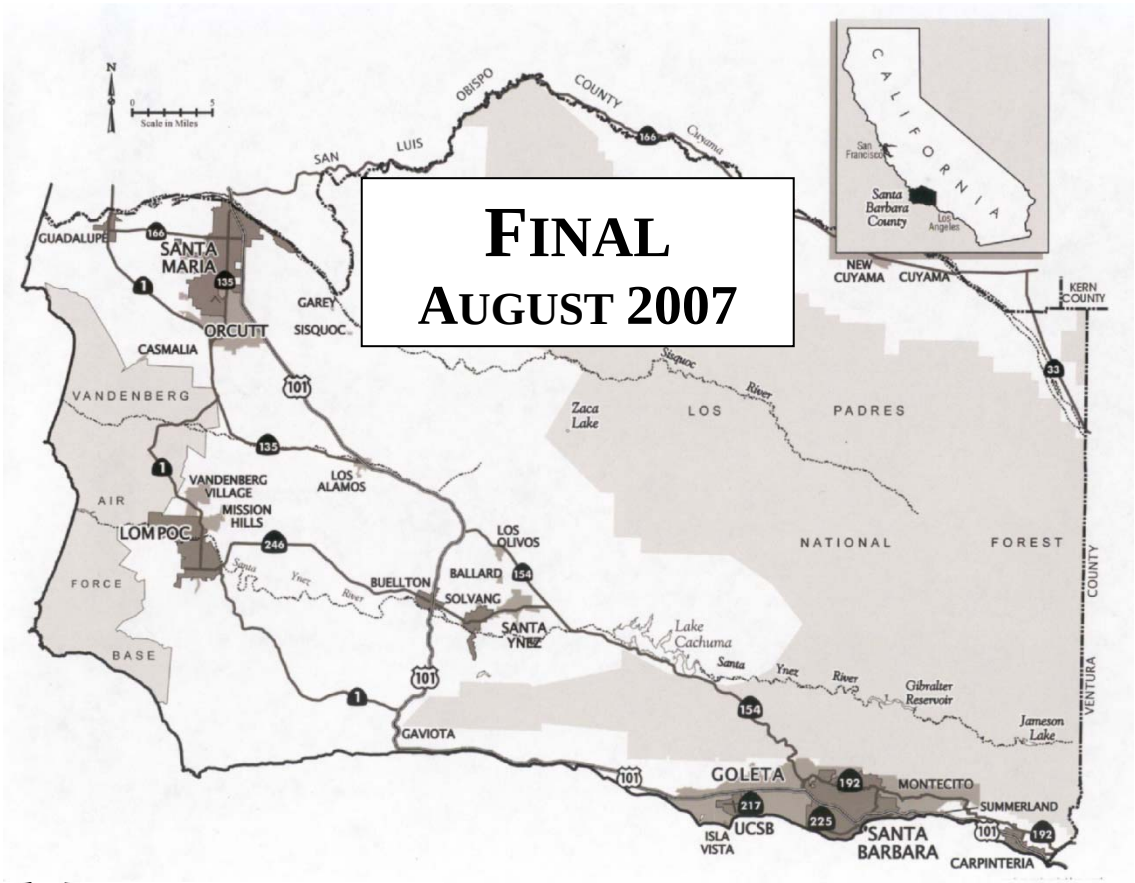
2007
CLEAN AIR PLAN

SANTA BARBARA COUNTY'S PLAN TO MAINTAIN THE FEDERAL 8-HOUR OZONE STANDARD AND ATTAIN THE STATE 1-HOUR OZONE STANDARD



Santa Barbara County
Air Pollution Control District

SBCAG
santa barbara county association of governments

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- **MAINTENANCE PLAN – FEDERAL 8-HOUR OZONE STANDARD**
- **THREE YEAR UPDATE TO THE 2004 CLEAN AIR PLAN – STATE 1-HOUR OZONE STANDARD**

FINAL
AUGUST 2007

Santa Barbara County
Air Pollution Control District

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2007
CLEAN AIR PLAN

FINAL

AUGUST 2007

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INTRODUCTION

Air quality in Santa Barbara County continues to improve and 2005 was one of the cleanest years on record. In fact, our air quality has improved to the point that the United States Environmental Protection Agency (USEPA) has declared us as attainment for the federal 8-hour ozone standard. Meeting this milestone is clear evidence that Santa Barbara County residents are breathing cleaner air. However, we do not yet comply with the state 1-hour ozone standard which is more protective of public health.

Continuing our progress toward clean air is a challenge that demands participation by the entire community. A Clean Air Plan represents the blueprint for air quality improvement in Santa Barbara County; the goals are to explain the complex interactions between emissions and air quality, and to design the best possible emission control strategy in a cost-effective manner. This 2007 Plan represents a partnership among the Santa Barbara County Air Pollution Control District (APCD), the Santa Barbara County Association of Governments (SBCAG), the California Air Resources Board (ARB), the USEPA, local businesses, and the community at large to reduce pollution from all sources: cars, trucks, industry, consumer products, and many more.

We have made remarkable progress in cleaning our air; the number of unhealthful air quality days in Santa Barbara County has been reduced by more than 95 percent from 1988 to 2005 despite substantial increases in population and vehicle miles traveled. The community should be proud of these accomplishments in reducing air pollution. This 2007 Plan reflects a commitment to continue this progress and bring clean air to all of the residents of Santa Barbara County.

WHY IS THIS 2007 PLAN BEING PREPARED?

This 2007 Plan is being prepared to address both federal and state requirements. The federal requirements pertain to provisions of the Federal Clean Air Act that apply to our current designation as an attainment area for the federal 8-hour ozone standard. Areas that are designated as attainment for the federal 8-hour ozone standard and attainment for the previous federal 1-hour ozone standard with an approved maintenance plan must submit an 8-hour maintenance plan under section 110(a)(1).

The California Clean Air Act mandates under Health and Safety Code sections 40924 and 40925 require that every three years areas update their clean air plans to attain the state 1-hour ozone standard. More specifically, this 2007 Plan provides a three-year update to the APCD's 2004 Clean Air Plan. Previous plans developed to comply with the state ozone standard include the1991 Air Quality Attainment Plan, the 1994 Clean Air Plan, the 1998 Clean Air Plan, and the 2001 Clean Air Plan.

WHAT'S NEW IN THIS 2007 PLAN?

Each clean air plan represents a snapshot in time, based on the most current information available. This 2007 Plan is similar to the 2004 Clean Air Plan but includes significant new information. Some new key elements include:

- Updated local air quality information (through 2006)
- An updated baseline emission inventory (year 2002)
- An updated baseline emission estimate of marine shipping emissions (year 2002)
- Updated future year emission estimates through 2020

HOW WAS THIS 2007 PLAN PREPARED?

The APCD prepared this 2007 Plan in partnership with SBCAG, ARB, and USEPA. SBCAG provided future growth projections, developed the transportation control measures, and estimated the on-road mobile source emissions. ARB provided information on statewide mobile sources and consumer product control measures. USEPA provided information on the status of the control efforts for federally regulated sources.

The APCD Board of Directors established the Community Advisory Council to help provide important local policy and technical input on APCD clean air plans and rules. Starting in March of 2006, the CAC considered various components of this 2007 Plan at their monthly meetings. The input provided by the Community Advisory Council was, on many occasions, directly incorporated into this 2007 Plan. APCD staff also conducted public workshops to obtain direct public input on the 2007 Plan.

WHAT ARE THE HEALTH EFFECTS OF OZONE?

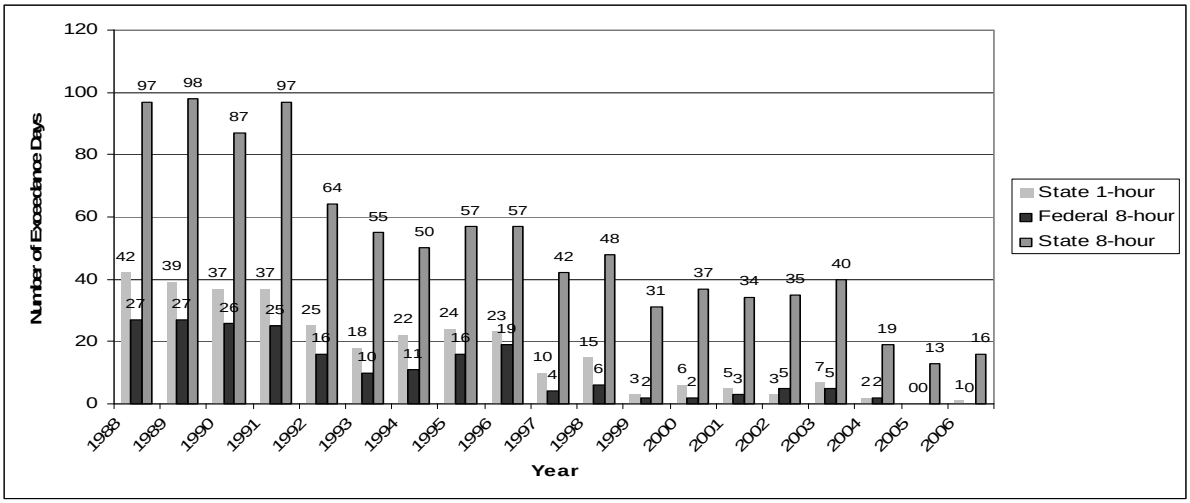
Ozone can damage the respiratory system, causing inflammation, irritation, and symptoms such as coughing and wheezing, and worsening of asthma symptoms. High levels of ozone are especially harmful for children, people who exercise outdoors, older people, and people with asthma or other respiratory problems. Ozone can harm the development of children's lungs, and recent studies suggest ozone plays a role in causing early childhood asthma. Ozone air pollution also hurts the economy by increasing hospital visits and medical expenses, and loss of work time due to illness, and by damaging crops, buildings, paint, and rubber.

IS AIR QUALITY IMPROVING?

Figure EX-1 shows that neither the state 1-hour ozone standard nor the federal 8-hour ozone standard was exceeded during 2006. A clear declining trend in the number of state ozone exceedances is evident from 1988 through 1999. Since 1999, however, with the relatively low number of State 1-hour and federal 8-hour ozone exceedances experienced in Santa Barbara County each year, the trend is less discernable, and likely more the result of natural year-to-year variability of weather patterns.

The long-term declining trend in both state 1-hour and federal 8-hour exceedance days has occurred concurrently with increases in both population and daily vehicle miles traveled in Santa Barbara County. This suggests that local, state and federal emission reduction programs have been effective in improving air quality in Santa Barbara County despite significant increases in population and vehicle miles traveled.

FIGURE EX-1
NUMBER OF DAYS EXCEEDING STATE AND FEDERAL OZONE STANDARDS SANTA BARBARA COUNTY - 1988-2006



HOW IS ATTAINMENT OF THE STATE OZONE STANDARD DETERMINED?

Attainment of the state ozone standard is determined using a statistical model developed by the ARB that excludes extreme concentration events, which are not expected to occur more frequently than once per year. This statistical concentration is commonly referred to as the Expected Peak Day Concentration (EPDC). An area is considered to be in attainment of the state 1-hour and state 8-hour ozone standards if all monitoring stations have ozone concentrations less than 0.09 ppm, and 0.070 ppm, respectively, after excluding those days with concentrations identified as extreme events.

WHAT KEY FEDERAL REQUIREMENTS DOES THIS 2007 PLAN ADDRESS?

Santa Barbara County is required to prepare a maintenance plan under Section 110(a)(1) of the Federal Clean Air Act. The specific required components are an attainment inventory, a maintenance demonstration, ambient air quality monitoring, a contingency plan and verification of continued attainment of the federal 8-hour ozone standard.

WHAT KEY STATE REQUIREMENTS DOES THIS 2007 PLAN ADDRESS?

The key requirements of the California Clean Air Act addressed in this 2007 Plan are the Triennial Progress Report (H&SC Section 40924(b)) and the Triennial Plan Revision (H&SC Section 40925(a)). Additionally, this 2007 Plan must provide an annual five percent 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 2007 Plan to provide for attainment of the state ambient air quality standards at the earliest practicable date (H&SC Section 40910).

