CHAPTER 3

EMISSION INVENTORY

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3. EMISSION INVENTORY

3.1 INTRODUCTION

This chapter describes the 2007 ~~2002~~ emission inventory used in the development of this 2010 ~~2007~~ Clean Air Plan (2010 ~~2007~~ Plan~~), as recommended by the United States Environmental Protection Agency (USEPA) maintenance plan guidance document.~~ The emission inventory accounts for the types and amounts of pollutants emitted from a wide variety of sources, including on-road motor vehicles and other mobile sources, fuel combustion at industrial facilities, solvent and surface coating usage, consumer product usage, and emissions from natural sources. The emission inventory is used to describe and compare contributions from air pollution sources, evaluate control measures, schedule rule adoptions, forecast future pollution, and prepare clean air plans.

The emission inventory is divided into two geographical regions: ***Santa Barbara County*** and the ***Outer Continental Shelf*** *(OCS).* The Santa Barbara County emission inventory encompasses all onshore sources of air pollution within Santa Barbara County and the State Tidelands (three miles from the shoreline). The OCS emission inventory includes pollution sources 25 miles beyond the State Tideland boundary offshore of Santa Barbara County.

This chapter describes the "2007 ~~2002~~ Annual Emission Inventory", which was derived from many sources including the Santa Barbara County Air Pollution Control District's (APCD) Annual Emission Inventory Questionnaire and Annual Reports programs, the Santa Barbara County Association of Governments (SBCAG), the California Air Resources Board (ARB), surveys from Santa Barbara businesses, and other U.S., California, and Santa Barbara County government agencies.

Also included in this chapter is a modified version of the 2007 ~~2002~~ Annual Emission Inventory, known as the "2007 ~~2002~~ Planning Emission Inventory," which will be used as the base year to forecast emissions for the years ~~2010, 2015, and~~ 2020 and 2030. Please refer to *Chapter 6, Emission Forecasting*, for more discussion on how the 2007 ~~2002~~ Planning Emission Inventory is used to forecast future emissions.

The 2007 ~~2002~~ Planning Emission Inventory is a modified subset of the 2007 ~~2002~~ Annual Emission Inventory and they differ from each other in three ways. First, the creation of the 2007 ~~2002~~ Planning Emission Inventory involves adjusting the 2007 ~~2002~~ Annual Emission Inventory to account for seasonal variation because most exceedances of ozone standards occur during the April to October ozone season. This is commonly referred to as a "summer seasonal" inventory. Second, the emissions from natural sources such as biogenics, oil and gas seeps, and wildfires that are part of the 2007 ~~2002~~ Annual Emission Inventory are excluded from the 2007 ~~2002~~ Planning Emission Inventory since they are not regulated or controlled through implementation of emission control measures. Finally, the annual emissions in the 2007 ~~2002~~ Annual Emission Inventory are converted to daily emissions in the 2007 ~~2002~~ Planning Emission Inventory.

This chapter presents both the 2007 ~~2002~~ Annual Emission Inventory and the 2007 ~~2002~~ Planning Emission Inventory for both Santa Barbara County and the OCS. These inventories are presented in **Table 3-1** and **Table 3-2**, and **Figure 3-1** to **Figure 3-5.**

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3.2 POLLUTANTS

The Annual Emission Inventory and Planning Emission Inventory include two pollutants that contribute to ozone formation, referred to as ***ozone precursors***. These pollutants are Reactive Organic Compounds (ROC) and Oxides of Nitrogen (NO_x). The definition of ROC used in this plan is essentially equivalent to the USEPA's definition of Volatile Organic Compounds (VOC) and ARB's definition of Reactive Organic Gases (ROG), and does not include methane, ethane, acetone or perchloroethylene as reactive organic chemical species.

3.3 EMISSION INVENTORY HIERARCHY

The emission inventory is organized in a three-tiered hierarchy that categorizes all air pollution sources. The first tier of this hierarchy contains four divisions:

3.3.1. Stationary Sources (individual facilities and aggregated point sources),
3.3.2. Area-Wide Sources (geographically dispersed area sources),
3.3.3. Mobile Sources (both on-road vehicles and off-road sources) and
3.3.4. Natural Sources (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

The following sections discuss each of the four divisions and their major source and summary categories:

3.3.1 STATIONARY SOURCES

The Stationary Sources emission inventory division contains five major source categories: Fuel Combustion, Waste Disposal, Cleaning and Surface Coatings, Petroleum Production and Marketing, and Industrial Processes.

The specific summary categories and sources of emissions associated with these major categories are identified and described in the following sections.

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 emissions within the Stationary Sources division. Emissions in the Fuel Combustion major source category are produced in the following eight summary categories:

A. Electric Utilities: Natural gas turbines used at electrical generation facilities.
B. Cogeneration: Natural gas turbine engines used in the production of electrical energy and useful thermal energy.
C. Oil and Gas Production (Combustion): Natural gas engines, boilers, process heaters, turbines, and steam generators at facilities engaged in the extraction and processing of petroleum products for shipment. Also diesel drilling rigs. Most of the emissions in this summary category are from natural gas-fired engines used in oil production operations.

D. Petroleum Refining (Combustion): Natural gas boilers and process heaters located at refineries.
E. Manufacturing and Industrial: Most of the emissions in this summary category are from diesel-fired engines and natural gas process heaters used in other industrial and manufacturing activities such as: sand, rock, and gravel processing; concrete and asphalt production; and mineral processing.
F. Food and Agricultural Processing: Diesel and natural gas-fired engines used for agricultural irrigation.
G. Service and Commercial: Natural gas commercial space and water heaters and small boilers and diesel-fired engines at non-industrial facilities.
H. Other (Fuel Combustion). Fuel combustion emissions not accounted for in any other category.

3.3.1.2 WASTE DISPOSAL

This major source category contains emissions associated with wastewater treatment plants, municipal landfills and incineration in five summary categories:
A. Sewage Treatment: Wastewater treatment plants and process gas flares.
B. Landfills: Landfill gas emissions from natural biodegradation and decomposition of waste material at Class II landfill sites, and waste gas flares.
C. Incinerators: Incinerators burning natural gas and process gas.
D. Soil Remediation: Contaminated soil clean-up sites.
E. Other (Waste Disposal): Waste disposal emissions not accounted for in any other category.

3.3.1.3 CLEANING AND SURFACE COATINGS

This major source category consists entirely of evaporative ROC emissions from solvents and coatings, and is the most significant source of ROC emissions in the Stationary Sources division. The six summary categories are:
A. Laundering: Use of petroleum-based solvents at dry cleaning facilities.
B. Degreasing: Cold cleaning of parts and materials at industrial and commercial facilities, mostly using petroleum naphtha, isopropyl alcohol and other degreasing solvents.
C. Coatings and Related Process Solvents: Automotive refinishing, metal parts, furniture and wood product coatings and associated solvent and thinner use.
D. Printing: Inks, solvents and cleaning agents.
E. Adhesives and Sealants: Organic solvent-based and water-based adhesives and sealants used in various commercial and industrial applications.
F. Other (Cleaning and Surface Coating): Solvent~~s~~ emissions not accounted for in any other category.

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 ROC emissions. The emissions are produced from processes in the following three summary categories:
A. Oil and Gas Production: Fugitive hydrocarbon emissions from oil wells, oil valves and fittings, compressor seals, flanges, fixed and floating roof tanks, oil sumps, pits and well

cellars, glycol regenerator vents, tank car and truck loading operations, and combustion emissions from vapor recovery flares at oil and gas extraction and processing facilities.

B. Petroleum Refining: Fugitive hydrocarbon emissions from valves, fittings, storage tanks and loading racks at oil and gas production facilities.
C. 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, gasoline dispensing facilities, 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. Industrial Processes produce only a small fraction of the county's ROC and NO_x emissions. They include the following seven summary categories:

A. Chemical: Fiberglass operations and plastic product manufacturing.
B. Food and Agriculture: Wine fermentation and aging.
C. Mineral Processes: Crushed rock, diatomaceous earth processing, asphalt and cement concrete production and limestone processing.
D. Metal Processes: There are no sources in Santa Barbara County for this category.
E. Wood and Paper: There are no sources in Santa Barbara County for this category.
F. Electronics: Chemicals used in semiconductor manufacturing.
G. Other (Industrial Processes): Aerospace operations (missile launches from Vandenberg Air Force Base).

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 from area sources are geographically dispersed throughout the county but are aggregated into two major source emission categories: Solvent Evaporation and Miscellaneous Processes.

3.3.2.1 SOLVENT EVAPORATION

The Solvent Evaporation major source category consists mostly of evaporative ROC emissions from consumer product use, architectural coatings, and pesticide use. The Solvent Evaporation major source category includes the following four summary categories:

A. Consumer Products: Solvents used in antiperspirants, personal fragrance products, air fresheners, automotive cleaners, household and bathroom cleaners, insecticides, barbecue lighter fluid, aerosol paints, hair spray, rubbing alcohol, and laundry detergents.
B. Architectural Coatings and Related Process Solvents: Oil and water-based paints and thinners used to paint commercial and residential buildings and other structures.
C. Pesticides/Fertilizers: Pesticides used in agricultural, structural and consumer product applications.
D. Asphalt Roofing and Paving: Road oils, emulsified asphalt, and hot-mix asphalt.

