Moderate Area).

- ***Comments on Appendix B: Stationary Source Control Measure Working Papers***

34. *Comment:* I: Proposed Stationary Source Control Measures
1. Rule 333 revisions: Stationary Internal Combustion Engines

Response: Due to the timing of the adoption and implementation of Rule 333 (post-1999), it must be identified as a contingency measure for the purposes of this 1998 Clean Air Plan. The Plan identifies April 1999 as the adoption date with implementation in 2001.

35. *Comment:* I: Proposed Stationary Source Control Measures
2. Unadopted Statewide Measures

Response: Staff are aware in the delay of some statewide measures and will only be taking credit for those measures which will be implemented by the milestone dates (i.e., 1999, 2005). The ARB has provided us the most recent control factors for these measures and has indicated which measures we cannot take any SIP credit for in this 1998 CAP.

36. *Comment:* I: Proposed Stationary Source Control Measures
3. Pesticide Measures

Response: We have been advised not to opt into the state pesticide implementation plan by the ARB. The methods used as part of this measure will most likely benefit Santa Barbara County but they are difficult to quantify and therefore are not credited in this 1998 CAP.

37. *Comment:* II: Further Study Measures
1. General comment

Response: Further study measures are evaluated on an annual basis when allocating assignments to various rules staff. Multiple rules priorities make it difficult to identify when a "further study" measure will be specifically addressed.

38. *Comment:* II: Further Study Measures
2. R-GN-2: Wineries and Breweries

Response: The APCD is studying the feasibility of promulgating a rule to regulate the emissions from wineries and breweries. In order for such a control measure to be

practical, it would have to achieve significant emission reductions relative to the planning emission inventory. Regardless of its relative effectiveness, any control measure developed for wineries could not be implemented in the time frame required for this plan. Wineries and breweries are not categorically exempt from the provisions of the APCD New Source Review Rules. However, a winery or brewery may qualify for an exemption from permit under the provisions of a general exemption for sources that emit one ton or less of any affected pollutant. Any new or modified facility that would have the potential to emit 25 lbs. per day of any non-attainment pollutant would be required to install the Best Available Control Technology (BACT) level of air pollution control. Likewise, should a new or modified winery or brewery have a potential to emit of 10 tons or more per year of any non-attainment pollutant, such a facility would be require to provide mitigating emission offsets.

It is unlikely that any Further Study Measure could be implemented on a schedule sufficient to be counted on for attainment in 1999. All the further study measures will be considered for future rule development actions.

39. *Comment:* II: Further Study Measures
3. R-GN-6: Waste water treatment facilities

Response: Staff are still evaluating the feasibility of implementing this measure.

40. *Comment:* II: Further Study Measures
4. R-PG-2: Process Turnarounds, R-PM-5: Glycol Regeneration Vents

Response: Staff are still evaluating the feasibility of implementing this measure.

41. *Comment:* II: Further Study Measures
5. R-SC-1: Architectural Coatings

Response: Staff are working with the ARB to determine the most appropriate emission limits for this measures.

42. *Comment:* II: Further Study Measures
6. R-SL-2: Degreasing Operations

Response: The are many implementation issues associated with this measure. As the South Coast AQMD will be implementing this measure starting January, 1999, staff will be addressing the effectiveness of low-ROG solvents (aqueous systems) as the rule is implemented. Further, our Innovative Technology Group is coordinating with the Institute for Research and Technical Assistance on the evaluation of aqueous systems at a test site in Santa Barbara County. The results of this work will be used to evaluated the feasibility of these systems in the county.

43. *Comment:* II: Further Study Measures
7. N-IC-7: Lawn and Garden Equipment

Response: Jet Skis are not lawn and garden equipment. The ARB and the USEPA already have proposed measures to control lawn and garden equipment which are most effectively controlled at the state and federal level. However, staff will continue to evaluate the merits of establishing a buy-back program for this equipment.