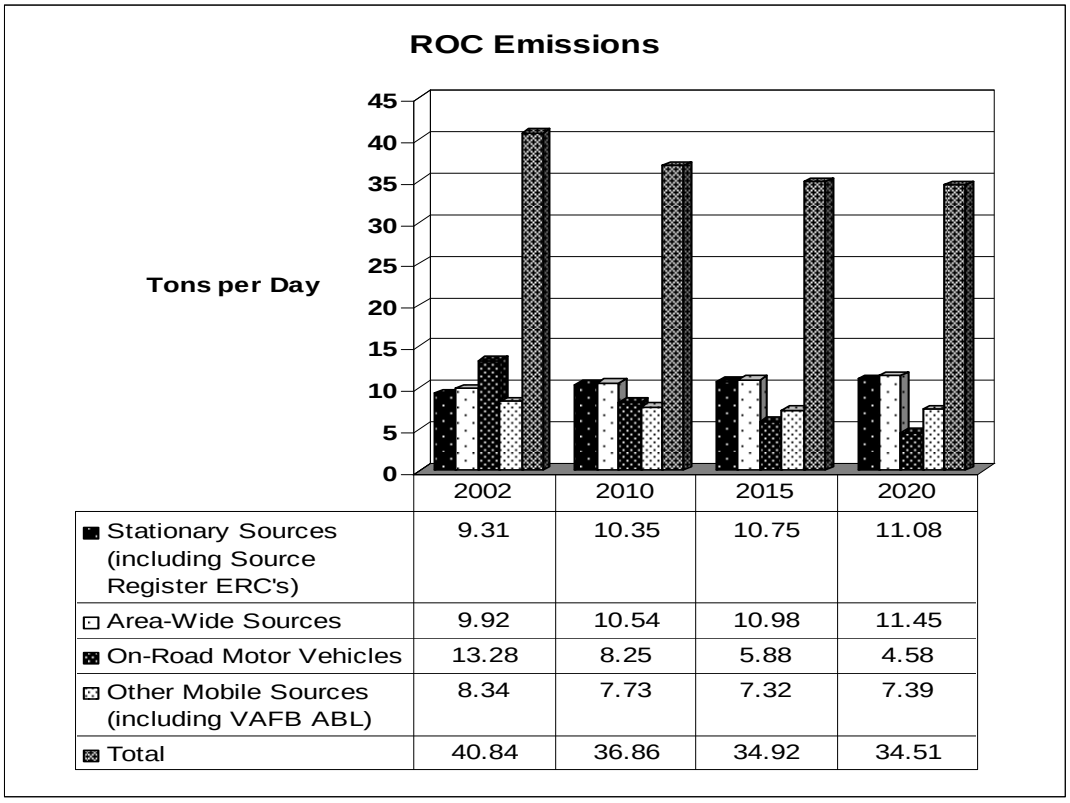
HOW HAS THE EMISSION INVENTORY CHANGED?

An updated emission inventory was developed for 2002 for both onshore and Outer Continental Shelf (OCS) sources for this 2007 Plan. This inventory serves as our base year emission inventory, and is used to forecast emissions for 2005, 2010, 2015, and 2020. The 2002 emission inventory was developed in accordance with ARB and USEPA policies and procedures. The emissions inventory follows the organizational structure developed by ARB, and assigns all air pollution sources into one of four categories: stationary sources, area-wide sources, mobile sources, and natural sources. The biggest change to the emission inventory since the 2004 Plan is to marine shipping emissions which are significantly higher than previously estimated.

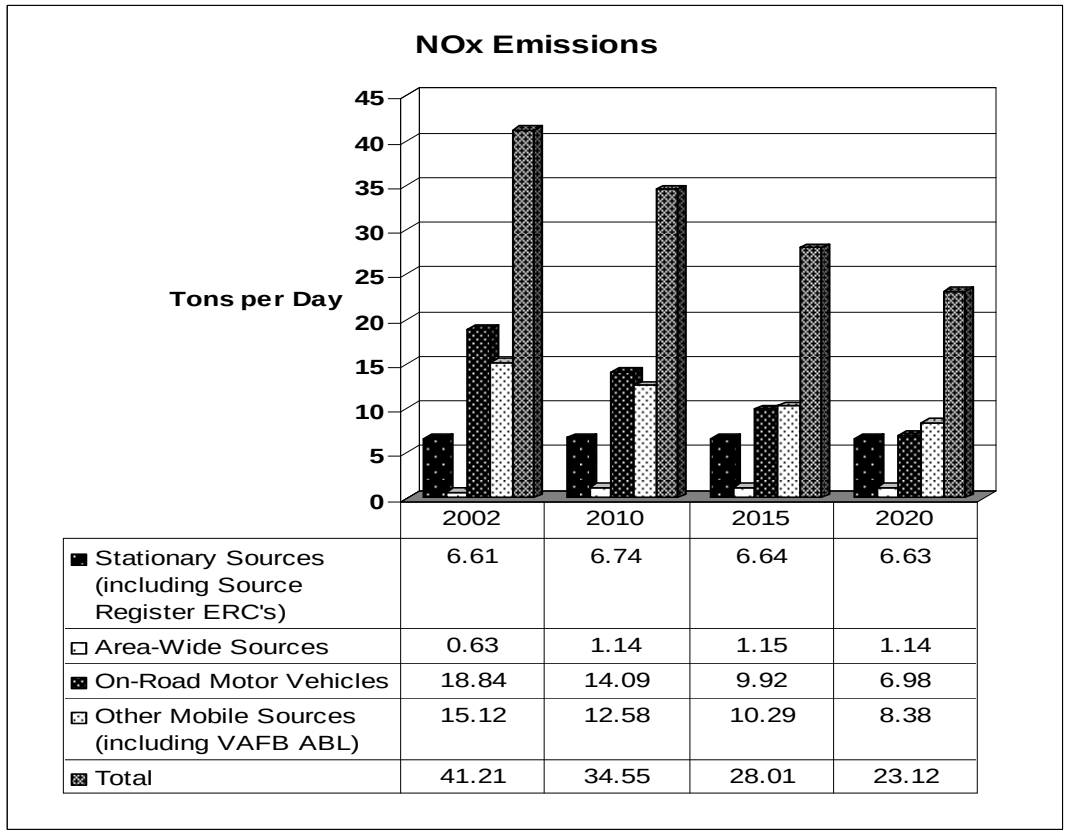
WHERE DOES OUR HUMAN-GENERATED AIR POLLUTION COME FROM?

Figure EX-2 shows Santa Barbara County's onshore emission inventory for 2002 to 2020. This figure presents the estimated emissions of reactive organic compounds and oxides of nitrogen (precursors that combine to form ozone), generated locally by human activities. This 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). Other mobile sources (planes, trains, boats, off-road equipment, farm equipment), the evaporation of solvents, combustion of fossil fuels, surface cleaning and coating, prescribed burning, and petroleum production and marketing combine to make up the remainder. **Figure EX-3** shows the emission inventory for the Outer Continental Shelf, where the majority of reactive organic compounds and oxides of nitrogen emissions come from mobile sources (predominantly international marine shipping activities).

FIGURE EX-2
SANTA BARBARA COUNTY ONSHORE ROC & NO_X EMISSIONS

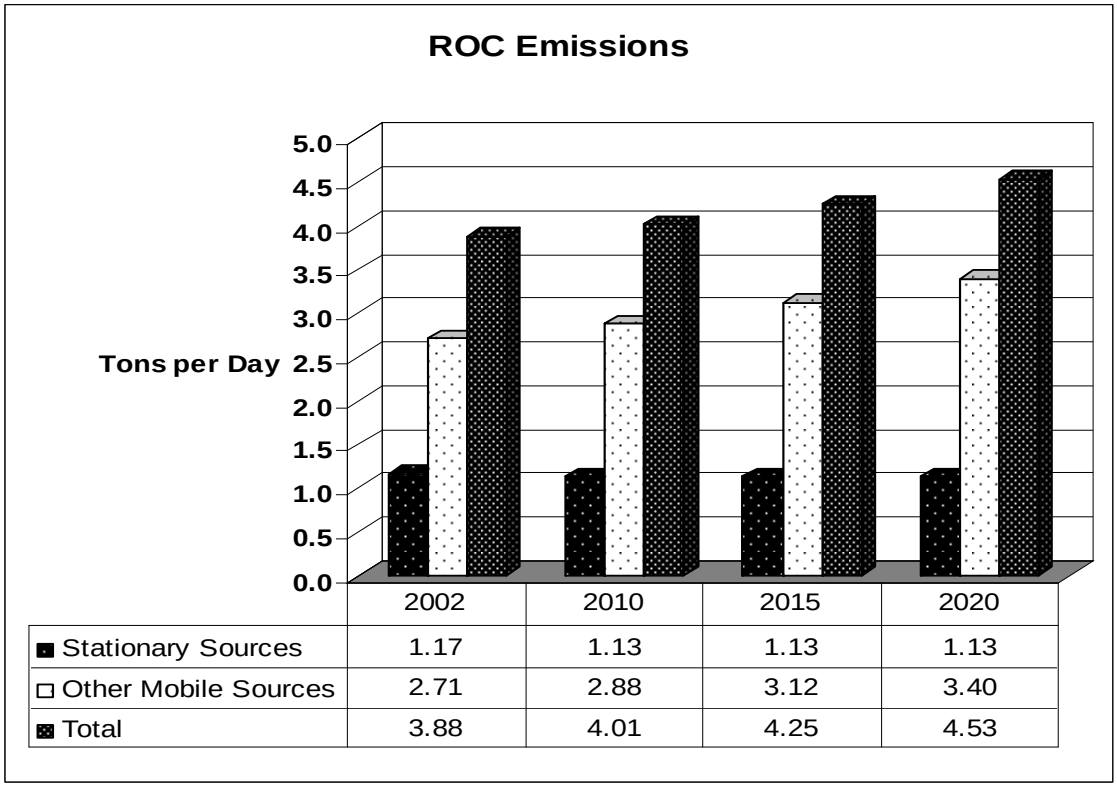


	2002	2010	2015	2020
Stationary Sources (including Source Register ERC's)	9.31	10.35	10.75	11.08
Area-Wide Sources	9.92	10.54	10.98	11.45
On-Road Motor Vehicles	13.28	8.25	5.88	4.58
Other Mobile Sources (including VAFB ABL)	8.34	7.73	7.32	7.39
Total	40.84	36.86	34.92	34.51

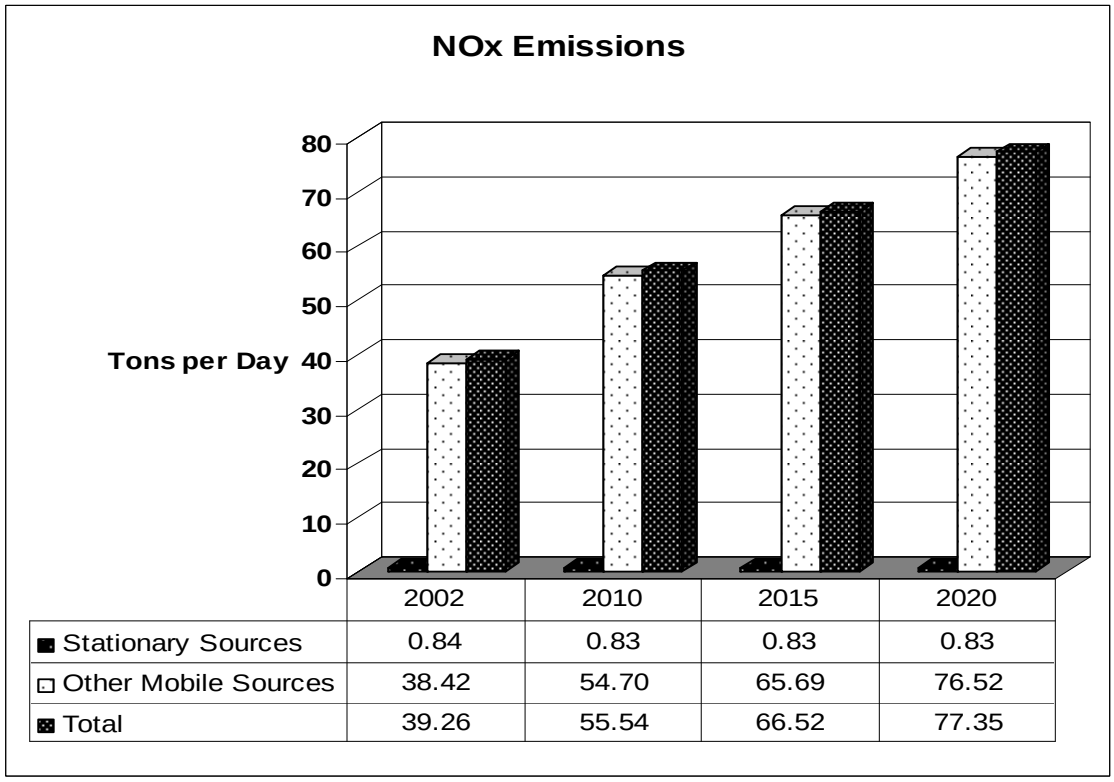


	2002	2010	2015	2020
Stationary Sources (including Source Register ERC's)	6.61	6.74	6.64	6.63
Area-Wide Sources	0.63	1.14	1.15	1.14
On-Road Motor Vehicles	18.84	14.09	9.92	6.98
Other Mobile Sources (including VAFB ABL)	15.12	12.58	10.29	8.38
Total	41.21	34.55	28.01	23.12

FIGURE EX-3
OUTER CONTINENTAL SHELF ROC & NO_X EMISSIONS



	2002	2010	2015	2020
Stationary Sources	1.17	1.13	1.13	1.13
Other Mobile Sources	2.71	2.88	3.12	3.40
Total	3.88	4.01	4.25	4.53



	2002	2010	2015	2020
Stationary Sources	0.84	0.83	0.83	0.83
Other Mobile Sources	38.42	54.70	65.69	76.52
Total	39.26	55.54	66.52	77.35

HAS THE OVERALL CONTROL STRATEGY CHANGED?