3.3.2.2 MISCELLANEOUS PROCESSES

The emissions produced by miscellaneous processes are listed in the following 10 summary categories:

A. Residential Fuel Combustion: Fuel combustion for cooking, space heating, and water heating using natural gas, distillate oil, and liquified petroleum gas. Also wood stoves and fireplaces.
B. Farming Operations: Tilling, harvest season operations and cattle feedlots.
C. Construction and Demolition: Residential, commercial and industrial building and demolition, and road construction.
D. Paved Road Dust: Vehicular travel on paved roads, including freeways, major roads, and local streets.
E. Unpaved Road Dust: Vehicular travel on unpaved roads, including city and county, farm and federal land roads.
F. Fugitive Windblown Dust: Wind erosion of agricultural fields, pastures, and unpaved roads.
G. Fires: Automobile and structural fires.
H. Managed Burning and Disposal: Burning of agricultural debris, weed abatement and range management burning, prescribed forest management burning and fire fighting training.
I. Cooking: Commercial charbroiling.
J. Other (Miscellaneous Processes): Miscellaneous process~~es~~ emissions not accounted for in any other category.

3.3.3 MOBILE SOURCES

The Mobile Sources emission inventory division contains 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 category contains most of the NO_x emissions and a substantial percentage of the ROC emissions in the Santa Barbara County and OCS inventories.

3.3.3.1 ON-ROAD MOTOR VEHICLES

The On-Road Motor Vehicles emission inventory in the 2010 ~~2007~~ Plan was developed from the latest working draft version of ARB's Emission Factor (EMFAC) model, which incorporates county-specific vehicle activity data generated by SBCAG's Santa Barbara Travel Model, ARB, and vehicle demographic data from the Department of Motor Vehicles (DMV). SBCAG coordinates with CalTrans and the ARB to estimate vehicle emissions by vehicle class. *Chapter 5, Transportation Control Measures*, of the 2010 ~~2007~~ Plan will provide analysis of the On-Road Motor Vehicle inventory.

The On-Road Motor Vehicles major source category includes 18 summary categories described in more detail below:

A. Light Duty Passenger (LDA): 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.

B. Light Duty Trucks – 1 (LDT1): Catalytic and non-catalytic converter-equipped gasoline engine and diesel engine trucks rated at less than or equal to 3,750 pounds gross vehicle weight designed primarily for transportation of property but also includes Sport Utility Vehicles (SUV).
C. Light Duty Trucks – 2 (LDT2): Catalytic and non-catalytic converter-equipped gasoline engine and diesel engine trucks from 3,751 to 5,750 pounds gross vehicle weight designed primarily for transportation of property but also includes Sport Utility Vehicles (SUV).
D. Medium Duty Trucks (MDV): Catalytic and non-catalytic converter-equipped gasoline engine and diesel engine trucks from 5,751 to 8,500 pounds gross vehicle weight. Some larger SUV are included in this vehicle class.
E. Light-Heavy Duty Gas Trucks – 1 (LHDV1): Catalytic and non-catalytic converter-equipped gasoline engine trucks from 8,501 to 10,000 pounds gross vehicle weight.
F. Light-Heavy Duty Gas Trucks – 2 (LHDV2): Catalytic and non-catalytic converter-equipped gasoline engine trucks from 10,001 to 14,000 pounds gross vehicle weight.
G. Medium-Heavy Duty Gas Trucks (MHDV): Catalytic and non-catalytic converter-equipped gasoline engine trucks from 14,001 to 33,000 pounds gross vehicle weight.
H. Heavy-Heavy Duty Gas Trucks (HHDV): Catalytic and non-catalytic converter-equipped gasoline engine trucks from 33,001 to 60,000 pounds gross vehicle weight.
I. Light-Heavy Duty Diesel Trucks – 1 (LHDV1): Diesel engine trucks from 8,501 to 10,000 pounds gross vehicle weight.
J. Light-Heavy Duty Diesel Trucks – 2 (LHDV2): Diesel engine trucks from 10,001 to 14,000 pounds gross vehicle weight.
K. Medium-Heavy Duty Diesel Trucks (MHDV): Diesel engine trucks from 14,001 to 33,000 pounds gross vehicle weight.
L. Heavy-Heavy Duty Diesel Trucks (HHDV): Diesel engine trucks from 33,001 to 60,000 pounds gross vehicle weight.
M. Motorcycles (MCY): Non-catalytic converter equipped gasoline engines in vehicles with not more than three wheels and weighing less than 1,500 pounds.
N. Heavy Duty Diesel Urban Buses (UB): Diesel engine buses typically used for municipal transportation.
O. Heavy Duty Gas Urban Buses (UB): Gas engine buses typically used for municipal transp ortation.
P. School Buses (SB).
Q. Other Buses (OB)
R. Motor Homes (MH).

3.3.3.2 OTHER MOBILE SOURCES

The Other Mobile Sources category pertains to emission sources that do not produce emissions on roads and highways. These include ships, boats, airplanes, trains, residential utility equipment, and construction and mining equipment~~. Although the~~ The ARB has the primary responsibility for estimating the emissions from these categories; however ~~the~~, the APCD currently estimates the emissions from ships, diesel commercial boats ~~(diesel)~~, OCS crew & supply boats, and aircraft. ~~aircraft, and trains.~~

The ARB ~~uses the model known as~~ OFFROAD model was used to calculate emissions from these categories. The OFFROAD model consists of three ~~four~~ main modules: population, activity, and emission factor. The base year equipment population is adjusted for growth and scrappage, producing population distributions for specified calendar years from 1970 through

2040 ~~2020~~. The statewide population is allocated to each geographic region, including air basin and county. The base emission factors are corrected for in-use and ambient conditions. The annual equipment emissions are adjusted for seasonal and diurnal factors, producing the base emissions output. Emissions are produced for fuel type (e.g., gasoline, diesel, compressed natural gas, etc.), engine type (e.g., two-stroke and four stroke), equipment category and horsepower group.

Virtually all of the Other Mobile Source emissions are related to engine fuel combustion. ~~in engines.~~ A significant percentage of the NO_x emissions come from marine vessels that operate in the State Tidelands and the Outer Continental Shelf. The Other Mobile Sources category is divided into seven summary categories:

A. Aircraft: Piston and jet powered commercial, civil, and military aircraft, and agricultural crop dusting.
B. Trains: Diesel road hauling locomotives.
C. Ships and Commercial Boats: A variety of large container ships, tankers, and cargo vessels, both of US and foreign origin traversing the Santa Barbara Channel, gasoline and diesel commercial fishing vessels, and crew and supply boats servicing offshore oil production platforms.
D. Recreational Boats: Gasoline and diesel powered boats, determined by ARB's OFFROAD model. These emissions are divided equally between the Santa Barbara County onshore (which includes the State Tidelands) and the Outer Continental Shelf.
E. Off-Road Recreational Vehicles: Four-wheel drive all-terrain and off-road passenger vehicles, and off-road motorcycles, determined by ARB's OFFROAD model.
F. Off-Road Equipment: 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. Diesel powered refrigeration units on trucks and trailers. This category also includes emissions from lawn and garden equipment, which include small horsepower two and four stroke utility engines driving chainsaws, lawn mowers, leaf blowers, portable compressors and generators used in residential and commercial applications. Lastly, there are emissions from oil drilling and workover rigs, and military tactical support equipment. The emissions from these categories are determined by ARB's OFFROAD model.
G. Farm Equipment: Gasoline and diesel heavy-duty farm equipment, including tractors, mowers, combines and other mobile agricultural equipment. The emissions from these categories are determined by ARB's OFFROAD model.

3.3.4 NATURAL SOURCES

The Natural Sources emission inventory division consists of emissions that are not man-made. Emission estimates for these categories tend to be difficult to quantify with any degree of certainty. Note that natural emissions are excluded from the Planning Emission Inventory.

3.3.4.1 NATURAL SOURCES

There are four summary categories of Natural Sources emissions:

A. Biogenic Sources: Emission estimates from natural vegetation are generated using the Urban Airshed Model's Biogenic Emission Inventory System (BEIS), a complex regional model incorporating biomass types and distribution, plant species emission factors and climate correction factors. Soil microorganisms contribute some NO_x emissions.
B. Geogenic Sources: Naturally occurring oil seeps 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. We have worked in cooperation with the Institute of Crustal Studies at the University of California at Santa Barbara to determine estimates of seep emissions in the Santa Barbara Channel. The results of their research have been used in this inventory.
C. 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. Note that there were significant ROC and NOx emissions from wildfires during 2007, predominately from the Zaca Fire, which burned over 240,000 acres in the Los Padres National Forest. Wildfire emissions are calculated by ARB using a GIS-based fire emissions model.
D. Windblown Dust.