44. *Comment:* II: Further Study Measures
8. N-IC-8: Airport Ground Support Equipment

Response: The emissions from airport ground support equipment in Santa Barbara County are generally small. However, staff from the Innovative Technology Group are working with Southern California Edison to evaluate electrifying equipment where possible. Rules staff will continue to work with ARB and the USEPA on the implementation of emission control measure M15, which will include strategies for controlling this

equipment.

45. *Comment:* II: Further Study Measures
9. N-XC-12: Direct Fired External Combustion Units

Response: Staff are evaluating this measure from adoption and implementation.

46. *Comment:* III: Control Strategies Proposed for Deletion
1. R-GN-7: Vacuum Producing Systems

Response: Staff believe the emissions that would be subject to this rule would be quite small and recommend this measure for deletion. It must be noted that if information or new technologies become available that make any deleted measure feasible and cost-effective, staff will consider changing the classification and status of the measure as appropriate.

47. *Comment:* III: Control Strategies Proposed for Deletion
2. R-PG-3: Pipeline Pigging

Response: There would be few emissions subject to this rule and it has been recommended for deletion.

48. *Comment:* III: Control Strategies Proposed for Deletion
3. R-PG-5: Glycol Regeneration Vents

Response: The emissions from these sources are already controlled with vapor recovery as part of AB2588.

49. *Comment:* III: Control Strategies Proposed for Deletion
4. R-PM-4: Pleasure Craft Fuel Transfer

Response: This measure has many obstacles with implementation combined with relatively small emissions. Staff recommends that this measure be deleted.

50. *Comment:* III: Control Strategies Proposed for Deletion
5. R-PP-3: Abandoned Well Vents

Response: If a mechanism for identifying and quantifying these emissions is established, staff will re-evaluated the cost-effectiveness of this measure.

51. *Comment:* III: Control Strategies Proposed for Deletion
6. R-PP-4: Petroleum Vacuum Trucks

Response: Staff anticipate that the emissions associated with this control measure are small due to low vapor pressures and recommend this measure for deletion.

52. *Comment:* III: Control Strategies Proposed for Deletion
7. N-IC-5: Exploratory Drilling Vessels

Response: Emissions from exploratory drilling vessels in excess of 25 tons per year are subject to BACT and offsets under the APCD's NSR rule. Exploratory drilling vessels with emissions less than 25 tons per year are exempt.

53. *Comment:* III: Control Strategies Proposed for Deletion
8. N-XC-9: Solar Water Heaters

Response: Staff will evaluate the potential emissions from this source and consider future actions.

- ***Comments on Appendix C: Transportation Control Measures and On-Road Mobile Source Emissions Analysis***

54. *Comment:* IV: Proposed Transportation Control Measures
1. T-2: Employer-Based Transportation Demand Management Program

Response: SBCAG's Traffic Solutions Division which implements the county rideshare program and the City/County TDM Program provides outreach service to employers in North County. Traffic Solutions also provides assistance to North County jurisdictions and transit agencies upon request. As part of the annual TDM survey, several North County employers participated in 1998 for the first time. These activities were not credited towards the plan. However, as greater participation from North County employers occurs and more survey information is analyzed, SBCAG will consider quantifying these benefits.

55. *Comment:* IV: Proposed Transportation Control Measures
2. T-7: Traffic Flow Improvement

Response: The APCD and SBCAG continue to review the literature and analyze existing local data that may provide some insights on this topic. The current literature generally indicates that new highway facilities, which open up previously unavailable areas to development, can in some cases, spur additional travel demand and development. However, the literature is less conclusive about the induced impact of expanding existing highway facilities within already developed areas. Nonetheless, given that T-7 addresses "spot" intersection improvements and signal coordination improvements as opposed to adding new highway capacity, the transferability of these studies to T-7 types of improvements is questionable given issues of scale and the magnitude of the travel time savings involved. In general, beneficial traffic flow improvements are those, which moderate speeds between 25 and 40 mph while reducing hard acceleration events which cause a vehicle to emit disproportionately greater emissions.

56. *Comment:* IV: Proposed Transportation Control Measures
3. T-10: Bicycle/Pedestrian

Response: The emission reduction calculations do reflect both vehicle trip reductions as well as VMT reductions. See Appendix C under T-10.