No, the overall strategy for control of both reactive organic compounds and oxides of nitrogen adopted in the 2004 Clean Air Plan continues in this 2007 Plan. This 2007 Plan proposes new or revised stationary emission control measures based on our most recent all feasible measures analysis.

DOES THE 2007 PLAN SHOW THAT WE WILL ATTAIN THE STATE 1-HOUR OZONE STANDARD AND MAINTAIN THE FEDERAL 8-HOUR OZONE STANDARD?

A preliminary review of our air quality monitoring data indicates that we have attained the state 1-hour ozone standard. We will be relying on the 2007 Plan's control strategies and measures to remain in attainment for this standard as well as to assist us in attaining the new and stricter state 8-hour ozone standard.

This 2007 Plan shows that onshore emissions of reactive organic compounds and oxides of nitrogen will continue to decrease through 2020, due primarily to on-road mobile source emission reduction measures. However, the large emission increases expected to occur in the OCS due to marine shipping activities are dramatic. While these offshore emissions may not have the same direct impact on our air as onshore emissions, their magnitude may impair our ability to comply with state ozone standards and maintain the federal 8-hour ozone standard.

DOES THIS 2007 PLAN ADDRESS THE NEW STATE 8-HOUR OZONE STANDARD?

We believe the strategy proposed in this 2007 Plan will expedite attainment of the new state 8-hour ozone standard based on historical air quality trends and onshore emission reductions.

HOW DOES THE ADOPTION OF THIS 2007 PLAN IMPACT APCD RULEMAKING?

The rules that are proposed in this 2007 Plan are directly included into the rulemaking priorities of the APCD. The measures that this Plan proposes on a near-term or mid-term basis will be adopted by the APCD according to that schedule. The formal adoption of this 2007 Plan by the APCD Board of Directors establishes the commitments to adopt all proposed rules according to the schedule identified in the plan.

Our current schedule of rule activities is located on our web site:
http://www.sbcapcd.org/rules/schedule.htm

HOW DOES THE SOUTH COAST AQMD V. EPA COURT DECISION IMPACT THIS 2007 PLAN?

On December 22, 2006 the DC Circuit Court of Appeals struck down and sent back to EPA for reconsideration its 2004 Rule implementing the 8-hour federal ozone standard. EPA has not issued any new guidance as a result of this decision. We believe that the only impacts to the 2007 Plan may be conformity related. Our approach at this point is to continue working on the 2007 Plan under Section 110(a)(1) and to submit it as close as possible to the June 2007 deadline.

CHAPTER 1

INTRODUCTION

- BACKGROUND
- PURPOSE
- CURRENT STATE AND FEDERAL PLANNING REQUIREMENTS
- SUMMARY OF ATTAINMENT PLANNING EFFORTS
- PLAN ORGANIZATION
- REFERENCES

1. INTRODUCTION

1.1 BACKGROUND

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, and damage native and ornamental vegetation. Since 1999, however, local air quality data show that every monitoring location in the County complied with the federal 1-hour ambient air quality standard for ozone. The Santa Barbara County Air Pollution Control District (APCD) adopted the 2001 Clean Air Plan (2001 CAP) that demonstrated attainment of the federal 1-hour ozone standard and continued maintenance of that standard through 2015. Consequently, on August 8, 2003, the United States Environmental Protection Agency (USEPA) designated Santa Barbara County as an attainment area for the federal 1-hour ozone standard.

On June 15, 2004, USEPA replaced the federal 1-hour ozone standard with an 8-hour ozone standard for Santa Barbara County and most parts of the country. This 8-hour ozone standard, originally promulgated by USEPA on July 18, 1997, is set at 0.08 parts per million measured over eight hours and is more protective of public health and more stringent than the federal 1-hour standard. For the purposes of the federal 8-hour ozone standard, Santa Barbara County has been designated attainment.

1.2 PURPOSE

The purpose of this 2007 Clean Air Plan (2007 Plan) is to facilitate the transition from the federal 1-hour ozone standard to the new 8-hour ozone standard, USEPA established planning requirements for areas such as Santa Barbara County which (1) had attained the federal 1-hour ozone standard by June 15, 2004, (2) were subject to a maintenance plan for the federal 1-hour ozone standard and (3) are classified as attainment for the federal 8-hour ozone standard. These requirements provide “anti backsliding” provisions specifying which of the federal 1-hour ozone obligations would continue to apply and required submission of a 10-year maintenance plan for the 8-hour federal ozone standard under Section 110(a)(1) of the federal Clean Air Act Amendments.

Our County’s air quality has improved enough to be considered in attainment of the federal 8-hour ozone standard and a preliminary review of our air quality monitoring data indicates that we have attained the state 1-hour ozone standard. The 2007 Plan will continue to serve as our “road map’ towards attaining the state ozone standard. While this 2007 Plan was prepared in the context of state planning requirements for attaining the state 1-hour ozone standard it fulfills three purposes - the aforementioned 1-hour ozone standard attainment demonstration, maintenance of the 1-hour standard and how we plan to attain the state 8-hour standard. This 2007 Clean Air plan (2007 Plan) also charts a course of action that will provide for ongoing maintenance of the federal 8-hour ozone standard through the year 2014. These plans have been developed for Santa Barbara County as required by both the 1998 California Clean Air Act (State Act) and the 1990 Federal Clean Air Act Amendments (Federal Act).

1.3 CURRENT STATE AND FEDERAL PLANNING REQUIREMENTS

Section 110(a)(1) of the Federal Act requires the preparation of a plan to provide for maintenance of the federal 8-hour ozone standard for at least 10 years after an area is redesignated to an attainment area. This "Maintenance Plan" must be submitted to USEPA by June 15, 2007.

At a minimum the Maintenance Plan must contain the following five components:

1. Attainment inventory
   - ❖ Based on a "typical summer day"
   - ❖ Base year of 2002

2. Maintenance demonstration
   - ❖ Project attainment in 2014
   - ❖ Sufficient to show that ozone precursor emissions will not exceed the level necessary to attain the 8-hour federal ozone standard

3. Verification of continued attainment
   - ❖ Compare actual versus projected emissions for interim year(s)

4. Ambient air quality monitoring
   - ❖ Continue to operate monitoring network in accordance with Title 40, Code of Federal Regulations, Part 58
   - ❖ Any proposed modifications must be justified and approved by USEPA

5. Contingency plans
   - ❖ Contingency measures
   - ❖ Schedule for adopting contingency measures
   - ❖ Triggers for implementing contingency measures – ambient violations

This 2007 Plan is the fifth major planning effort under the Federal Act and also complies with the triennial progress report and plan revision requirements under the State Act. Many of the local control measures proposed in this 2007 Plan satisfy the "every feasible" measure requirements of the State Act and serve as "contingency" measures for the Federal Act. If Santa Barbara County experiences a "violation" of the federal 8-hour ozone standard during the planning horizon of this 2007 Plan, we will evaluate and expedite the implementation of the "contingency" measures outlined in this 2007 Plan. A complete summary of all state and federal Clean Air Act requirements that apply to Santa Barbara County is provided in Chapter 8.

California law mandates that APCD's periodically revise and update attainment plans to achieve the state ozone standard as expeditiously as practicable. The efforts being undertaken for this 2007 Plan also address attainment of the state ozone standard. This 2007 Plan will therefore satisfy all state triennial planning requirements.

Health and Safety Code section 40925.5(a) specifies that a district that is nonattainment for the state ozone standard shall be designated "nonattainment transitional" by operation of law if during a single calendar year, the state standard is not exceeded more than three times at any

monitoring station within the district. A nonattainment transitional district must comply with Health and Safety Code sections 40925.5(b) through (d). Essentially, these sections require a nonattainment transitional district to determine whether one or more of the stationary source control measures scheduled for adoption or implementation within the next three years is still necessary to accomplish the expeditious attainment or to maintain the state standard. If any such measure will not do so, the district shall shift those measures to the contingency category. While our 2005 ambient monitoring data show that no station experienced more than two exceedances, the California Air Resource Board (ARB) did not find Santa Barbara County to be nonattainment transitional because the Santa Rosa Island monitoring station failed to meet the minimum data recovery rate of 80% for three months of the year. A letter from ARB (in Chapter 10 – Public Participation) explains their decision to not designate Santa Barbara County nonattainment transitional.

This 2007 Plan will be forwarded to the California Air Resources Board (ARB) for their review and approval before being submitted to the USEPA for their approval and incorporation into the State Implementation Plan (SIP).

In April 2005, ARB approved a new more health protective air quality standard for ozone with special consideration for children's health. The new state 8-hour ozone standard, set at 0.070 parts per million (ppm), is not to be exceeded and is in addition to the existing state 1-hour ozone standard set at 0.09 ppm. This standard became effective on May 17, 2006. Based on a preliminary examination of our ambient air quality data, Santa Barbara County will be classified as nonattainment for the state 8-hour ozone standard (please see *Chapter 2* for a discussion of state 8-hour exceedance data). While ARB has yet to issue any guidance for this planning effort, we believe all of the measures recommended in this 2007 Plan will expedite our progress towards complying with the new state 8-hour ozone standard.

1.4 SUMMARY OF ATTAINMENT PLANNING EFFORTS

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 which was updated in 1982. These two plans were prepared in response to mandates established by the federal Clean Air Act Amendments of 1977. At that time only the southern portion of the county, the region south of the Santa Ynez Mountains, violated the federal 1-hour ozone standard. The 1982 update predicted attainment of the federal ozone standard by 1984, but acknowledged that the county's ability to attain the federal ozone standard was uncertain because pollution generated on the Outer Continental Shelf was not considered in the Plan.

The predicted attainment of the federal ozone standard did not occur. As a consequence, the USEPA called for an update to the 1982 Air Quality Attainment Plan on March 17, 1986. On May 26, 1988, the USEPA issued a subsequent mandate that our planning efforts address air quality for the entire county. This new mandate was issued in response to the failure of many regions of the country to attain the federal 1-hour ozone standard by 1987. In response, the APCD prepared the 1989 Air Quality Attainment Plan, which was adopted by the APCD Board of Directors in June of 1990 and was designed to bring the southern portion of the county into attainment with the federal 1-hour ozone standard.

The APCD also prepared a 1991 Air Quality Attainment Plan (1991 AQAP). This plan was required by the State Act to bring the entire county into attainment of the more health protective state 1-hour ozone standard. The APCD Board of Directors adopted the 1991 AQAP in December 1991 and ARB approved it in August 1992.

In 1990, Congress amended the federal Clean Air Act (Federal Act). The Federal Act Amendments 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 (1994 CAP) that contained these required elements was adopted by the APCD Board of Directors and formally submitted to the USEPA on November 15, 1994. 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 1-hour ozone standard; and a plan to show maintenance of the federal 1-hour ozone standard through the year 2006. The 1994 CAP also provided a three-year update to the 1991 AQAP for the state 1-hour ozone standard, as required by the State Act.

On January 8, 1997, the USEPA approved several elements of the 1994 CAP, including the amendments to the 1993 ROP, the base year emission inventory, and the control strategy. USEPA did not approve the attainment demonstration element due to violations of the federal 1-hour standard that occurred during 1994-1996. This element 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 for "moderate" nonattainment areas of November 15, 1996. As a result, the entire Santa Barbara County nonattainment area was reclassified as a "serious" nonattainment area by operation of federal law. The USEPA action mandated that we continue progress toward the federal 1-hour ozone standard through the development of a revised Clean Air Plan. The 1998 Clean Air Plan (1998 CAP) was adopted by the APCD Board of Directors on December 17, 1998, and forwarded by the ARB to the USEPA on March 19, 1999. The 1998 CAP addressed all the new federal planning requirements for "serious" nonattainment areas and was approved by the USEPA on August 14, 2000 (65 FR 49499-49501).

Since 1999, local air quality data collected in Santa Barbara County showed that we had achieved the federal 1-hour ozone standard. Achieving this milestone allowed us to request USEPA to designate the county as an attainment area for this standard. The 2001 CAP was adopted by the APCD Board of Directors on November 15, 2001 and subsequently amended on December 19, 2002. The 2001 CAP addressed all federal planning requirements for "maintenance plans" and provided for ongoing attainment of the federal 1-hour ozone standard through the year 2015. The plan was forwarded by the ARB to USEPA on February 21, 2002, formally approved by USEPA on July 9, 2003, and became effective on August 8, 2003 with Santa Barbara County being officially designated as an attainment area. The 2001 CAP also addressed the state triennial plan revision and progress report requirements under the State Act.

The 2004 Clean Air Plan (2004 Plan) was prepared to address the California Clean Air Act mandates under Health and Safety Code sections 40924 and 40925 requiring that every three years areas update their clean air plans to attain the state 1-hour ozone standard. The 2004 Plan

was a three year update to the 2001 CAP. Because we have yet to meet the state 1-hour ozone standard, the State Act requires that we report our the overall effectiveness of our air quality plan, the extent of air quality improvements resulting from the plan and any revisions to deficiencies identified in the plan. On December 16, 2004, the APCD Board of Directors adopted the 2004 Plan to fulfill this requirement.

A summary of Santa Barbara County's state and federal planning activities beginning with the 1991 AQAP is presented in **Table 1-1**.