Based on information presented in Sections 3.2 and 3.3, the 2007 ~~2002~~ Annual Emission Inventory and the 2007 ~~2002~~ Planning Emission Inventory will be described in the following sections. These two inventories will form the basis for determining emission reductions and forecasting future inventories.

3.4 2007 ~~2002~~ ANNUAL EMISSION INVENTORY

The 2007 ~~2002~~ Santa Barbara County and the Outer Continental Shelf Annual Emission Inventory document the current sources of ROC and NO_x emissions, both in quantity and relative contribution.

3.4.1 SANTA BARBARA COUNTY ANNUAL EMISSIONS

The 2007 ~~2002~~ Santa Barbara County Annual Emissions Inventory of ROC and NO_x in tons per year is presented in **Table 3-1**. The Santa Barbara County inventory represents onshore and State Tidelands emission sources, and includes natural sources. **Figure 3-1** shows each major source category's relative contribution for each pollutant during 2007 ~~2002~~. The largest sources of each pollutant and their percent of contribution are as follows:

2007 ~~2002~~ Santa Barbara County ROC Annual Emissions: 58,892.86 ~~43,440~~ tons per year

- **6% Stationary Sources: 3,243 ~~3,211~~ tons per year**
  Primarily coatings and process solvents, degreasing, adhesives and sealants, and oil and gas production.
- **5% ~~9%~~ Area-Wide Sources: 3,051 ~~3,732~~ tons per year**
  Primarily consumer products, pesticides, forest management, and farming livestock waste.
- **6% ~~11%~~ Mobile Sources – On-Road Motor Vehicles: 3,527 ~~4,846~~ tons per year**
  Predominantly light duty passenger cars and light duty trucks.
- **3% ~~7%~~ Other Mobile Sources: 1,692 ~~3,043~~ tons per year**
  Significant emissions from lawn and garden equipment, transport refrigeration units, fuel storage and handling, recreational boats, and diesel agricultural equipment, and diesel construction and mining equipment.
- **80% ~~66%~~ Natural Sources: 47,379 ~~28,608~~ tons per year**

Mostly biogenic sources and wildfires with a significant contribution from geogenic sources.

2007 ~~2002~~ Santa Barbara County NO_x Annual Emissions: 23,108 ~~16,155~~ tons per year

- **12% ~~15%~~ Stationary Sources: 2,843 ~~2,469~~ tons per year**
  Almost all from oil and gas production (natural gas IC engines), manufacturing and industrial (diesel IC engines), agricultural irrigation (diesel and natural gas IC engines).
- **1% ~~3%~~ Area-Wide Sources: 333 ~~412~~ tons per year**
  Mostly residential fuel combustion (natural gas space heating and water heating) and forest management.
- **26% ~~43%~~ Mobile Sources – On-Road Motor Vehicles: 6,039 ~~6,877~~ tons per year**
  The majority from light duty passenger cars, light duty trucks, and heavy-heavy duty diesel trucks.
- **22% ~~34%~~ Other Mobile Sources: 5,186 ~~5,515~~ tons per year**
  Contributors are trains, diesel construction and mining equipment, and diesel agricultural equipment, and transport refrigeration units.
- **38% ~~5%~~ Natural Sources: 8,707 tons per year**

In summary, Natural Sources (both biogenic and geogenic sources) contribute the most ROC emissions in the Annual Emission Inventory. On-road motor vehicles, specifically light duty passenger, also produce large amounts of ROC emissions and most of the NO_x emissions. On-road motor vehicles, ~~light duty trucks,~~ and other mobile sources such as trains, off-road equipment and farm equipment also significantly contribute to the ~~large amounts of~~ onshore NO_x emissions inventory.

3.4.2 OCS Annual Emissions

The 2007 ~~2002~~ OCS emission inventory is presented in **Table 3-2**. The OCS emissions are summarized separately from the onshore emission inventory for clarity. **Figure 3-2** shows each major source's relative contribution for each pollutant during 2007~~2002~~. The largest sources of each pollutant and their percent of contribution are discussed below.

2007 ~~2002~~ OCS ROC Annual Emissions: 3,221.37 ~~3,499~~ tons per year

- **9% ~~12%~~ Stationary Sources: 303 ~~426~~ tons per year**
  Primarily oil and gas production (fugitives from crude oil valves).
- **28% ~~28%~~ Mobile Sources: 914 ~~995~~ tons per year**
  Mostly ships (foreign motor ships), recreational boats, and commercial boats.
- **62% ~~60%~~ Natural Sources: 2,004 ~~2,079~~ tons per year**
  All from geogenic sources (gas seeps and oil seeps).

2007 ~~2002~~ OCS NO_x Annual Emissions: 18,230 ~~14,325~~ tons per year

- **1% ~~2%~~ Stationary Sources: 213 ~~305~~ tons per year**
  Primarily oil and gas production (natural gas turbine IC engines).
- **99% ~~98%~~ Mobile Sources: 18,017 ~~14,019~~ tons per year**
  Predominantly ships (foreign motor ships).

The 2007 ~~2002~~ marine shipping inventory was developed by growing the 2006 marine shipping inventory by trends in power consumption for ships traversing the Santa Barbara Channel. The inventory was developed using 2006 ship-specific data including ship name, vessel number, ship type, and cruising speed that were obtained from the Southern California Marine Exchange and Port Hueneme. The ~~2002~~ marine shipping inventory is based on estimating emissions by utilizing the ship-specific power consumption data for each ship that transited the coast of the county during 2006~~2002~~. Ship power data were obtained from the Lloyds Maritime Database and correlated to each ship transiting the Santa Barbara Channel by a unique vessel number. Utilizing ship speed data along with a ship travel distance of 130 miles (county-line to county-line distance) for ships servicing west coast ports and 90 miles for ships on a Great Circle Route servicing Asian ports, the amount of time it took each ship to transit the Santa Barbara County coastline was determined. Emissions were then calculated by essentially multiplying together transit time, ship power, number of transits through the Channel and a NO_x emission factor that ranges from 16.32 grams per kilowatt-hour for cargo ships to ~~17.09~~ 18.1 grams per kilowatt-hour for container ships. It is assumed that the ships operate at 80 ~~70~~ percent load while in transit. Of the approximately 17,750 ~~12,940~~ tons of NO_x emissions in 2007~~2002~~, about 93% ~~88%~~ are from foreign motor ships with about 7% ~~9%~~ from U.S. motor ships. Utilizing trends in power consumption for growth, the 2007 inventory is about 6% higher than the 2006 inventory that was used as a baseline.

~~It should be noted that based on Community Advisory Council comments and suggestions, marine shipping base year NO_x emissions have been revised using a NO_x factor of 18.1 grams per kilowatt-hour consistent with the methodology used by the California Air Resources Board (ARB) for calculating marine shipping emissions. The previous base year NO_x factor of 17.09 grams per kilowatt-hour has been retained for the future-year marine shipping NO_x emission since it reflects the International Maritime Organization (IMO) standard. It is assumed that ships traversing the Santa Barbara Channel will meet the IMO NO_x standard by the first milestone year of 2010. Also consistent with ARB's marine shipping emissions calculation methodology, the load factor has been revised from 70% to 80%. The 80% load factor is constant through each of the inventory years.~~

~~In addition, emissions have been recalculated using information from the July 31, 2000 Federal Register (33 CFR Part 167) that specifies United States Coast Guard amendments to the marine Traffic Separation Schemes in the Santa Barbara Channel. The amendments were adopted by the IMO and validated by vessel routing studies. The information in the regulation provides more specific route data for ships traversing the Santa Barbara Channel that are on a great circle route traveling to and from Asian ports. The revised shipping route results in about a 40 mile reduction in travel distance for the ships using a great circle route. Approximately 47% of the total base year transits are from ships servicing Asian ports. The other 53% of the transits account for ships that service west coast ports such as Oakland, San Francisco, Portland, Vancouver and Seattle. The reduction in travel distance results in an approximately 30% reduction in NO_x emissions from ships traversing the Santa Barbara Channel that service Asian ports. Due to the changes in both the load and emission factors, however, total marine shipping NO_x emissions increased by about 5% from previous base year estimates (12,940 tons per year to 13,651 tons per year).~~

In summary, nearly three-fourths ~~two thirds~~of the ROC emissions in the OCS are from Natural Sources, specifically offshore oil seeps 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 ROC emissions to the OCS inventory. Ships and commercial boats also account for almost all of the OCS NO_x emissions.

3.5 2007 ~~2002~~ PLANNING EMISSION INVENTORY

The 2007 ~~2002~~ Planning Emission Inventory had been developed by modifying the Annual Emission Inventory three significant ways. First, seasonal variations were factored into the Planning Emission Inventory because most exceedances of ozone standards occur during the April to October ozone season. Second, the Planning Emission Inventory excluded emissions from natural sources such as biogenics, oil seeps and gas seeps, and wildfires, since they're not regulated or controlled. Third, the emission values were converted from tons per year to tons per day.