57. *Comment:* IV: Proposed Transportation Control Measures
4. T-13: Accelerated Retirement of Vehicles

Response: This measure is being funded by the APCD. The state is endeavoring to implement a vehicle buyback program for the South Coast Air Basin.

58. *Comment:* IV: Proposed Transportation Control Measures
5. T-17: Telecommunication

Response: The monthly meetings of the APCD and SBCAG board are too few (12 days a year) and public participation too sporadic to take SIP credit. The potential for additional departments and the public to share the telecommunication equipment needs to be brought to the attention of County officials.

59. *Comment:* IV: Proposed Transportation Control Measures
6. T-14: Activity Centers

Response: T-14 Activity Centers and T-11 Special Events are both measures that are proposed for further study. At this time, the APCD's Community Advisory Council is awaiting direction from the APCD board to investigate and develop policies or programs related to indirect source review. A cost-benefit analysis was performed in 1996/97 for T-11, which entailed transit service to festivals at Oak Park within the City of Santa Barbara. This service was determined not to be cost-effective in terms of cost per ton of emissions reduced. Other

opportunities or applications to implement T-11, in some form, will continue to be evaluated. For a general description of these measures, the reader is referred to the 1994 CAP – Appendix C.

60. *Comment:* V: Contingency Measure
1. T-21: Enhanced Inspection and Maintenance (I & M) Program

Response: The legislative changes to the I/M bill will be described in greater detail in Chapter 5. APCD/SBCAG have requested ARB to quantify the impact of these program changes for Santa Barbara County. The mechanism by which an Enhanced I/M program is to be implemented in Santa Barbara County is by a formal request from the APCD board to the Bureau of Automotive Repair (BAR). BAR is the implementing agency for this measure.

61. *Comment:* V: Contingency Measure
2. T-22: Countywide Implementation of Tier III TDM Program

Response: Pursuant to the 1990 Federal Clean Air Act, T-22 is required for nonattainment areas designated as "severe" or "extreme. Given that state law prohibits public agencies from imposing employer-based trip reduction programs, the county would need to be reclassified as a "severe" nonattainment area to legally impose such a program. This measure is therefore appropriately included as a contingency measure. SBCAG continues to encourage North County participation in its City/County TDM program as in our response to Comment #54.

The mechanism to implement this measure is already in place. Over 70 percent of the county's largest employers are already participating in the City/County TDM Program implemented by Traffic Solutions. Those employers with over 100 employees who currently are not participating in the program will be brought into the program if EPA reclassifies Santa Barbara County to "severe". Pursuant to federal law, employers can choose not to implement a trip reduction

program if they can achieve emission reductions through other means (e.g., funding alternative fuel conversions, old car buyback programs etc.) equivalent or greater than would be expected from a trip reduction program.

- ***Comments on the Initial Study/Mitigated Negative Declaration***

1. *Comment:* Attainment of the federal air quality standards

Response: The 1998 CAP demonstrates that the control strategy outlined in Chapter 4 (Emission Control measures) and Chapter 5 (Transportation Control Measures) supported by the air quality modeling shown in Chapter 7 and the Implementation Support Activities described in Chapter 8, will provide sufficient emissions reductions necessary to provide for the attainment of the federal 1-hour ozone standard by the year 1999. This constitutes substantial evidence to show that the impact on public health is expected to be insignificant.

2. *Comment:* Attainment of the State Ozone Standard

Response: Through implementation of the Plan the air quality in the county will improve. While unfortunately the state standard will not necessarily attainment through implementation of the plan, there have been absolutely no adverse environmental impacts identified due to implementation of the plan. Therefore the environmental document is adequate. It is true that Santa Barbara County is not predicted to attain the state AAQS by 1999, the 1998 CAP meets all feasible mandates of the California Clean Air Act.