1.5 PLAN ORGANIZATION

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

Chapter 3, Emission Inventory, establishes an "attainment inventory" for Santa Barbara County by quantifying the emissions of reactive organic compounds and oxides of nitrogen for 2002. 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 all ARB emission reduction programs that reduce emissions in Santa Barbara County. 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 2010, 2015 and 2020.

Chapter 7, Federal Maintenance Plan, demonstrates how the APCD will satisfy the provisions of the federal act and maintain the federal 8-hour ozone standard.

Chapter 8, 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 2007 Plan complies with all applicable requirements.

Chapter 9, State Mandated Triennial Progress Report and Triennial Plan Revision, summarizes how the development and adoption of the 2007 Plan satisfies the triennial update requirements of the California Clean Air Act.

Chapter 10, Public Participation, summarizes all public input received during the development of this 2007 Plan.

1.6 REFERENCES

1) California Health and Safety Code: 2005 Edition.

2) United States Public Law 101-549, Nov. 15, 1990 104 Stat.2399.

3) U.S. Environmental Protection Agency: Preamble - USEPA Title 1, General Preamble of the Federal Clean Air Act Amendments of 1990.

4) U.S. Environmental Protection Agency: Guidance of the adjusted base year emissions inventory and the 1996 Target for the 15% rate-of-progress plans. EPA-452-R-92-005, October 1992.

5) U.S. Environmental Protection Agency: Guidance on growth factors, projections, and control strategies for the 15% rate-of-progress plans. EPA-452/R-93-002, March 1993.

6) U.S. Environmental Protection Agency: Clean Air Act Reclassification; California Santa Barbara Nonattainment Area; Ozone. 40 CFR Part 81, December 10, 1997.

7) U.S. Environmental Protection Agency: Extension of Attainment Dates for Downwind Transport Areas. USEPA memorandum dated July 17, 1998.

8) U.S. Environmental Protection Agency: Approval and Promulgation of State Implementation Plans; California--Santa Barbara. August 14, 2000 (65 FR 49499-49501).

9) U.S. Environmental Protection Agency: “Maintenance Plan Guidance Document for Certain 8-hour Ozone Areas Under Section 110(a)(1) of Clean Air Act”. Memorandum from Lydia N. Wegman, Director, Air Quality Strategies and Standards Division to Air Division Directors, Regions I-X, May 20, 2005.

TABLE 1 - 1

COMPARISON OF THE 1991 AQAP, 1994 CAP, 1998 CAP, 2001 CAP, 2004 PLAN, AND 2007 PLAN

	1991 AQAP	1994 CAP	1998 CAP	2001 CAP	2004 PLAN	2007 PLAN
MANDATES	California Clean Air Act of 1988	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	Federal Clean Air Act Amendments of 1990 California Clean Air Act of 1988	California Clean Air Act of 1988	Federal Clean Air Act Amendments of 1990 California Clean Air Act of 1988
AIR QUALITY STANDARDS	The state 1-hour ozone standard is 0.09 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).	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).	Addresses only the state 1-hour ozone standard (0.09 parts per million).	Addresses only the state 1-hour ozone standard (0.09 parts per million).and the federal 8-hour ozone standard (0.08 parts per million)
REGION COVERED	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. 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.	The Maintenance Plan and redesignation request covers the onshore area of Santa Barbara County. Emission Inventories are also provided for the Outer Continental Shelf.	The 2004 Plan covers the onshore area of Santa Barbara County and the Outer Continental Shelf.	The 2007 Plan covers the onshore area of Santa Barbara County and the Outer Continental Shelf.
EMISSION INVENTORY	A 1987 baseline inventory of emission sources countywide was developed, but excluded sources in the Outer Continental Shelf.	A 1990 baseline inventory of emission sources countywide 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 countywide was 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.	A 1999 baseline inventory of emission sources countywide was developed, including an updated inventory of Outer Continental Shelf sources. The 1999 inventory will be used to develop an "attainment inventory" and to forecast 2005, 2010, and 2015 emissions. Also, an emission budget for ROG and NO_x are re-established.	A 2000 baseline inventory of emission sources countywide was developed including an updated inventory of Outer Continental Shelf sources. The 2000 inventory will be used to forecast 2005, 2010, 2015, and 2020 emissions. No emission budgets are established or re-established in the plan.	A 2002 baseline inventory of emission sources countywide was developed including an updated inventory of Outer Continental Shelf sources. The 2002 inventory will be used to forecast 2010, 2015, and 2020 emissions. No emission budgets are established or re-established in the plan.
PLAN SUMMARY	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 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.	The 2001 CAP contains a Maintenance Plan and redesignation request for the federal 1-hour ozone standard. This 2001 CAP also satisfies state planning requirements.	The 2004 Plan focuses solely on California Clean Air Act requirements.	The 2007 Plan focuses on both a Maintenance Plan for the federal 8-hour ozone standard and triennial update and revision for the state 1-hour ozone standard.

CHAPTER 2

LOCAL AIR QUALITY

- INTRODUCTION
- CLIMATE OF SANTA BARBARA COUNTY
- AIR QUALITY MONITORING
- STATE AND FEDERAL OZONE EXCEEDANCES
- STATE AIR QUALITY INDICATORS
- STATE DESIGNATION VALUE
- FEDERAL 8-HOUR OZONE STANDARD
- STATE 8-HOUR OZONE STANDARD
- CONCLUSION

2. LOCAL AIR QUALITY

2.1 INTRODUCTION

This chapter provides the background for this 2007 Plan by presenting an overview of the climate of Santa Barbara County, and an assessment of local air quality trends using California Air Resources Board (ARB) specified indicators and federal design value data. The description of the climate of Santa Barbara County is important for understanding the factors that influence air quality in the county, while the air quality data are important for assessing progress towards attainment of the state 1-hour ozone standard and maintenance of the federal 8-hour ozone standard.

There are two related terms that are used frequently in this chapter: standard *exceedance* and standard *violation*. A *standard exceedance* occurs when a measured concentration exceeds the 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 8-hour ozone exceedance occurs when ozone is measured over the standard of 0.08 ppm. A federal ozone standard violation occurs when the fourth highest ozone concentration at an individual monitoring site, averaged over three years, is higher than the standard. Attainment and nonattainment designations are based on violations of standards. It should be emphasized that both exceedances and violations are determined on a site-by-site basis. If any monitoring site experiences a violation of an ambient air quality standard, then the entire county would be designated as nonattainment for that standard.

The next section of this chapter, Section 2.2, discusses the local climate of Santa Barbara County and the relationship of the climate to air quality. Santa Barbara County's air quality monitoring network is described in Section 2.3. A summary of state ozone exceedances experienced in the county from 1988 through 2005 are highlighted in Section 2.4 while Section 2.5 summarizes state air quality trends using air quality indicators. Section 2.6 discusses the State Designation Value and its relation to the air quality indicators. Section 2.7 discusses the federal 8-hour ozone standard and the federal design value concept while Section 2.8 details the new state 8-hour ozone standard. Finally, Section 2.9 highlights the conclusions of this chapter. For clarity, all tables and figures associated with this chapter will appear after the conclusions.

2.2 CLIMATE OF SANTA BARBARA COUNTY

Santa Barbara County's air quality is influenced by both local topography and meteorological conditions. Surface and upper-level wind flow varies both seasonally and geographically in the county and inversion conditions common to the area can affect the vertical mixing and dispersion of pollutants. The prevailing wind flow patterns in the county are not necessarily those that cause high ozone values. In fact, high ozone values are often associated with atypical wind flow patterns. Meteorological and topographical influences that are important to air quality in Santa Barbara County are as follows:

- Semi-permanent high pressure that lies off the Pacific Coast leads to limited rainfall (around 18 inches per year), with warm, dry summers and relatively damp winters. Maximum summer temperatures average about 70 degrees Fahrenheit near the coast and in the high 80s to 90s inland. During winter, average minimum temperatures range from the 40s along the coast to the 30s inland. Additionally, 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 until broken up by a change in the weather pattern.

- In the northern portion of the 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 the southern portion of the county is from the southwest. During summer, these winds are stronger and persist later into the night. At night, the sea breeze weakens and is replaced by light land breezes (from land to sea). 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.

- 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.

- Santa Ana winds are northeasterly winds that occur primarily during fall and winter, but occasionally in spring. These are warm, dry winds blown from the high inland desert that descend down the slopes of a mountain range. Wind speeds associated with Santa Ana's 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 in what is called a "post-Santa Ana condition." The effects of the post-Santa Ana condition can be experienced throughout the county. Not all post-Santa Ana conditions, however, lead to high pollutant concentrations in Santa Barbara County.

- Upper-level winds (measured at Vandenberg Air Force Base once each morning and afternoon) are generally from the north or northwest throughout the year, but occurrences of southerly and easterly winds do occur in winter, especially during the morning. Upper-level winds from the south and east are infrequent during the summer. When they do occur during summer, they are usually associated with periods of high ozone levels. Surface and upper-level winds can move pollutants that originate in other areas into the county.

- Surface temperature inversions (0-500 ft) are most frequent during the winter, and subsidence inversions (1000-2000 ft) are most frequent during the summer. Inversions are an increase in temperature with height and are directly related to the stability of the atmosphere. Inversions act as a cap to the pollutants that are emitted below or within them

and ozone concentrations are often higher directly below the base of elevated inversions than they are at the earth's surface. For this reason, elevated monitoring sites will occasionally record higher ozone concentrations than sites at lower elevations. 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 principal causes of air stagnation.

- Poor air quality is usually 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 northern part of the county where the prevailing winds are usually strong and persistent.

2.3 AIR QUALITY MONITORING

Both the federal and state Clean Air Acts identify pollutants of specific importance, which are known as criteria pollutants. Ambient air quality standards are adopted by the ARB and the United States Environmental Protection Agency (USEPA) to protect public health, vegetation, materials and visibility, shown in **Table 2-1**. State standards for ozone and both respirable (less than 10 microns in diameter-PM_{10}) and fine (less than 2.5 microns in diameter– $PM_{2.5}$) particles are more stringent than federal standards.

Monitoring of ambient air pollutant concentrations is conducted by the ARB, Santa Barbara County Air Pollution Control District (APCD) and industry. Monitors operated by the ARB and APCD are part of the State and Local Air Monitoring System (SLAMS). The SLAMS stations 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 or maintain air quality standards. **Figure 2-1** shows the locations of all monitoring stations in Santa Barbara County that are currently in operation. Note that data collection from the Santa Rosa Island monitoring ceased on December 31, 2004 due to both financial constraints and logistical challenges in collecting data from and maintaining the remote island site.

2.4 STATE AND FEDERAL OZONE EXCEEDANCES

Figure 2-2a presents the number of state and federal ozone exceedances in Santa Barbara County during the period of 1988 to 2006. As shown in the figure, Santa Barbara County has experienced as many as 42 days where the state 1-hour ozone standard was exceeded to no exceedance days in 2005. The number of federal 8-hour ozone standard exceedances ranges from 27 days in both 1988 and 1989 to no exceedance days during 2005 and 2006.

The most striking feature of **Figure 2-2a** is the dramatic decrease in the number of state and federal ozone exceedances since 1988, when the county experienced 42 days where the state 1–

hour ozone standard was exceeded and 27 days where the federal 8-hour ozone standard was exceeded. In contrast, there were no exceedances of the state and federal ozone standard during 2005. A clear declining trend in the number of state and federal ozone exceedances is evident from 1988 through 1999. Since 1999, however, with the relatively low number of state 1-hour and federal 8-hour ozone exceedances experienced in Santa Barbara County each year, the trend is less discernable, and likely more the result of natural year-to-year variability of weather patterns.

The long-term declining trend in both state 1-hour and federal 8-hour exceedance days has occurred concurrently with increases in both population and daily vehicle miles traveled in Santa Barbara County, shown in **Figure 2-2b**. This suggests that local, state and federal emission reduction programs have been effective in improving air quality in Santa Barbara County despite significant increases in population and vehicle miles traveled.

2.5 STATE AIR QUALITY INDICATORS

The California Clean Air Act (CCAA) requires the ARB to evaluate and identify three air quality related indicators for districts to use in assessing their progress toward attainment of the state standards [Health and Safety Code section 39607(f)]. Districts are required to assess their progress triennially and report to the ARB as part of the triennial plan revisions. The assessment must address (1) the peak concentrations in the peak "hot spot" subarea, (2) the population-weighted average of the total exposure, and (3) the area-weighted average of the total exposure (ARB Resolution 90-96, November 8, 1990).

2.5.1 Peak Concentration Indicators

As mentioned above, the ARB specifies the use of three air quality indicators to assess progress toward attaining the state 1-hour ozone standard: peak "hot spot" indicator, population-weighted exposure, and area-weighted exposure. These data were provided by the ARB with the recommendation that we report improvement in air quality using the Expected Peak Day Concentration (EPDC), and two exposure indicators (population-weighted and area-weighted).

The peak "hot spot" indicator is assessed in terms of the EPDC. The EPDC is provided to districts by the ARB for each monitoring site in the county and represents the maximum ozone concentration expected to occur once per year, on average. The EPDC is useful for tracking air quality progress at individual monitoring stations since it is relatively stable, thereby providing a trend indicator that is not highly influenced by year-to-year changes in weather. Simply, progress means the change or improvement in air quality over time that can be attributed to a reduction in emissions rather than the influence of other factors, such as variable weather. The EPDC is also used in the area designation process, which is described in Section 2.6.