3.5.1 SANTA BARBARA COUNTY PLANNING EMISSION INVENTORY

~~**Table 3-3** and~~ **Figure 3-3** shows each major source's relative contribution for each pollutant during 2007~~2002~~. The largest sources of each pollutant and their relative contribution are discussed in the following section.

2007 ~~2002~~ Santa Barbara County ROC Planning Emissions: 31.51 ~~40.84~~ tons per day

- **28% ~~23%~~ Stationary Sources: 8.85 ~~9.31~~ tons per day**
  Primarily coatings and process solvents, degreasing, adhesives and sealants, and oil and gas production.
- **27% ~~24%~~ Area-Wide Sources: 8.36 ~~9.92~~ tons per day**
  Primarily consumer products, pesticides, forest management, and farming livestock waste.
- **31% ~~33%~~ Mobile Sources – On-Road Motor Vehicles: 9.66 ~~13.28~~ tons per day**
  Predominantly light duty passenger cars and light duty trucks.
- **15% ~~20%~~ Other Mobile Sources: 4.64 ~~8.34~~ tons per day**
  Significant emissions from lawn and garden equipment, transport refrigeration units, fuel storage and handling, recreational boats, diesel agricultural equipment, and diesel construction and mining equipment.

2007 ~~2002~~ Santa Barbara County NO_x Planning Emissions: 39.27 ~~41.21~~ tons per day

- **19% ~~16%~~ Stationary Sources: 7.61 ~~6.61~~ tons per day**
  Almost all from oil and gas production (natural gas IC engines), manufacturing and industrial (diesel IC engines), agricultural irrigation (diesel IC engines).
- **2% ~~1%~~ Area-Wide Sources: 0.91 ~~0.63~~ tons per day**
  Mostly residential fuel combustion (natural gas space and water heating) and forest management.
- **42% ~~46%~~ Mobile Sources – On-Road Motor Vehicles: 16.55 ~~18.84~~ tons per day**
  The majority from light duty passenger cars, light duty trucks, and heavy-heavy duty diesel trucks.
- **36% ~~37%~~ Other Mobile Sources: 14.21 ~~15.12~~ tons per day**
  Contribution from trains, diesel construction and mining equipment, and diesel agricultural equipment, and transport refrigeration units.

In summary, on-road motor vehicles, specifically light duty passenger cars and light duty trucks produce about two-thirds of the ROC emissions along with significant contributions from cleaning and surface coatings, solvent evaporation, and petroleum production and marketing. On-road motor vehicles, primarily light duty passenger cars, light duty trucks, and heavy, heavy duty diesel trucks, along with the

other mobile source categories of off-road equipment and farm equipment, produce the majority of the NO_x emissions.

3.5.2 OCS PLANNING EMISSION INVENTORY

The 2007 ~~2002~~ OCS Planning Emission Inventory is presented in **Table 3-2**. The OCS emissions are summarized separately from the onshore emission inventory for clarity. **Figure 3-4** shows each major source's relative contribution for each pollutant during 2007~~2002~~. The largest sources of each pollutant and their percent of contribution are discussed as follows.

2007 ~~2002~~ OCS ROC Planning Emissions: 3.33 ~~3.88~~ tons per day

- **25% ~~30%~~ Stationary Sources: 0.83 ~~1.17~~ tons per day**
  Primarily oil and gas production (fugitives from crude oil valves).
- **75% ~~70%~~ Mobile Sources: 2.51 ~~2.71~~ tons per day**
  Mostly ships (foreign motor ships), recreational boats, and commercial boats.

2007 ~~2002~~ OCS NO_x Planning Emissions: 49.95 ~~39.26~~ tons per day

- **1% ~~2%~~ Stationary Sources: 0.58 ~~0.84~~ tons per day**
  Primarily oil and gas production (natural gas turbine IC engines).
- **99% ~~98%~~ Mobile Sources: 49.36 ~~38.42~~ tons per day**
  Predominantly ships (foreign motor ships).

Ocean-going ships, primarily foreign motor ships, account for most of the ROC and NO_x emissions in the Planning Emission Inventory for the OCS. Emissions from marine shipping comprise 99% of the NO_x inventory and 75% of the ROC inventory on the OCS. ~~In summary, the most significant contributors of ROC and NO_x emissions to the Planning Emission Inventory on the OCS are ships (foreign motor ships).~~

3.6 COMBINED OCS AND SANTA BARBARA COUNTY INVENTORIES

Figure 3-5 presents the combined Annual Emission Inventory for both the OCS and Santa Barbara County sources. This figure shows that about 50,450 tons per year, or 80% of the ROC emissions are from Natural Sources, including wildfire, biogenic (vegetative) and geogenic emissions. As previously discussed, significant wildfire emissions occurred during 2007 due to the Zaca Fire, which burned nearly 240,000 in the Los Padres National Forest. Stationary Sources comprise 6% of the ROC emissions while Area Wide-Sources and On-road Mobile Sources each make up 5% of the ROC emissions for the combined Annual Emission Inventory. Other Mobile Sources contribute the remaining 4% of the ROC inventory.

Other Mobile Sources account for about 23,203 tons per year, or 56% of the NOx emissions of the combined Annual Emission Inventory. Nearly 18,000 tons per year of these NOx emissions are from ships and commercial boats, primarily marine shipping. Natural Sources account for 21% of the combined annual NOx inventory with most of these emissions from wildfires. On-Road Motor Vehicles, while making up about 26% of the onshore NOx inventory, account for 15% of the combined OCS-Santa Barbara County NOx inventory due to the significant NOx emissions from marine shipping.

The combined Annual Emission Inventory for NOx includes another 7% of the emissions from stationary sources and 1% of the NOx emissions from area-wide sources.

The combined OCS and Santa Barbara Planning Emission Inventory, which excludes natural sources, is shown in Figure 3-6. The combined ROC inventory shows a fairly equal distribution of emissions among each of the four source categories. Both Stationary Sources and On-Road Motor Vehicles each comprise 28% of the ROC inventory or about 9.7 tons per day. Area-Wide Sources account for 8.4 tons per day or 24% of the combined ROC inventory while Other Mobile Sources emit 7.1 tons per day, which is 20% of the combined ROC inventory.

Nearly three-fourths, or about 64 tons per day of the combined OCS-Santa Barbara County Planning NOx inventory is from Other Mobile Sources, a majority of these NOx emissions from marine shipping. On-Road Motor Vehicles account for about 17 tons per day or 19% of the combined NOx inventory. This is compared to a 42% contribution On-Road Motor Vehicles make to the onshore Planning Inventory for NOx, which once again underscores the impact of marine shipping emissions on the overall NOx inventory. NOx emissions from Stationary Sources, at about 8 tons per day, make up 9% of the combined planning inventory, while Area-Wide Sources contribute 1% of the NOx emissions to the combined inventory.

3.76 CONCLUSION

In this chapter we have described how our emission inventories are categorized into Stationary Sources, Area-Wide Sources, Mobile Sources and Natural Sources. The emphasis in the 2010 ~~2007~~ Plan is on the ozone precursors of ROC and NO_x. We have also discussed the development of the 2007 ~~2002~~ Annual Emission Inventory and Planning Emission Inventory for both Santa Barbara County and the Outer Continental Shelf. These inventories provide the foundation for this plan and are key elements to calculating emission reductions attributable to control measures and for forecasting future emission inventories for 2020 and 2030~~2010, 2015, and 2020~~.

In Santa Barbara County, the largest contribution ~~contributor~~ of ROC emissions is from natural sources in the Annual Emission Inventory and from on-road motor vehicles in the Planning Emission Inventory. Santa Barbara County NO_x emissions for both inventories are mostly from on-road motor vehicles and other mobile sources, such as trains and off-road equipment. The most significant source of ROC and NO_x emissions in both the Annual Emission Inventory and the Planning Emission Inventory for the Outer Continental Shelf is from sources in the other mobile sources category, with a majority of these emissions from international maritime shipping activities.