3. *Comment:* Relaxation of Two Rules

Response: The APCD has several rules related to paints. We are uncertain which "paint rule" is referred to in the comments. We assume it is a reference to Rule 323 (Control Measure R-SC-1, Architectural Coatings). This rule was adopted in

February 1990. It reduces ROG emissions. This rule was adequately analyzed in previous environmental documents for the 1991 AQAP and the 1994 CAP. Impacts were found to be insignificant. No additional revisions to this rule which involve relaxation of existing standards are planned and no additional credit is taken in the 1998 CAP. Therefore, the ND for the 1998 CAP did not analyze this rule.

Control of Emissions from Reciprocating Internal Combustion Engines) was listed in the 1998 CAP as a contingency measure to be adopted in 1999. No emission reduction credit was taken for this measure. A draft staff report on revisions to Rule 333 is expected to be released in late November. As discussed in the 1998 CAP, this rule will result in substantial NOx emission reductions. The methods expected to be used to comply with the rule were listed in the ND and have been examined in previous environmental documents for the 1991 AQAP and the 1994 CAP. Impacts were found to be insignificant.

4. *Comment:* Worst Case Analysis

Response: The comments state that if the analysis involves speculation or details are not yet resolved, the District should employ a worst-case analysis to describe the potential adverse impacts. After examining the impacts of the compliance methods to be used in complying with the requirements of the 1998 CAP as described in previous environmental documents, the APCD concluded that additional discussion of future control measures would be too speculative. Therefore, these impacts were not discussed further pursuant to the authority provided in CEQA Section 15145.

There has been no relaxation from the 1994 CAP.

5. *Comment:* Revisions to Rule 333

Response: The comments state that Revisions to Rule 333 will involve increases in NOx as a trade-off for ROC emissions reductions. On the contrary, as described in the

1998 CAP, revisions to Rule 333 will result in substantial decreases in NOx emissions.

TABLE 12-1

SANTA BARBARA COUNTY

AIR POLLUTION CONTROL DISTRICT BOARD

BOARD APPOINTED COMMUNITY ADVISORY COUNCIL (CAC) MEMBERS

BOARD MEMBER	TITLE	CAC APPOINTEE(S)
NAOMI SCHWARTZ	Supervisor, First District	Marc Chytilo & John Robinson
JEANNE GRAFFY	Supervisor, Second District	Maria Raso
GAIL MARSHALL	Supervisor, Third District	Dave Pierce & Deborah Weeks
JONI GRAY	Supervisor, Fourth District	John Gunderson & Patrice Surmeier
TOM URBANSKE	Supervisor, Fifth District	John Deacon & Kevin Wright
RUSS HICKS	Councilmember, City of Buellton	Robert Hall
RICHARD WEINBERG	Councilmember, City of Carpinteria	Tom Banigan & Doug Marsh
KEN WESTALL	Councilmember, City of Guadalupe	Bob Kober & James Porter
WILLIAM SCHUYLER	Councilmember, City of Lompoc	Harley Santos & John Silva
ELINOR LANGER	Councilmember, City of Santa Barbara	Lee Moldaver & Dave Hofstatter
LARRY LAVAGNINO	Councilmember, City of Santa Maria	Conrad Calderon & Gary Winters
NANCY ORCHARD	Mayor, City of Solvang	No Appointees Selected Yet

TABLE 12-2

SANTA BARBARA COUNTY **AIR POLLUTION CONTROL DISTRICT** ***CLEAN AIR PLAN PUBLIC PRESENTATIONS***		
PRESENTATION	LOCATION	DATE
Public Workshops	County Administrators Office Board of Supervisors Hearing Room Santa Barbara	October 21, 1998 1:00 PM & 7:00 PM
Public Workshops	Betteravia Government Center Board of Supervisors Hearing Room Santa Maria	October 22, 1998 1:00 PM & 7:00 PM
APCD Monthly Board Meeting	Santa Barbara County Air Pollution Control District Board Lompoc City Council Chambers Lompoc	November 12, 1998
APCD Monthly Board Meeting	Santa Barbara County Air Pollution Control District Board Board of Supervisors Hearing Room Santa Barbara	December 17, 1998