The EPDC is calculated using ozone data for a three-year period (the summary year and the two years proceeding the summary year). For example, the 2005 EPDC for a monitoring site uses data from 2003, 2004 and 2005. The data that are used in the calculation are the daily maximum one-hour concentrations. The EPDC is calculated using a complex statistical procedure that analytically

determines for each monitoring site the highest ozone concentration that is expected to recur at a rate of once per year.

Figure 2-3 presents 1988 through 2006 peak air quality indicators for monitoring sites in Santa Barbara County. Note that the Santa Barbara station was offline for several months during 2001, but came back online at the beginning of 2003. Due to the temporary loss of data, the 2002 EPDC value for the Santa Barbara site is not available.

Figure 2-3 shows that peak air quality indicators have declined significantly from 1988 levels at all monitoring stations. 1999 EPDC values (based on 1997, 1998 and 1999 ozone data) fell below the state standard at the GTC-B, Santa Ynez, El Capitan, Goleta, Lompoc HS&P and Santa Barbara sites. The Carpinteria EPDC indicator dropped below the state ozone standard in 2002 from earlier levels that were significantly above the standard. Additionally, the peak indicator for the Las Flores Canyon site fell below the state standard in 2003 and has leveled-off at or below the standard since then. The Paradise Road monitoring site has shown considerable improvement in air quality from earlier years. In fact, based on 2004 through 2006 data, the Paradise Road site has come into compliance with the state 1-hour ozone standard for the first time since monitoring began at the site in 1986.

As discussed previously, the ARB requires that district's assess the peak "hot spot" subareas as one method of determining progress toward meeting state air quality standards. Since 1988, both the Paradise Road and Las Flores Canyon monitoring sites have experienced the most state ozone exceedances in the county, and therefore can be considered hot spot locations, shown in **Table 2-2**. The Las Flores Canyon monitoring site had a maximum of 24 state ozone exceedances in 1990 with no exceedances during 2002, 2005 and 2006, while the number of state exceedances at the Paradise Road site has ranged from 24 in 1988 to no state ozone exceedances during 2000, 2005 and 2006.

The EPDC indicators have improved significantly from earlier levels at both the Las Flores Canyon and Paradise Road sites. The EPDC indicator was as high as 0.140 ppm during 1989 and 1990 at the Las Flores Canyon site decreasing to 0.092 ppm during 2006. At the Paradise Road site, the peak indicator was as high as 0.125 ppm in 1989 and 1991, decreasing to 0.090 ppm by 2006. **Figure 2-4** presents the overall EPDC trend improvement for both the Las Flores Canyon and Paradise Road sites from 1988 to 2006. Based on these data, the overall EPDC improvement for the Las Flores Canyon site from 1988 to 2006 is about 28%. The Paradise Road EPDC trend improvement is about 32% over the period of 1988 to 2006. Additionally, the Paradise Road EPDC has improved over the short-term. From 2003 to 2006, the EPDC from the Paradise Road monitoring site has decreased from 0.105 ppm to 0.090 ppm, representing a short-term improvement of about 14%.

2.5.2 Population and Area Exposure Indicators

Population and area exposure indicators are intended to provide an indication of the potential for chronic adverse health impacts. Unlike the EPDC that tracks air quality progress at individual monitoring sites, the population- and area-weighted exposure indicators consolidate hourly ozone monitoring data from all sites within the county into a single exposure value. The result is a value representing the average potential exposure in an area.

The population exposure indicator is based on the annual number of hours that ozone levels were above the state standard. Hourly ozone concentrations are interpolated to each census tract centroid. Hourly ozone exposures are determined for each centroid by subtracting the value of the state ozone standard from each interpolated hourly concentration. Any computed negative values are set to zero. The hourly exposures for each census tract are multiplied by the number of people residing in the census tract. These hourly exposures are then added together and divided by the total population of all the census tracts for which interpolated exposure values are available.

The area-weighted exposure value is similar to the population exposure except that it is based on the area within each census tract rather than the population in each tract. For area-weighted exposure, the hourly exposures for each census tract are multiplied by the square kilometer land area of the census tract. These hourly exposures are then added together and divided by the total land area for which interpolated exposure values are available. The result represents an hourly area-weighted exposure for the district.

Population-weighted and area-weighted trends are presented in **Figure 2-5a** and **Figure 2-5b**. These figures show that both exposure indicators have decreased over time since 1988 (with the exception of 1989) and that indicator values have been very low during the last few years due to dramatic improvement in air quality. It should be noted that high values during 1989, shown as spikes in the trend data, are due to two specific ozone episodes in March and April of that year where ozone concentrations were significantly higher than both federal and state standards. Due to spikes in the data during 1989, exposure trend data for 1990 to 2005 are presented in a separate figure, shown in **Figure 2-5b**, with a more suitable scale to better display trends during that period. These trends in the population- and area-weighted exposure data suggest that even with population growth and natural fluctuations in weather, air quality has improved significantly since 1988.

2.6 STATE DESIGNATION VALUE

Designation values (DV) are used to determine whether an area is in or out of attainment of applicable air quality standards. The designation value refers to the highest measured concentration remaining at a given site after all measured concentrations affected by extreme concentration events are excluded. In the state designation process, measured concentrations that are higher than the calculated EPDC are identified as being affected by an extreme concentration event (weather conditions conducive to high concentrations of ozone) and are not considered violations of the state standard. If the highest designation value within an area does not exceed the state standard, then the area can be considered in attainment for that pollutant. For example, if the calculated EPDC for a site is 0.096 ppm and the four highest measured ozone concentrations are 0.125, 0.113, 0.102 and 0.094 ppm, then the designation value is equal to 0.10 ppm.. This is because the EPDC of 0.096 is first rounded to 0.10 to be consistent with the precision of the state 1-hour standard, which is two decimal places, and 0.10 is the highest concentration measured (0.102 rounds down to 0.10) that is equal to or lower than the rounded EPDC. The concentrations of 0.125 ppm (rounded to 0.13 ppm) and 0.113 ppm (rounded to 0.11 ppm) are higher than the rounded EPDC of 0.10 and are excluded as an extreme concentrations and are not considered as the DV.

DV data for the period of 1988 to 2006 for Las Flores Canyon and Paradise Road, sites historically measuring the most ozone exceedances, are presented in Figure 2-6. Based on these data, the Paradise Road site has come into compliance with the state 1-hour ozone standard in 2006, marking the first time the standard has been attained at the site since it began operation in 1986.

2.7 FEDERAL 8-HOUR OZONE STANDARD

EPA has established standards (termed National Ambient Air Quality Standards or NAAQS), under the authority of the Federal Clean Air Act that identify safe levels for ozone in the lower atmosphere to prevent and minimize adverse impacts to human health and to crops, forests, and materials. Ozone levels measured in the atmosphere at levels equal to or lower than the standards are viewed as safe, whereas levels above the standards represent a reasonable risk to public health and welfare (non-health related damages), and thus require action to reduce emissions of ozone precursors. The current federal ozone standard is an 8-hour average of 0.08 ppm. This standard is subdivided into primary standards that protect public health and secondary standards that protect public welfare (the numeric value of the standard is the same for primary and secondary standards).

The federal 8-hour ozone standard of 0.08 ppm replaces the 1-hour standard of 0.12 ppm. The 1-hour ozone standard was revoked by EPA effective June 15, 2005. The 8-hour standard is considered more protective of health than the former 1-hour standard since it takes into account health effects over a longer exposure period.

Similar to state 1-hour ozone exceedances, the number of federal 8-hour exceedances has decreased significantly since 1988. As shown in **Figure 2-2a**, the number of 8-hour exceedances in Santa Barbara County have decreased from 27 days in 1988 and 1989 to no exceedance days in both 2005 and 2006. As with the state 1-hour standard, a declining trend was evident between 1988 and 1999 with no real distinguishable trend after about 1999.

2.7.1 Federal 8-hour Design Value

The severity or magnitude of a given area's federal 8-hour ozone nonattainment problem is determined by the ozone design value for that standard. The design value for the federal 8-hour ozone standard is determined by calculating the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at any given monitoring station. The overall federal design value for Santa Barbara County is given by the highest design value of all of the individual monitoring stations in the county.

EPA attainment designations became effective on June 15, 2004 with these designations based on 2001 to 2003 monitoring data. Federal design values for this period are presented in **Table 2-3**. As shown in the table, the highest federal 8-hour design value at any site in Santa Barbara County for 2003 is 0.084 ppm at the Paradise Road site. Santa Barbara County is therefore in compliance with the federal 8-hour ozone standard since the highest design value is less than the federal 8-hour standard itself.

Current 2005 federal design values for each monitoring site in Santa Barbara County utilizing 2003 through 2005 data are presented in **Table 2-4**. These data show that Santa Barbara County has continued to comply with the federal 8-hour ozone standard since designations were made in 2004. As presented in the table, the highest 2005 federal 8-hour designation value for Santa Barbara County is 0.078 ppm at the Paradise Road site. This not only validates continued compliance with the federal 8-hour standard, but it also shows progress in reducing the countywide federal 8-hour design value.

2.8 NEW STATE 8-HOUR OZONE STANDARD

On April 28, 2005, the California Air Resources Board (ARB) approved a new more health protective air quality standard for ozone with special consideration for children's health. The new state 8-hour standard was given final approval by the ARB's Office of Administrative Law on April 17, 2006 and became effective on May 17, 2006. The new 8-hour standard, set at 0.070 ppm, is not to be exceeded and is in addition to the existing state 1-hour ozone standard set at 0.09 ppm. The new standard was adopted pursuant to the Children's Environmental Health Protection Act, passed in 1999, that requires ARB to work in consultation with the Office of Environmental Health Hazard Assessment to "review all existing health-based ambient air quality standards to determine whether these standards protect public health, including infants and children, with an adequate margin of safety."

Note that the new state 8-hour standard has a higher level of precision than the current 1-hour standard. The level of precision for the 1-hour standard is two decimal places whereas the level of precision for the new 8-hour standard is three decimal places. Typically, ozone concentrations are measured in parts per billion (ppb) then converted to ppm then rounded to the appropriate level of precision. The ARB rounding convention is that values of 5 or more round up and values below 5 rounds down. For example, a measured 1-hour ozone concentration of 84 ppb is 0.084 ppm, which is rounded to 0.08 ppm to meet the level of precision of the 1-hour standard. A 1-hour ozone concentration of 85 ppb is 0.085 ppm and rounded to 0.09 ppm. Since the new state 8-hour ozone standard has a higher level of precision, the same rounding process does not apply. That is, an 8-hour concentration of 85 ppb is converted to 0.085 ppm and rounding is not necessary because the level of precision of the 8-hour standard is three decimal places. As a consequence of the precision of the new state 8-hour standard, a concentration of 71 ppb (0.071 ppm) is an exceedance of the new standard. Were the precision of the state 8-hour standard similar to the current state 1-hour standard (set at two decimal places), a concentration of 75 ppb (0.075 ppm) would be needed before an exceedance occurs due to the rounding process discussed above.

The most important implications of the new 8-hour ozone standard are:

- The new 8-hour standard will be more difficult to attain as it is more health protective than existing state and federal ozone standards.
- Implementation of the new standard will extend our planning mandates to develop Clean Air Plan progress reports and plan revisions.
- The new standard will extend our programs for Rule Development, New Source Review

(NSR) permitting, and analysis of projects using existing thresholds under the California Environmental Quality Act (CEQA).

Compliance with the new 8-hour standard is determined in a manner similar to the state 1-hour standard using the same expected peak day and design value approach. Based on data collected from 2002 through 2004, seven monitoring stations in Santa Barbara County are out of compliance with the new standard (Carpinteria, Las Flores Canyon, Lompoc HS&P, Vandenberg AFB, Nojoqui Summit, Santa Ynez, and Paradise Road). Currently, only the Paradise Road site does not comply with the both existing state 1-hour ozone standard and the new 8-hour standard.

State 8-hour exceedance data for the period of 1988 through 2006 are presented in **Figure 2-7**. These data show that the number of exceedances ranges from a high of 98 days in 1989 to a low of 13 days in 2005. Although we are currently out of compliance with the new state 8-hour standard, the long-term trend shows a significant decrease in the number of state 8-hour exceedances from 1988 to 2006, clearly an indication of air quality improvement in Santa Barbara County over this time period.

2.9 CONCLUSION

This 2007 Plan has been prepared to demonstrate maintenance of the federal 8-hour ozone standard and to document progress toward meeting the state 1-hour and new 8-hour ozone standards. Although Santa Barbara County violates the state 8-hour ozone standard, recent data show that the county has attained the state 1-hour ozone standard of 0.09 ppm, evidence that the air quality of the county has improved dramatically over the years. This air quality improvement is clearly seen in the EPDC data, which show that the EPDC has decreased below that state 1-hour ozone standard at all sites in the county including Paradise Road, where the EPDC has historically exceeded standard. A further indication of air quality improvement is shown in the historical exceedance data, where the number of state 1-hour exceedances has decreased from 42 days in 1988 to no exceedances in 2005, with only one exceedance in 2006. Additionally, the number of federal 8-hour exceedances has decreased from 27 days in both 1988 and 1989 to no exceedance days in 2005. Based on a 2003 federal design value of 0.084 ppm, Santa Barbara County has been designated as an attainment area for the federal 8-hour ozone standard. The 2005 federal 8-hour design value of 0.078 ppm shows improvement in air quality and continued compliance with the federal 8-hour standard.