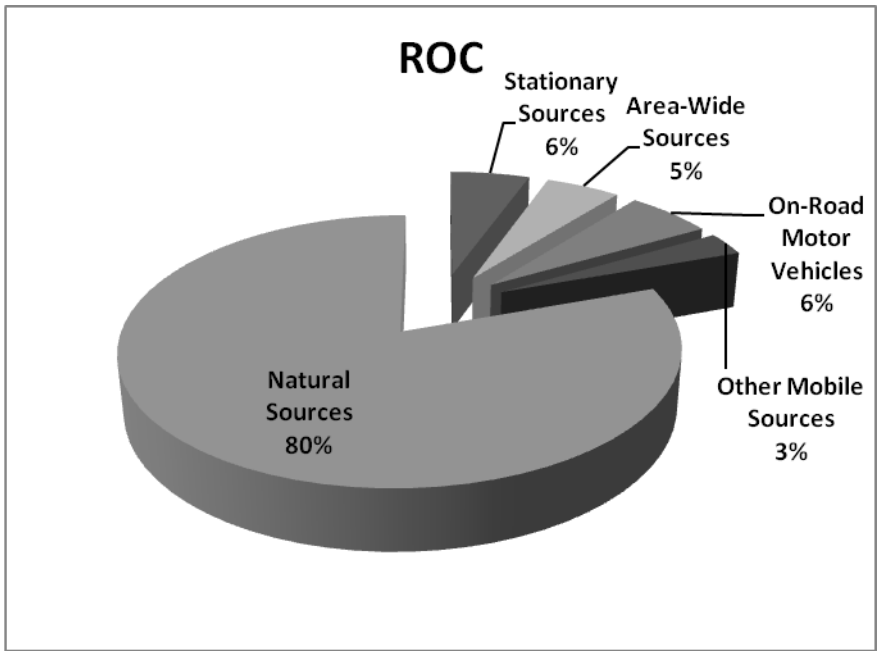
	TABLE 3 – 1 ~~2002~~ 2007 EMISSION INVENTORY – SANTA BARBARA COUNTY	Annual ROC *(tons per year)*	Planning ROC *(tons per day)*	Annual NO_x *(tons per year)*	Planning NO_x *(tons per day)*
STATIONARY SOURCES					
Fuel Combustion					
010	ELECTRIC UTILITIES	0.7	0.0019	1.53	0.0042
020	COGENERATION	11.79	0.0323	40.36	0.1106
030	OIL AND GAS PRODUCTION (COMBUSTION)	42.76	0.1172	644.26	1.7651
040	PETROLEUM REFINING (COMBUSTION)	0.18	0.0005	4.4	0.0121
050	MANUFACTURING AND INDUSTRIAL	23.12	0.0639	363.08	1.0022
052	FOOD AND AGRICULTURAL PROCESSING	68.55	0.1878	1414.69	3.8758
060	SERVICE AND COMMERCIAL	24.18	0.0577	303.17	0.6413
099	OTHER (FUEL COMBUSTION)	0.00	0.0000	0.00	0.0000
	Fuel Combustion Total	**171.28**	**0.4613**	**2,771.48**	**7.4113**
Waste Disposal					
110	SEWAGE TREATMENT	0.73	0.0020	0.85	0.0023
120	LANDFILLS	50.74	0.1390	1.69	0.0046
130	INCINERATORS	0.13	0.0004	1.43	0.0039
140	SOIL REMEDIATION	0.00	0.0000	0.00	0.0000
199	OTHER (WASTE DISPOSAL)	11.43	0.0000	0.00	0.0000
	Waste Disposal Total	**63.03**	**0.1414**	**3.97**	**0.0108**
Cleaning and Surface Coatings					
210	LAUNDERING	2.31	0.0063	0.00	0.0000
220	DEGREASING	686.20	1.8800	0.00	0.0000
230	COATINGS AND RELATED PROCESS SOLVENTS	748.25	2.0500	0.00	0.0000
240	PRINTING	174.29	0.4775	0.00	0.0000
250	ADHESIVES AND SEALANTS	302.95	0.8300	0.00	0.0000
299	OTHER (CLEANING AND SURFACE COATINGS)	38.56	0.1056	0.00	0.0000
	Cleaning and Surface Coatings Total	**1,952.56**	**5.3495**	**0.00**	**0.0000**
Petroleum Production and Marketing					
310	OIL AND GAS PRODUCTION	768.34	2.1050	24.36	0.0667
320	PETROLEUM REFINING	14.84	0.0407	0.06	0.0002
330	PETROLEUM MARKETING	190.67	0.5224	0.00	0.0000
	Petroleum Production and Marketing Total	**973.84**	**2.6681**	**24.42**	**0.0669**
Industrial Processes					
410	CHEMICAL	5.64	0.0155	0.00	0.0000
420	FOOD AND AGRICULTURE	41.04	0.1124	0.00	0.0000
430	MINERAL PROCESSES	1.57	0.0043	12.71	0.0348
440	METAL PROCESSES	NA	NA	NA	NA
450	WOOD AND PAPER	NA	NA	NA	NA
470	ELECTRONICS	0.00	0.0000	0.00	0.0000
499	OTHER (INDUSTRIAL PROCESSES)	35.00	0.0959	30.62	0.0839
	Industrial Processes Total	**83.25**	**0.2281**	**43.33**	**0.1187**
	STATIONARY SOURCES TOTAL	**3,243.96**	**8.8484**	**2,843.20**	**7.6077**

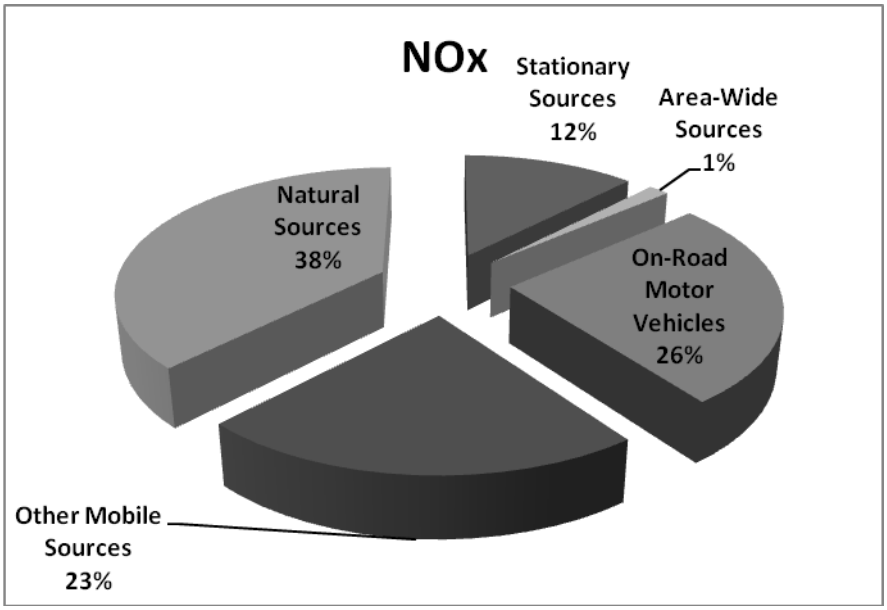
	TABLE 3 – 1 ~~2002~~ 2007 EMISSION INVENTORY – SANTA BARBARA COUNTY	Annual ROC *(tons per year)*	Planning ROC *(tons per day)*	Annual NO_x *(tons per year)*	Planning NO_x *(tons per day)*
	AREA-WIDE SOURCES				
	Solvent Evaporation				
510	CONSUMER PRODUCTS	992.80	2.7200	0.00	0.0000
520	ARCHITECTURAL COATINGS AND SOLVENTS	445.30	1.2200	0.00	0.0000
530	PESTICIDES/FERTILIZERS	1,175.30	3.2200	0.00	0.0000
540	ASPHALT PAVING/ROOFING	85.70	0.2348	0.00	0.0000
	Solvent Evaporation Total	**2,699.10**	**7.3948**	**0.00**	**0.0000**
	Miscellaneous				
610	RESIDENTIAL FUEL COMBUSTION	13.42	0.0368	332.08	0.9098
620	FARMING OPERATIONS	320.04	0.8768	0.00	0.0000
630	CONSTRUCTION AND DEMOLITION	0.00	0.0000	0.00	0.0000
640	PAVED ROAD DUST	0.00	0.0000	0.00	0.0000
645	UNPAVED ROAD DUST	0.00	0.0000	0.00	0.0000
650	FUGITIVE WINDBLOWN DUST	0.00	0.0000	0.00	0.0000
660	FIRES	0.00	0.0000	0.00	0.0000
670	MANAGED BURNING AND DISPOSAL	8.21	0.0225	0.5712	0.0016
690	COOKING	10.32	0.0283	0.00	0.0000
699	OTHER (MISCELLANEOUS PROCESSES)	0.00	0.0000	0.00	0.0000
	Miscellaneous Total	**351.99**	**0.9644**	**332.65**	**0.9114**
	AREA-WIDE SOURCES TOTAL	**3,051.00**	**8.3592**	**332.65**	**0.9114**
	MOBILE SOURCES				
	On-Road Motor Vehicles				
710	LIGHT DUTY PASSENGER	1,352.11	3.7044	1,221.33	3.3461
722	LIGHT DUTY TRUCKS – 1	689.45	1.8889	763.80	2.0926
723	LIGHT DUTY TRUCKS – 2	552.61	1.5140	879.61	2.4099
724	MEDIUM DUTY TRUCKS	156.91	0.4299	324.92	0.8902
732	LIGHT HEAVY DUTY GAS TRUCKS – 1	89.35	0.2448	109.32	0.2995
733	LIGHT HEAVY DUTY GAS TRUCKS – 2	101.14	0.2771	90.26	0.2473
734	MEDIUM HEAVY DUTY GAS TRUCKS	109.83	0.3009	110.56	0.3029
736	HEAVY HEAVY DUTY GAS TRUCKS	89.10	0.2441	222.69	0.6101
742	LIGHT HEAVY DUTY DIESEL TRUCKS – 1	5.40	0.0148	134.79	0.3693
743	LIGHT HEAVY DUTY DIESEL TRUCKS – 2	5.55	0.0152	116.40	0.3189
744	MEDIUM HEAVY DUTY DIESEL TRUCKS	16.35	0.0448	688.61	1.8866
746	HEAVY HEAVY DUTY DIESEL TRUCKS	69.72	0.1910	1,005.28	2.7542
750	MOTORCYCLES	242.03	0.6631	66.25	0.1815
760	HEAVY DUTY DIESEL URBAN BUSES	4.38	0.0120	116.76	0.3199
762	HEAVY DUTY GAS URBAN BUSES	9.16	0.0251	9.93	0.0272
770	SCHOOL BUSES	4.31	0.0118	74.28	0.2035
776	OTHER BUSES	10.00	0.0274	46.46	0.1273
780	MOTOR HOMES	19.86	0.0544	57.96	0.1588
	On-Road Motor Vehicles Total	**3,527.25**	**9.6637**	**6,039.22**	**16.5458**