A new state 8-hour standard was approved by the ARB on April 28, 2005 and became effective on May 17, 2006. The new standard is in addition to the current state 1-hour standard and is considered more health protective than the current 1-hour standard, particularly for children and other sensitive individuals. Based on current monitoring data, Santa Barbara County will be out compliance with the new state 8-hour standard when designations are made by the ARB.

TABLE 2-1
AMBIENT AIR QUALITY STANDARDS

		California Standards[1]		National Standards[2]		
Pollutant	**Averaging Time**	**Concentration[3]**	**Attainment Status**	**Primary[2, 4]**	**Secondary[2, 5]**	**Attainment Status**
Ozone	8 Hour	0.070 ppm (137 ug/m^3)	**N[8]**	0.08 ppm (157 ug/m^3)	Same as Primary	A
	1 Hour	0.09 ppm (180 ug/m^3)	**A**	0.12 ppm[9] (235 ug/m^3)	Same as Primary	A
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	A	9.0 ppm (10 mg/m^3)	Same as Primary	A
	1 Hour	20.0 ppm (23 mg/m^3)	A	35.0 ppm (40 mg/m^3)		A
Nitrogen Dioxide[10]	Annual Average	0.03 ppm (56 µg/m^3)	A	0.053 ppm (100 ug/m^3)	Same as Primary	A
	1 Hour	0.18 ppm (339 µg/m^3)	A	--		-
Sulfur Dioxide	Annual Average	--	-	0.03 ppm (80 ug/m^3)		A
	24 Hour	0.04 ppm[6] (105 ug/m^3)	A	0.14 ppm (365 ug/m^3)	--	A
	3 Hour	--	-	--	0.5 ppm (1,300 ug/m^3)	A
	1 Hour	0.25 ppm (655 ug/m^3)	A	--	--	-
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 ug/m^3	**N**	--	--	
	24 Hour	50 ug/m^3	**N**	150 ug/m^3	Same as Primary	A
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 ug/m^3	U	15 ug/m^3	Same as Primary	U
	24 Hour	--	-	35 ug/m^3 [11]	Same as Primary	U
Sulfates	24 Hour	25 ug/m^3	A		--	-
Lead	Calendar Quarter	--	A	1.5 ug/m^3	Same as Primary	A
	30 Day Average	1.5 ug/m^3	-	--	--	-
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m^3)	A		--	-
Vinyl Chloride (Chloroethene)	24 Hour	0.010 ppm (26 ug/m^3)	A		--	-
Visibility Reducing Particles[7]	8 Hour (1000 to 1800 PST)		A		--	-

TABLE 2-1 (CONCLUDED)

FOOTNOTES:

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 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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 Environmental Protection Agency.

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 EPA.

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) This state 8-hour ozone standard went into effect in June, 2006. Official designations have not yet been announced; our data indicate we will be considered in nonattainment of this standard.

9) This federal 1-hour ozone standard was revoked in 2005.

10) The state Nitrogen Dioxide ambient air quality standard was amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected at the end of 2007.

11) Effective December 18, 2006, the USEPA revoked the annual PM10 standard and lowered the 24-hour PM2.5 standard, with the changes reflected in the table.

TABLE 2-2

NUMBER OF DAYS EXCEEDING STATE AND FEDERAL OZONE STANDARDS BY SITE AND COUNTYWIDE

1988 - 2006*

* preliminary data

		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	Federal 8-Hour	8	7	1	4	6	2	4	3	4	1	1	1	0	0	0	0	1	0	0
	State 8-Hour	26	22	8	10	16	19	15	13	18	9	3	2	7	3	0	3	5	0	1
Carpinteria	State 1-Hour	10	14	5	8	9	6	11	7	8	4	3	1	1	1	0	1	0	0	1
	Federal 8-Hour	3	2	1	0	3	1	0	3	3	0	1	0	0	0	0	0	1	0	0
	State 8-Hour	10	5	5	3	8	7	4	6	5	1	1	2	0	2	0	1	3	0	0
El Capitan	State 1-Hour	0	3	2	2	6	3	2	5	4	0	1	0	0	0	0	1	1	0	0
	Federal 8-Hour	3	3	3	0	6	2	2	2	1	0	0	0	0	0	0	0	1	0	0
	State 8-Hour	14	10	7	9	12	12	5	10	8	4	1	1	0	0	0	1	2	0	0
Goleta	State 1-Hour	5	6	5	5	8	5	3	3	5	0	1	1	0	0	0	1	0	0	0
	Federal 8-Hour	3	2	3	1	1	3	0	1	4	0	1	0	0	0	0	1	0	0	0
	State 8-Hour	6	7	11	10	9	9	3	6	13	1	2	1	0	1	0	3	2	0	0
Nojoqui	State 1-Hour	4	5	4	7	5	5	2	3	5	1	0	0	1	0	0	1	0	0	0
	Federal 8-Hour	6	14	15	7	9	5	9	12	12	1	2	2	0	1	0	1	2	0	0
Las Flores	State 8-Hour	33	56	54	39	31	25	39	40	30	23	23	9	11	11	3	4	16	4	3
Canyon	State 1-Hour	10	23	24	12	15	9	15	15	14	5	5	1	4	1	0	1	2	0	0
	Federal 8-Hour	1	3	0	1	0	2	1	1	2	0	1	0	0	0	0	0	2	0	0
Lompoc	State 8-Hour	17	7	5	4	3	11	4	4	10	6	1	5	2	2	1	7	6	0	0
HS&P	State 1-Hour	4	5	1	3	1	3	1	1	3	0	1	0	1	0	0	1	1	0	0
	Federal 8-Hour	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lompoc H	State 8-Hour	3	2	1	1	3	2	0	2	2	0	0	0	0	0	1	0	1	0	0
Street	State 1-Hour	1	1	0	1	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0
	Federal 8-Hour	19	16	14	15	9	4	3	4	12	2	5	1	2	2	5	5	0	0	0
Paradise	State 8-Hour	76	70	61	85	44	38	20	22	40	23	34	24	30	28	32	35	15	10	14
Road	State 1-Hour	24	20	10	22	12	7	5	6	10	3	11	3	0	4	3	6	0	0	0
	Federal 8-Hour	0	5	0	0	1	0	0	1	2	0	1	0	0	0	0	0	0	0	0
	State 8-Hour	11	8	5	4	11	8	9	7	14	3	2	1	0	2	1	6	3	1	1
Santa Ynez	State 1-Hour	3	6	0	3	4	1	1	1	4	1	2	0	0	1	0	0	0	0	0
	Federal 8-Hour	0	3	1	2	1	1	0	1	2	0	0	1	0	0	0	0	0	0	0
	State 8-Hour	2	9	8	3	7	10	3	5	6	1	2	2	0	0	1	5	5	0	0
VAFB STS	State 1-Hour	0	3	3	2	1	1	0	1	2	0	0	1	0	0	0	0	0	0	0
	Federal 8-Hour	27	27	26	25	16	10	11	16	19	4	6	2	2	3	5	5	2	0	0
	State 8-Hour	97	98	87	97	64	55	50	57	57	42	48	31	37	34	35	40	19	13	16
Countywide	State 1-Hour	42	39	37	37	25	18	22	24	23	10	15	3	6	5	3	7	2	0	0

TABLE 2-3

2003 DESIGN VALUE FOR MONITORING STATIONS IN SANTA BARBARA COUNTY FEDERAL 8-HOUR OZONE STANDARD 2001 - 2003 DATA (PPB)*

Station Name	2001 4th High	2002 4th High	2003 4th High	Average
Carpinteria	**69** 10/15/01	**63** 10/04/02	**69** 10/26/03	**67**
El Capitan	**70** 05/24/01	**61** 07/01/02	**69** 09/18/03	**66**
GTC B	**63** 07/04/01	**65** 08/09/02	**64** 10/25/03	**64**
Lompoc HS&P	**69** 10/15/01	**68** 09/09/02	**74** 04/08/03	**70**
Paradise Road	**83** 07/03/01	**85** 08/09/02	**86** 10/14/03	**84**
Exxon 1	**76** 05/05/01	**70** 09/13/02	**71** 05/20/03	**72**
VAFB STS	**63** 10/15/01	**63** 10/05/02	**71** 10/26/03	**65**
Goleta	**63** 05/05/01	**56** 08/28/02	**64** 10/15/03	**61**
Lompoc H Street	**57** 03/31/01	**63** 09/10/02	**58** 09/18/03	**59**
Santa Barbara	**52** 08/18/01	**50** 08/13/02	**63** 09/20/03	**55**
Santa Maria	**51** 05/03/01	**49** 10/07/02	**52** 10/12/03	**50**
Santa Ynez	**67** 05/07/01	**67** 08/08/02	**73** 07/18/03	**69**
Santa Rosa Island	**64** 10/15/01	**66** 09/01/02	**64** 10/16/03	**64**

*EPA 8-hour Ozone designations became effective June 15, 2004. Designations were based on 2001-2003 monitoring data.

TABLE 2-4

2005 DESIGN VALUE FOR MONITORING STATIONS IN SANTA BARBARA COUNTY FEDERAL 8-HOUR OZONE STANDARD 2003 - 2005 DATA (PPB)

Station Name	2003 4th High		2004 4th High		2005 4th High		Average
Carpinteria	**69**	10/26/03	**72**	09/07/04	**51**	04/13/05	**64**
El Capitan	**69**	09/18/03	**69**	05/15/04	**63**	04/15/05	**67**
GTC B	**64**	10/25/03	**67**	04/25/04	**50**	04/13/05	**60**
Lompoc HS&P	**74**	04/08/03	**73**	09/08/04	**63**	04/05/05	**70**
Paradise Road	**86**	10/14/03	**76**	04/25/04	**74**	07/16/05	**78**
Exxon 1	**71**	05/20/03	**80**	04/25/04	**71**	08/26/05	**74**
VAFB STS	**71**	10/26/03	**76**	04/26/04	**60**	04/05/05	**69**
Goleta	**64**	10/15/03	**69**	09/07/04	**61**	09/19/05	**64**
Lompoc H Street	**58**	09/18/03	**62**	05/02/04	**49**	09/20/05	**56**
Santa Barbara	**63**	09/20/03	**71**	09/05/04	**59**	04/13/05	**64**
Santa Maria	**52**	10/12/03	**57**	05/02/04	**50**	09/20/05	**53**
Santa Ynez	**73**	07/18/03	**69**	05/02/04	**62**	05/19/05	**68**