	TABLE 3 – 1 ~~2002~~ 2007 EMISSION INVENTORY – SANTA BARBARA COUNTY	Annual ROC *(tons per year)*	Planning ROC *(tons per day)*	Annual NO_x *(tons per year)*	Planning NO_x *(tons per day)*
Other Mobile Sources					
810	AIRCRAFT	113.24	0.3102	303.73	0.8321
820	TRAINS	76.65	0.2100	1,113.25	3.0500
830	SHIPS AND COMMERCIAL BOATS	15.73	0.0431	202.65	0.5552
840	RECREATIONAL BOATS	299.30	0.8200	36.50	0.1000
850	OFF-ROAD RECREATIONAL VEHICLES	222.01	0.6082	30.08	0.0824
860	OFF-ROAD EQUIPMENT	670.73	1.8376	2,592.27	7.1021
870	FARM EQUIPMENT	159.44	0.4368	907.47	2.4862
890	FUEL STORAGE AND HANDLING	135.05	0.3700	0.00	0.0000
	Other Mobile Sources Total	**1,692.15**	**4.6360**	**5,185.95**	**14.2081**
	MOBILE SOURCES TOTAL	**5,219.40**	**14.2997**	**11,225.17**	**30.7539**
NATURAL SOURCES					
Natural Sources					
910	BIOGENIC SOURCES	22,532.47	0.0000	882.48	0.0000
920	GEOGENIC SOURCES	6,786.09	0.0000	0.00	0.0000
930	WILDFIRES	18,059.94	0.0000	7,824.73	0.0000
940	WINDBLOWN DUST	0.00	0.0000	0.00	0.0000
	Natural Sources Total	**47,378.50**	**0.0000**	**882.48**	**0.0000**
	NATURAL SOURCES TOTAL	**47,378.50**	**0.0000**	**8,707.21**	**0.0000**
	2007 SANTA BARBARA COUNTY TOTAL	**58,892.86**	**31.5073**	**23,108.23**	**39.2730**

TABLE 3 – 2 ~~2002~~ 2007 EMISSION INVENTORY – OCS	Annual ROC *(tons per year)*	Planning ROC *(tons per day)*	Annual NO_x *(tons per year)*	Planning NO_x *(tons per day)*
STATIONARY SOURCES				
Fuel Combustion				
030 OIL AND GAS PRODUCTION (COMBUSTION)	10.36	0.0284	208.26	0.5706
Fuel Combustion Total	**10.36**	**0.0284**	**208.26**	**0.5706**
Cleaning and Surface Coatings				
230 COATINGS AND RELATED PROCESS SOLVENTS	12.96	0.0355	0.00	0.0000
Cleaning and Surface Coatings Total	**12.96**	**0.0355**	**0.00**	**0.0000**
Petroleum Production and Marketing				
310 OIL AND GAS PRODUCTION	279.36	0.7654	4.70	0.0129
Petroleum Production and Marketing Total	**279.36**	**0.7654**	**4.70**	**0.0129**
STATIONARY SOURCES TOTAL	**302.68**	**0.8293**	**212.96**	**0.5835**
MOBILE SOURCES				
Other Mobile Sources				
810 AIRCRAFT	3.34	0.0092	1.47	0.0040
830 SHIPS AND COMMERCIAL BOATS	611.67	1.6758	17,979.03	49.2576
840 RECREATIONAL BOATS	299.30	0,8200	36.50	0.1000
Other Mobile Sources Total	**914.31**	**2.5050**	**18,017.00**	**47.9672**
MOBILE SOURCES TOTAL	**914.31**	**2.5050**	**18,017.00**	**49.3616**
NATURAL SOURCES				
Natural Sources				
920 GEOGENIC SOURCES	2,004.38	0.0000	0.00	0.0000
Natural Sources Total	**2,004.38**	**0.0000**	**0.00**	**0.0000**
NATURAL SOURCES TOTAL	**2,004.38**	**0.0000**	**0.00**	**0.0000**
2007 OUTER CONTINENTAL SHELF TOTAL	**3,221.37**	**3.3343**	**18,229.96**	**49.9451**

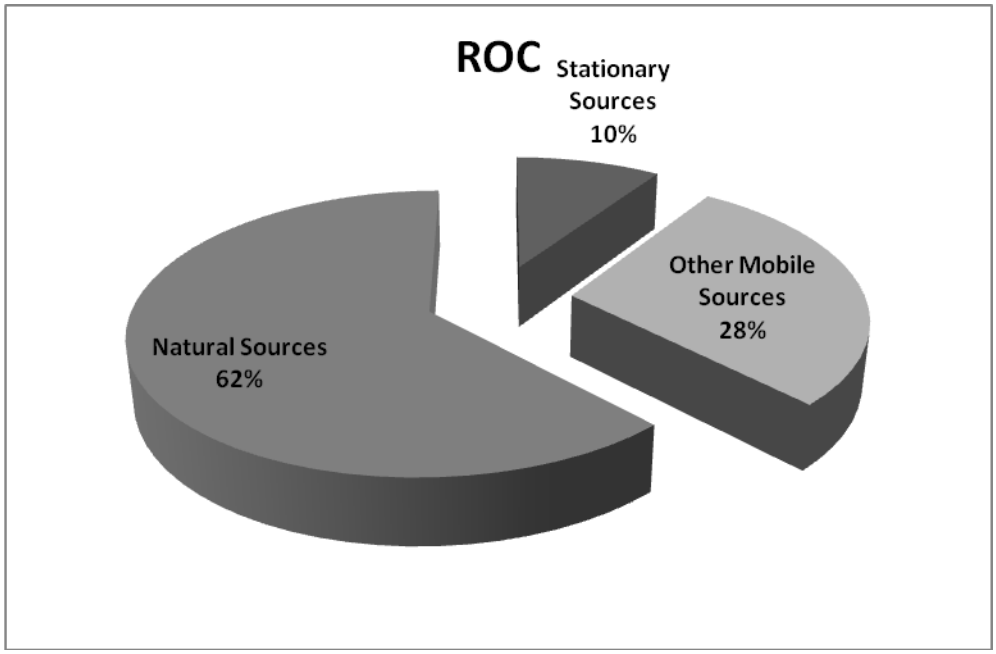
FIGURE 3-1
2007 Annual Emission Inventory
Santa Barbara County ROC and NOx Emissions

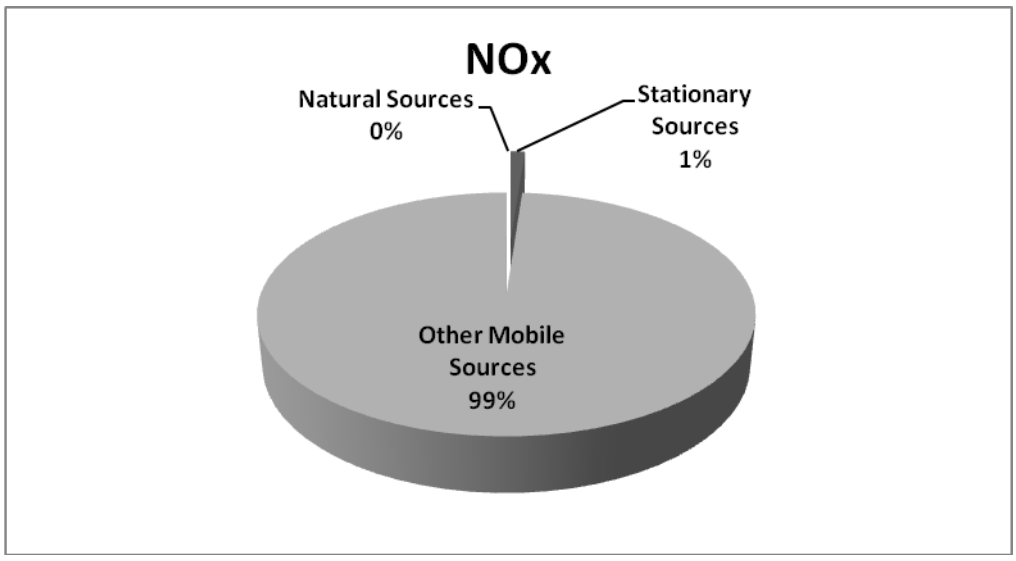




	ROC (tpy)	NOx (tpy)
Stationary Sources	3,243.96	2,843.20
Area-wide Sources	3,051.00	332.65
On-road Motor Vehicles	3,527.25	6,039.22
Other Mobile Sources	1,692.15	5,185.95
Natural Sources	47,378.50	8,707.21
Total	58,892.86	23,108.23

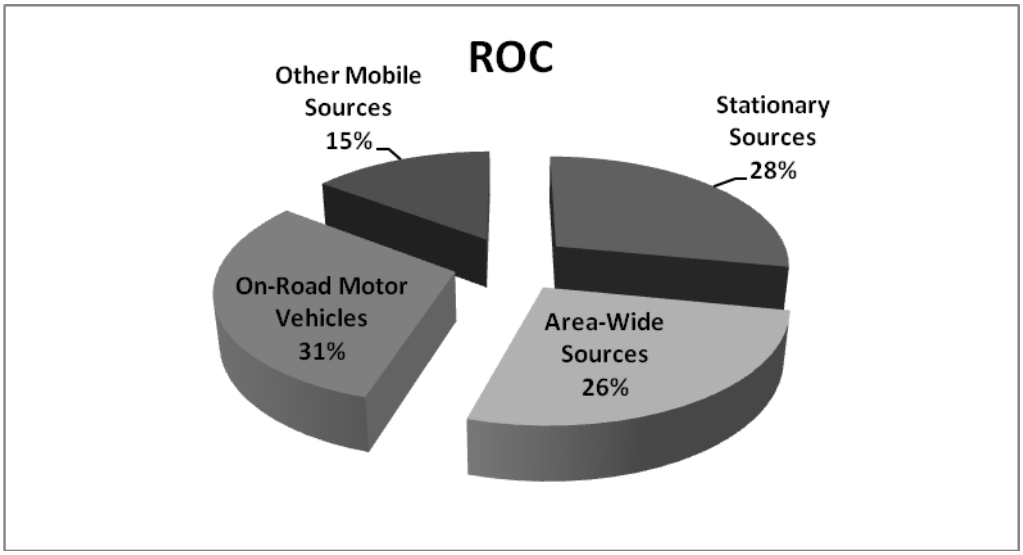
FIGURE 3-2
2007 Annual Emission Inventory
Outer Continental Shelf ROC and NOx Emissions

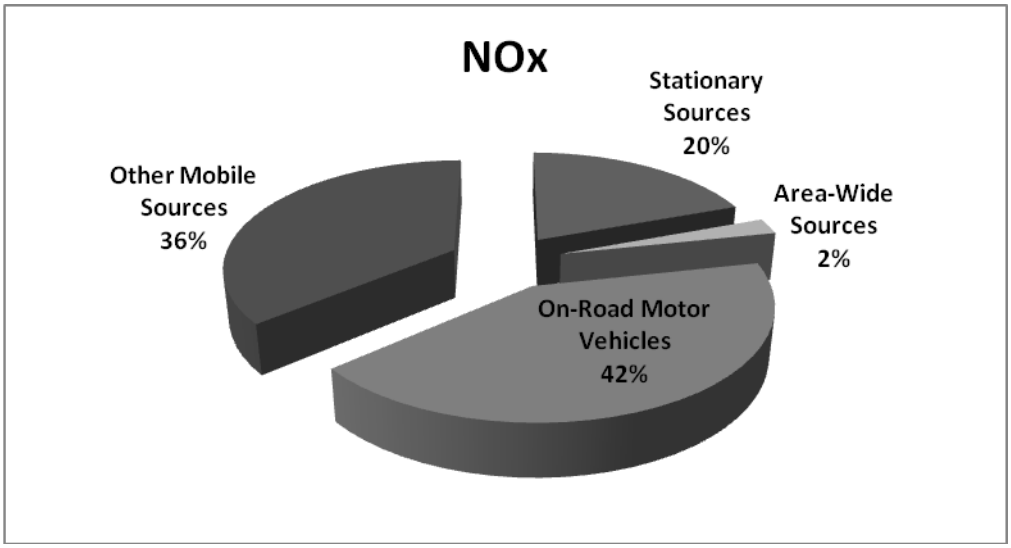




	ROC (tpy)	NOx (tpy)
Stationary Sources	**302.68**	**212.96**
Other Mobile Sources	**914.31**	**18,017.00**
Natural Sources	**2,004.38**	**0.00**
Total	**3,221.37**	**18,229.96**

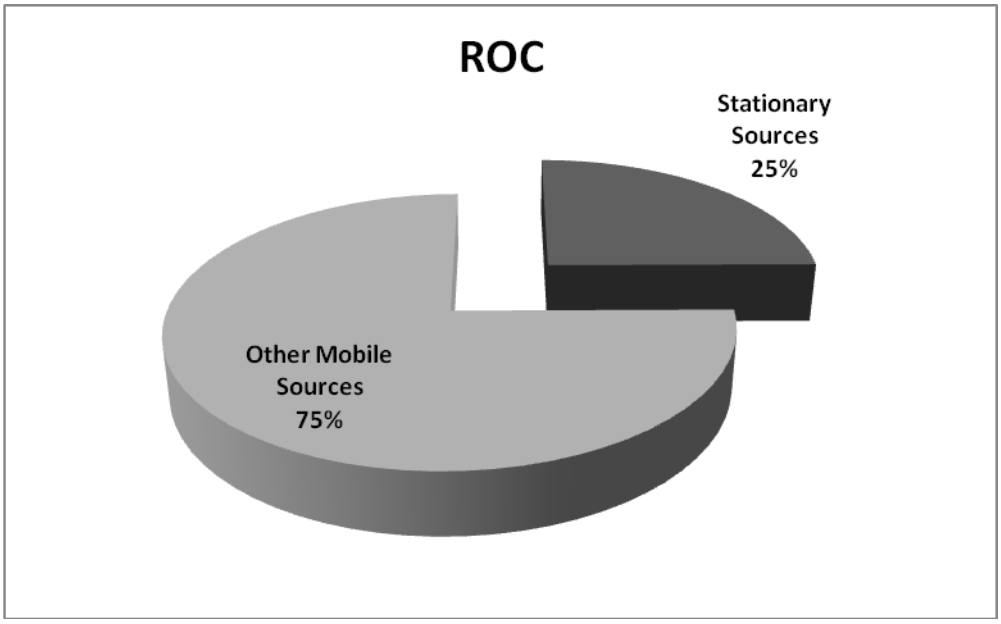
FIGURE 3-3
2007 Planning Emission Inventory
Santa Barbara County ROC and NOx Emissions

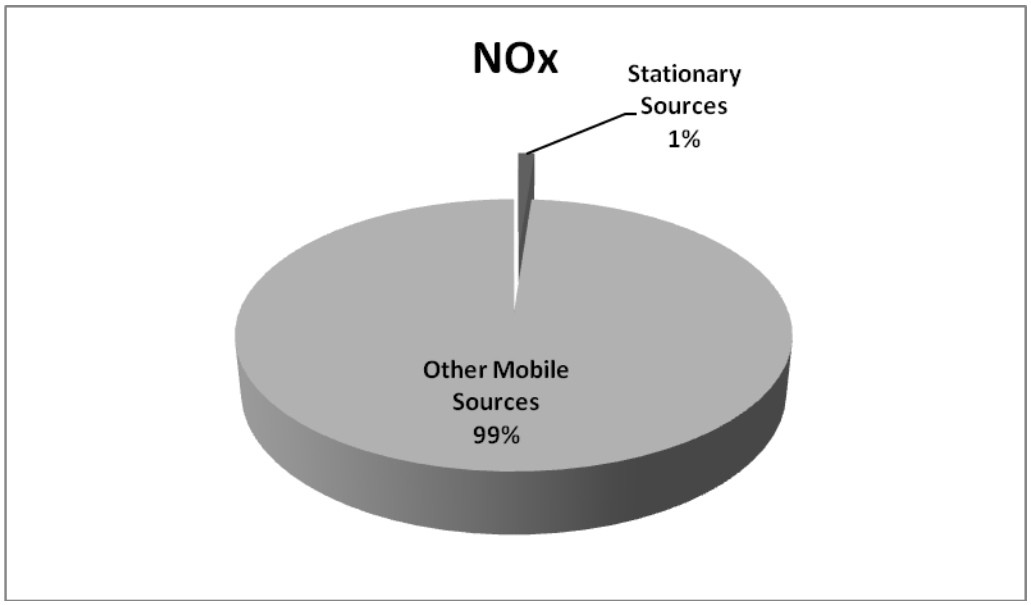




	ROC (tpd)	NOx (tpd)
Stationary Sources	**8.85**	**7.61**
Area-wide Sources	**8.36**	**0.91**
On-road Motor Vehicles	**9.66**	**16.55**
Other Mobile Sources	**4.64**	**14.21**
Total	**31.51**	**39.27**