Figure 2-1
Santa Barbara County Air Quality Monitoring Stations

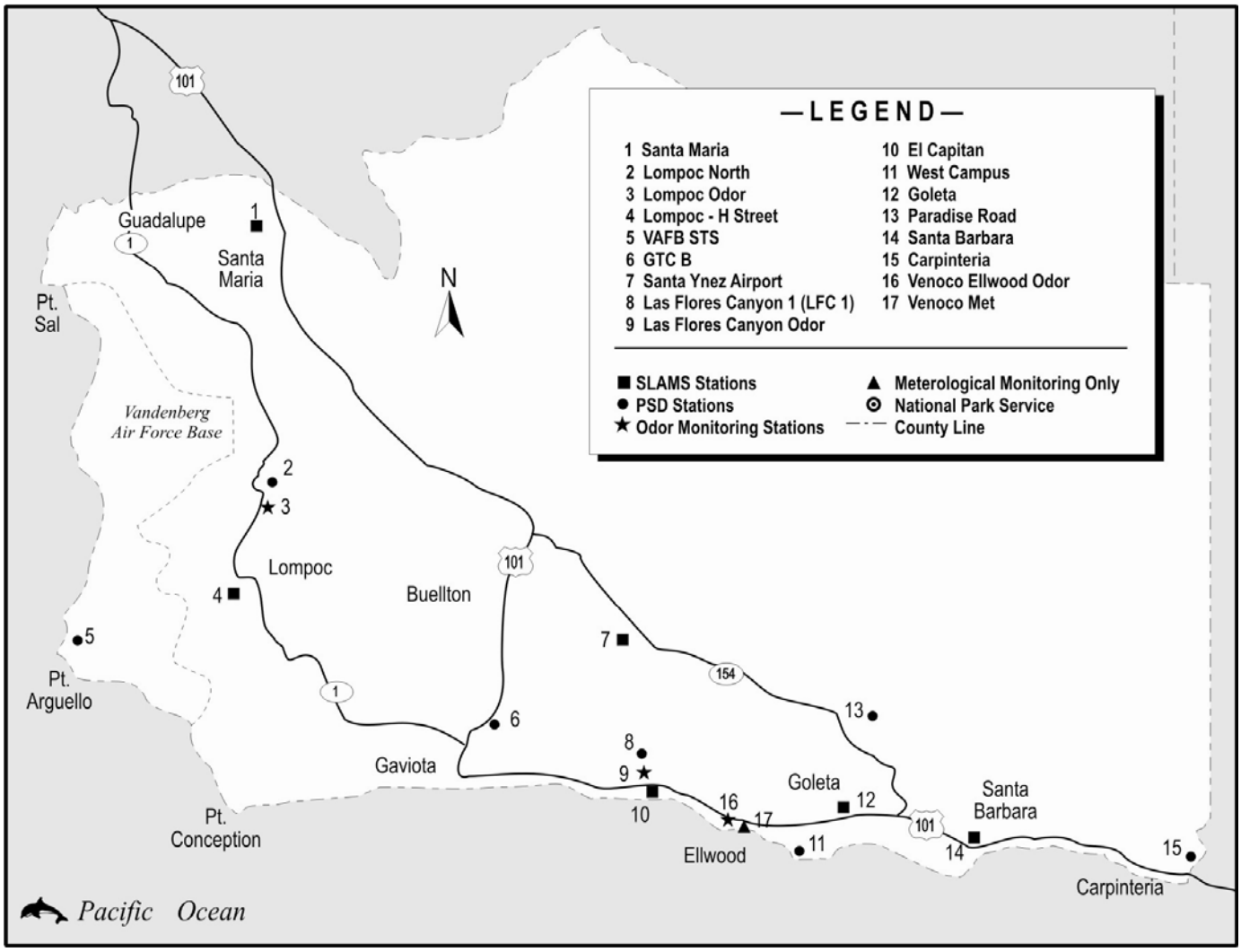
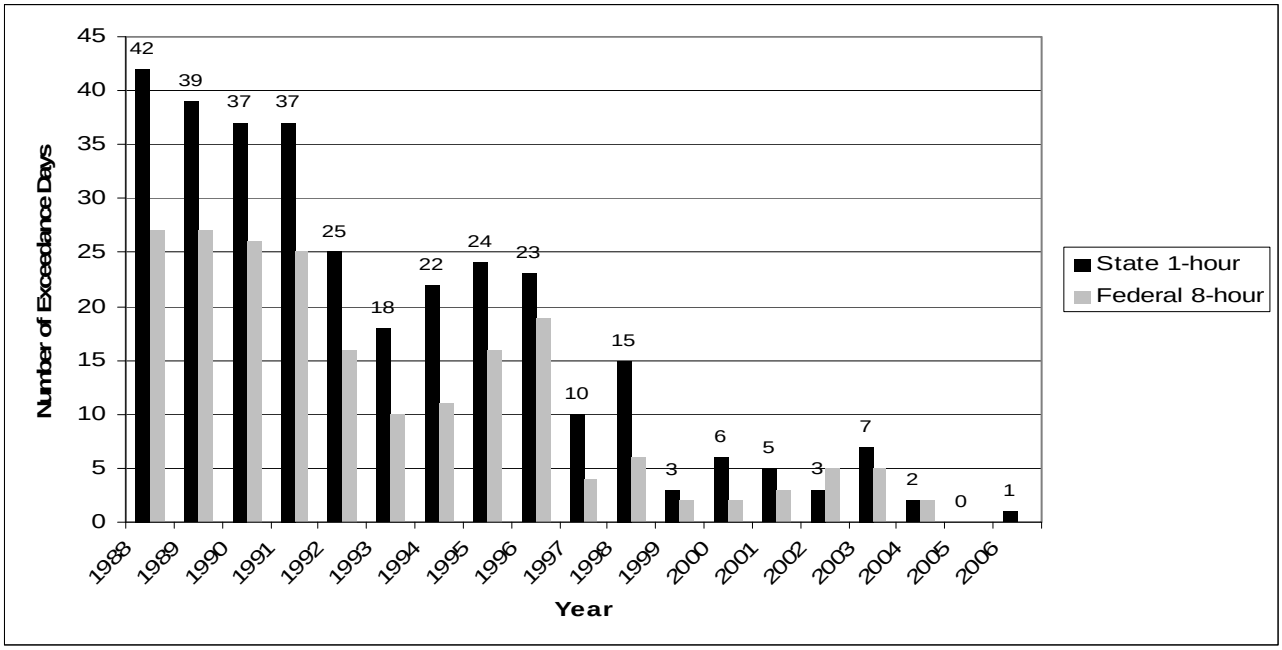


FIGURE 2-2A
NUMBER OF DAYS EXCEEDING STATE AND FEDERAL OZONE STANDARDS
SANTA BARBARA COUNTY
1988 - 2006 *



*** 2006 data are preliminary**

FIGURE 2-2B
POPULATION AND DAILY VEHICLE MILES TRAVELED
SANTA BARBARA COUNTY
1988 - 2006

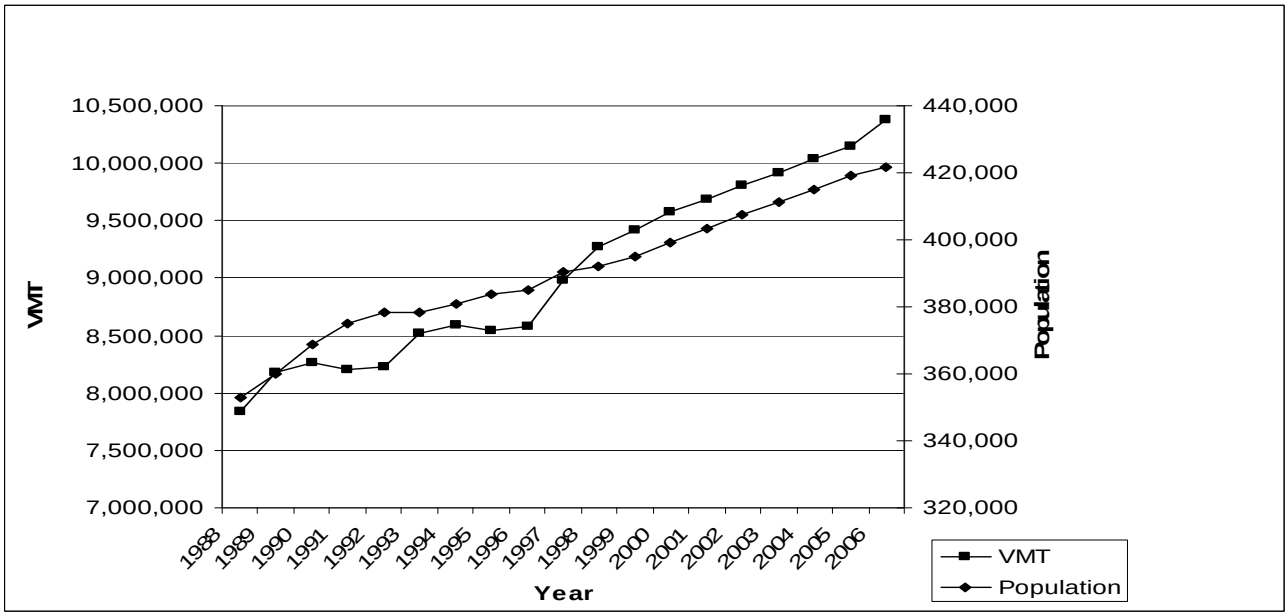
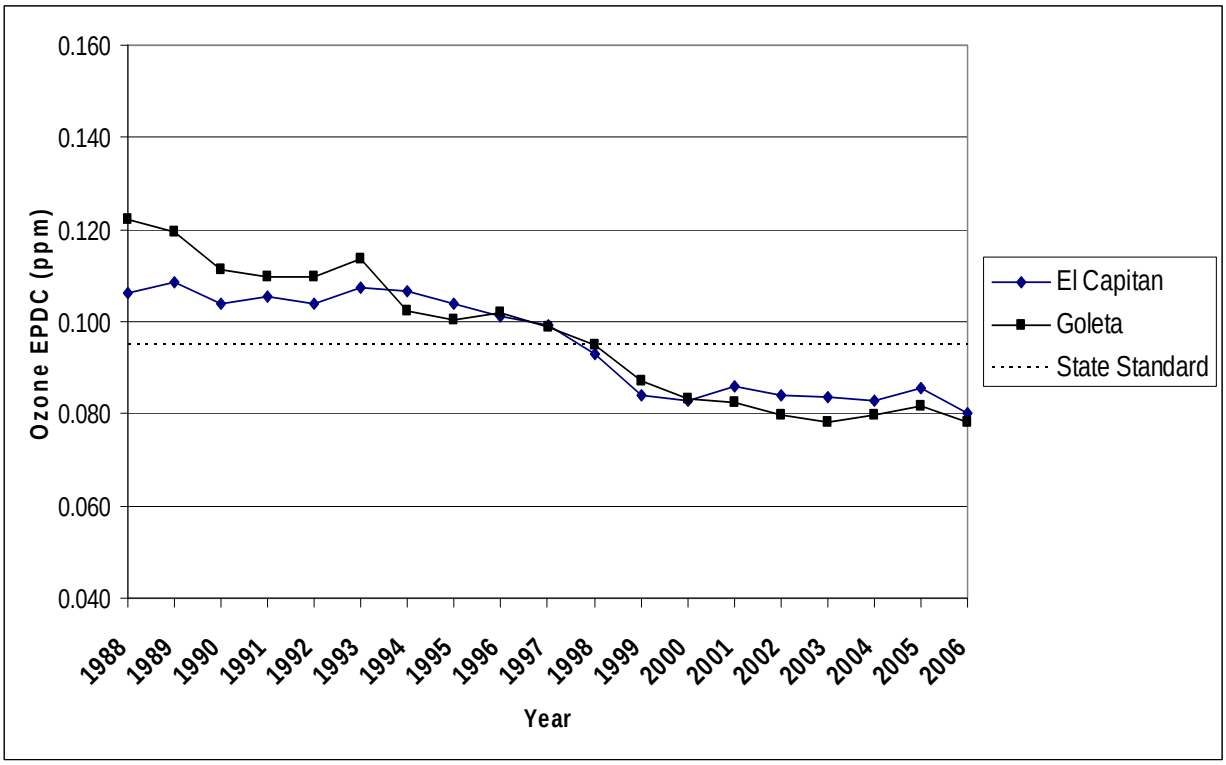