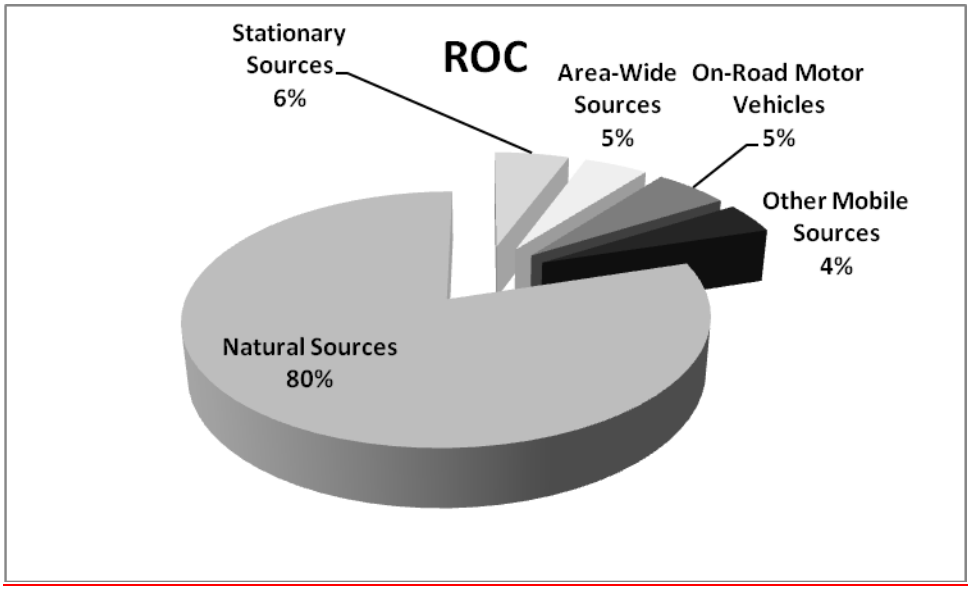
FIGURE 3-4
2007 Planning Emission Inventory
Outer Continental Shelf ROC and NOx Emissions

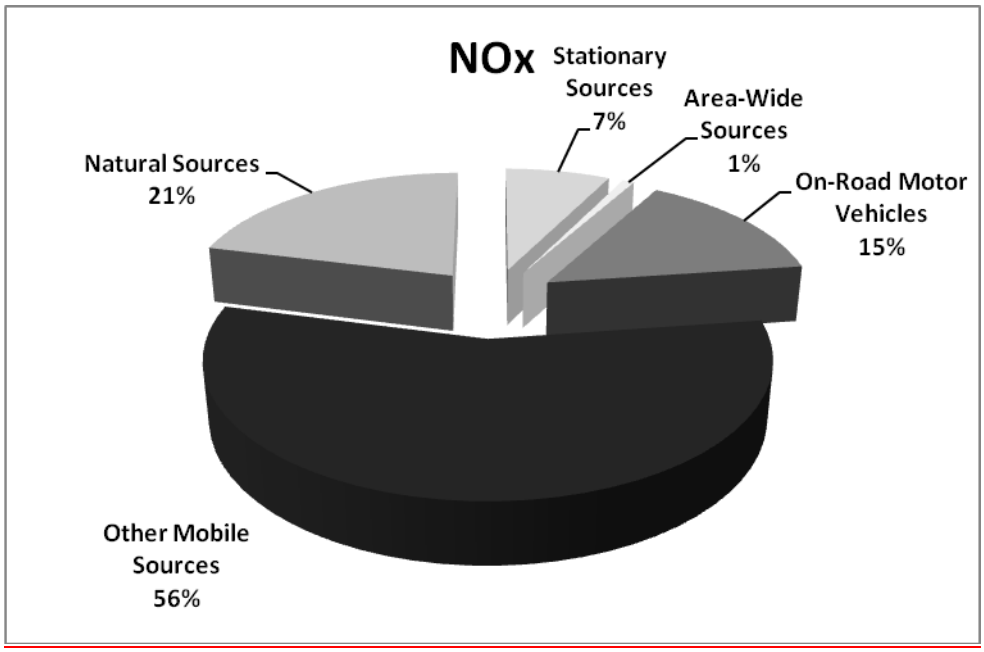




	ROC (tpd)	NOx (tpd)
Stationary Sources	**0.83**	**0.58**
Other Mobile Sources	**2.51**	**49.36**
Total	**3.33**	**49.95**

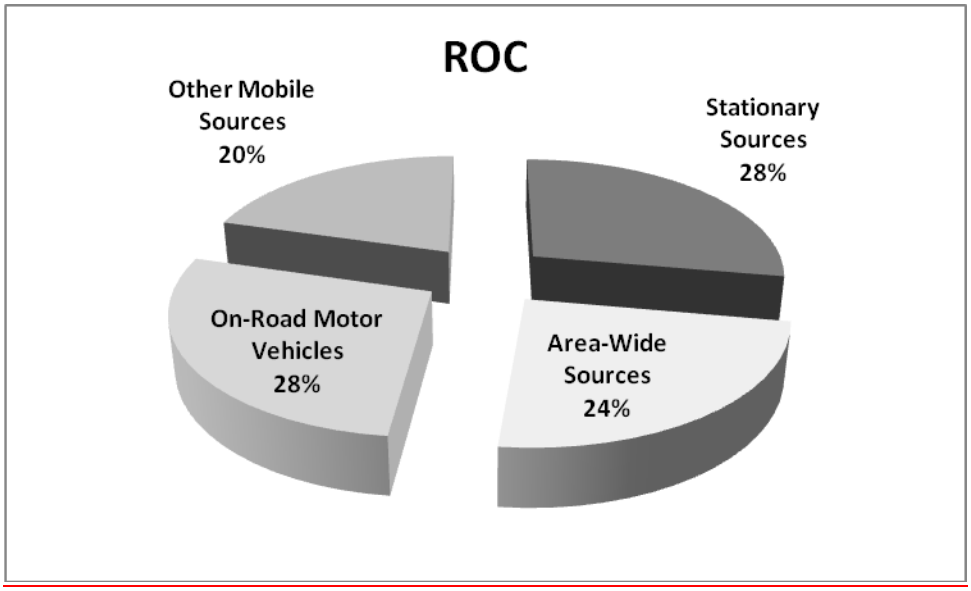
FIGURE 3-5
2007 Annual Emission Inventory
Outer Continental Shelf and Santa Barbara County ROC and NOx Emissions

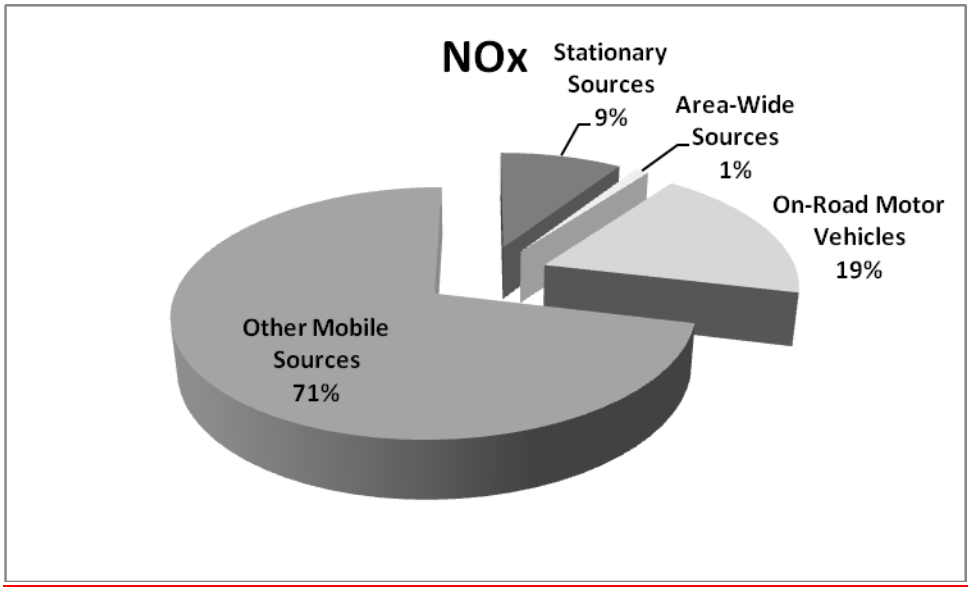




	ROC (tpy)	NOx (tpy)
Stationary Sources	3,546.64	3,056.16
Area-wide Sources	3,051.00	332.65
On-road Motor Vehicles	3,527.25	6,039.22
Other Mobile Sources	2,606.46	23,202.95
Natural Sources	50,450.05	8,707.21
Total	63,181.40	41,338.19

FIGURE 3-6
2007 Planning Emission Inventory
Outer Continental Shelf and Santa Barbara County ROC and NOx Emissions





	ROC (tpd)	NOx (tpd)
Stationary Sources	9.68	8.19
Area-wide Sources	8.36	0.91
On-road Motor Vehicles	9.66	16.55
Other Mobile Sources	7.14	63.57
Total	34.84	89.22