FIGURE 2-3
STATE OZONE EXPECTED PEAK DAY CONCENTRATION
SANTA BARBARA COUNTY MONITORING SITES
1988 - 2006



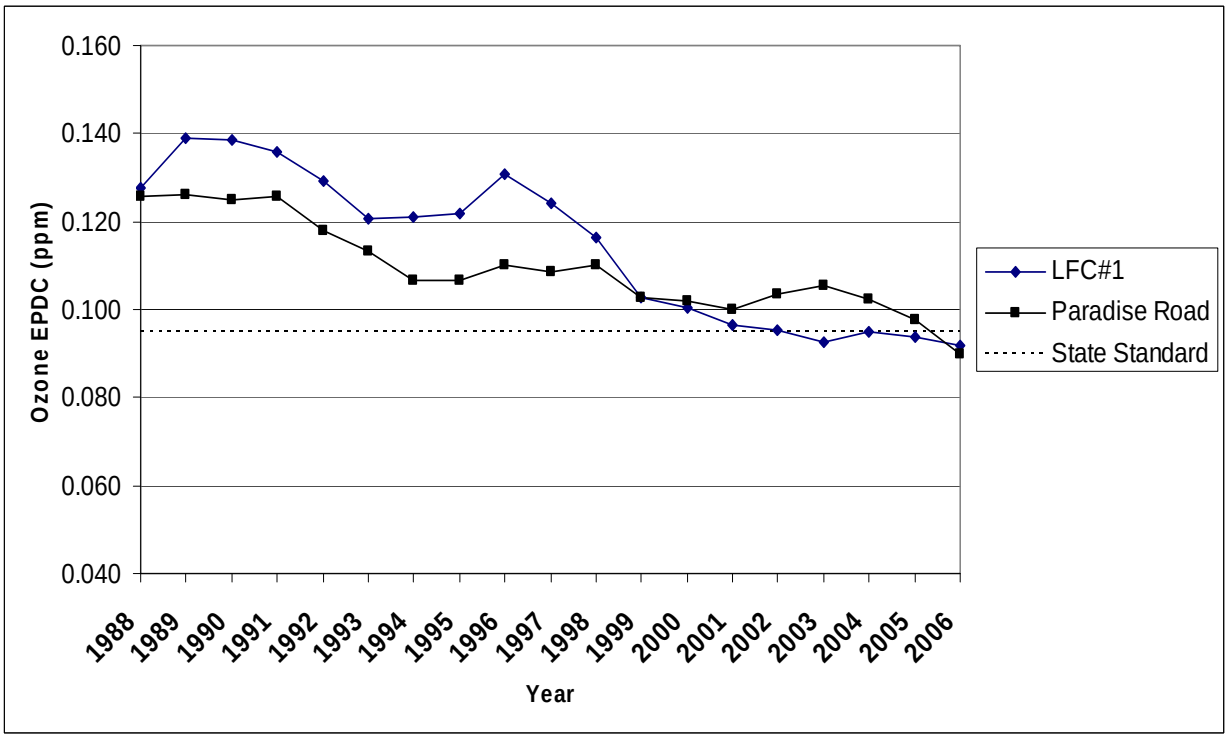
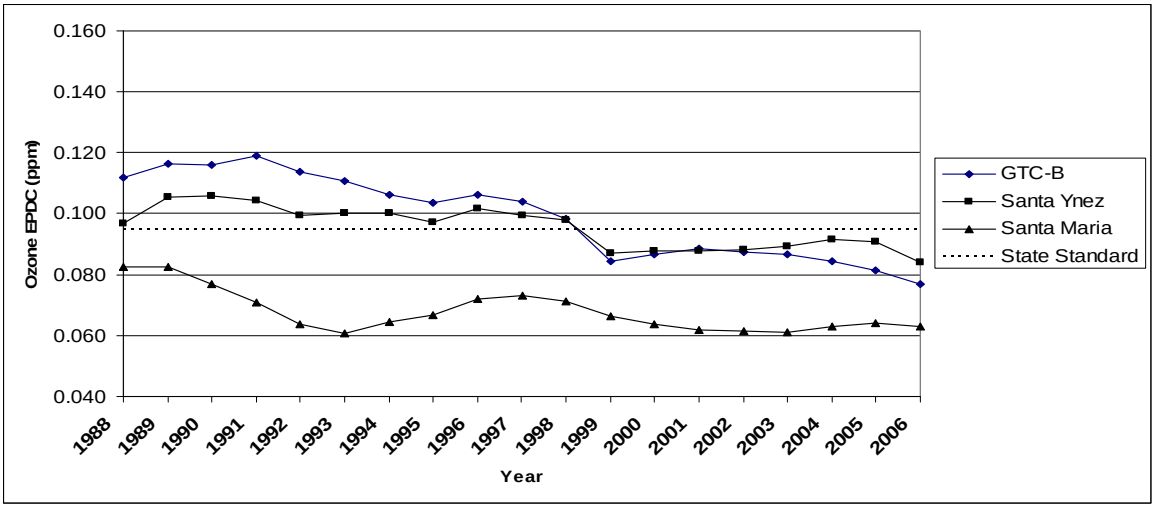
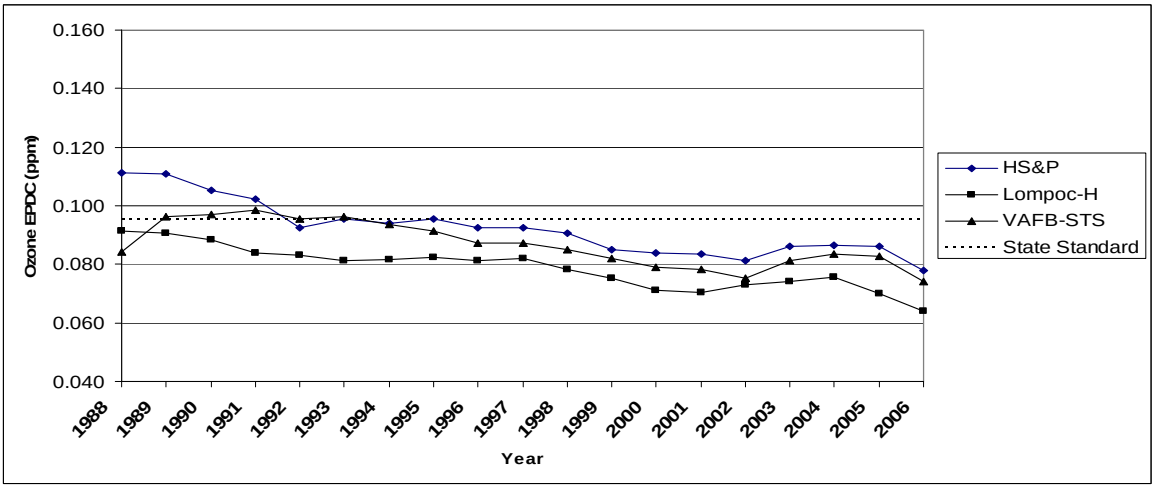


FIGURE 2-3 CONCLUDED
STATE OZONE EXPECTED PEAK DAY CONCENTRATION
SANTA BARBARA COUNTY MONITORING SITES
1988 - 2006





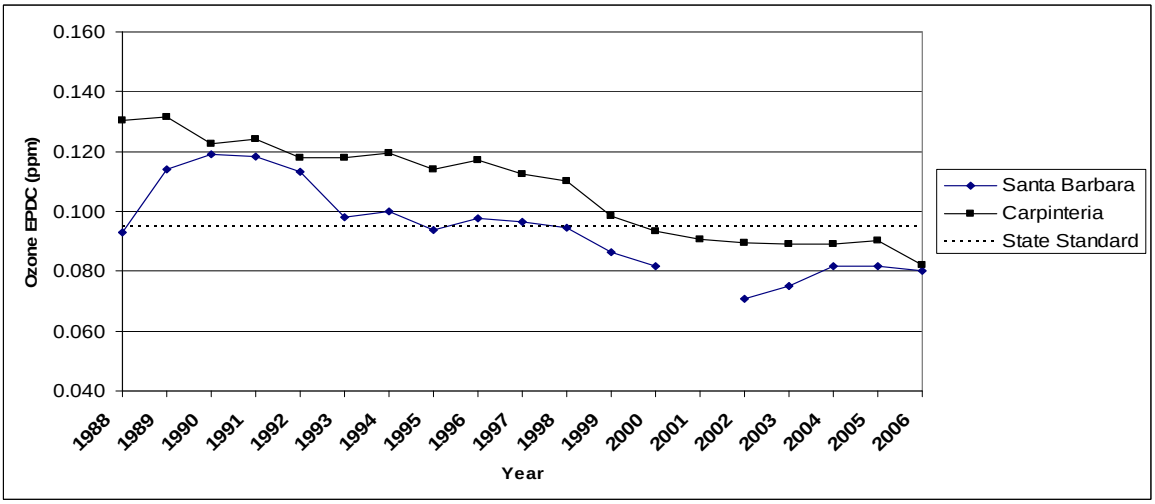
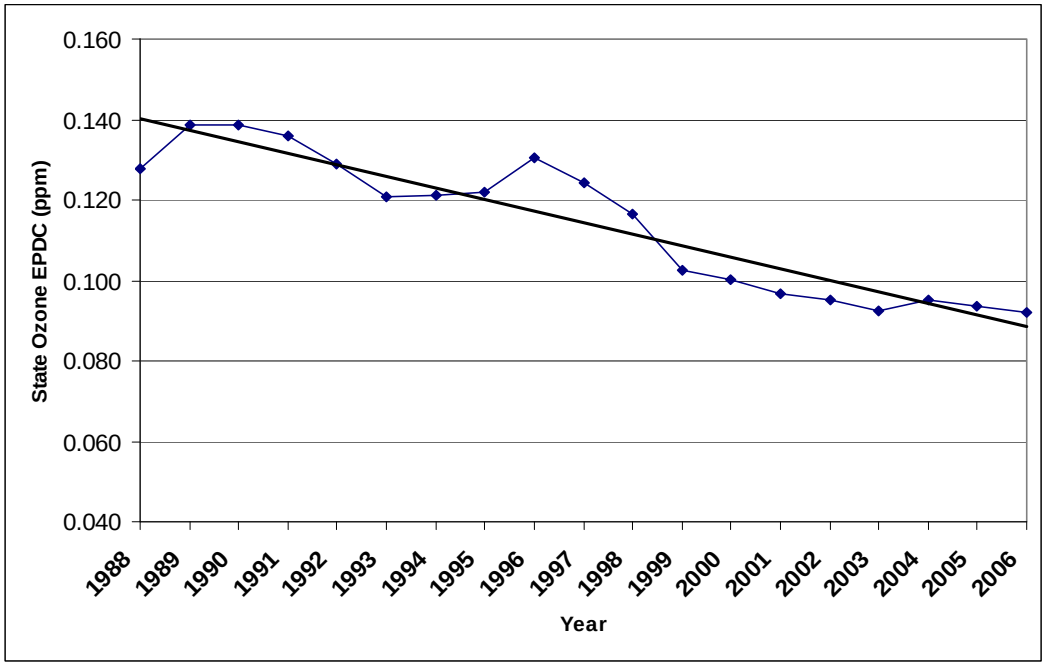


FIGURE 2-4

PEAK "HOT SPOT" EPDC TRENDS
1988 - 2006

LAS FLORES CANYON



PARADISE ROAD

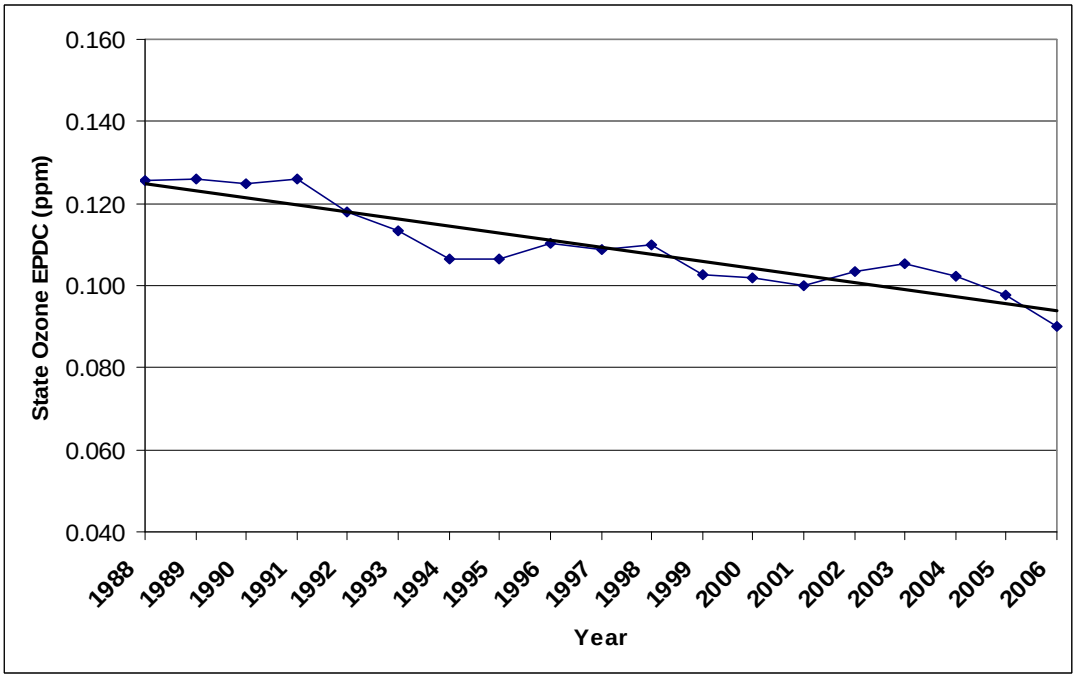


FIGURE 2-5A
POPULATION- AND AREA-WEIGHTED EXPOSURE
SANTA BARBARA COUNTY
1988 - 2005

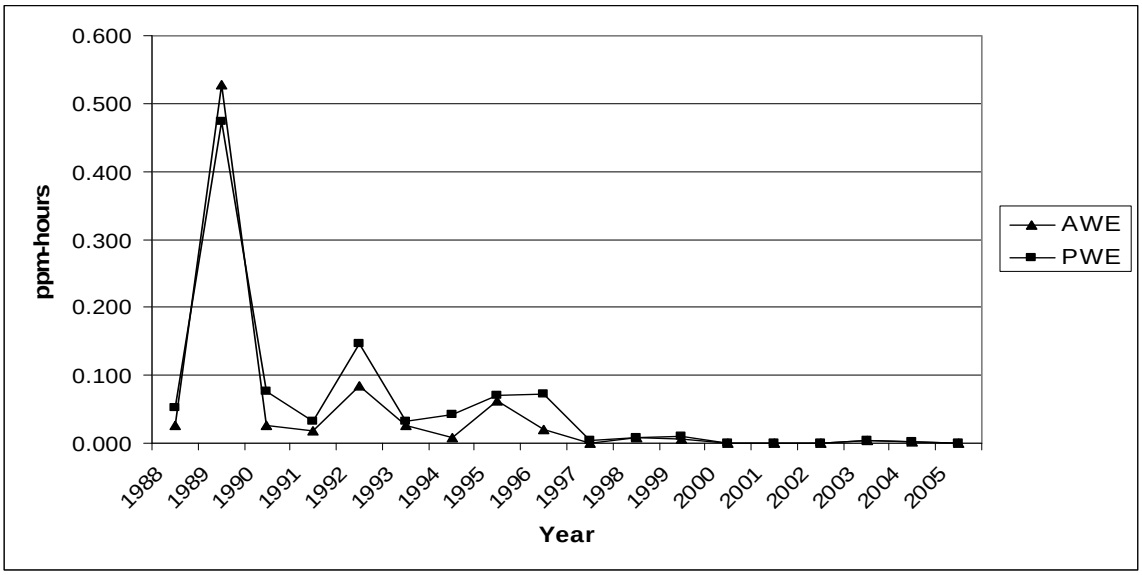


FIGURE 2-5B
POPULATION-AND AREA-WEIGHTED EXPOSURE
SANTA BARBARA COUNTY
1990 - 2005

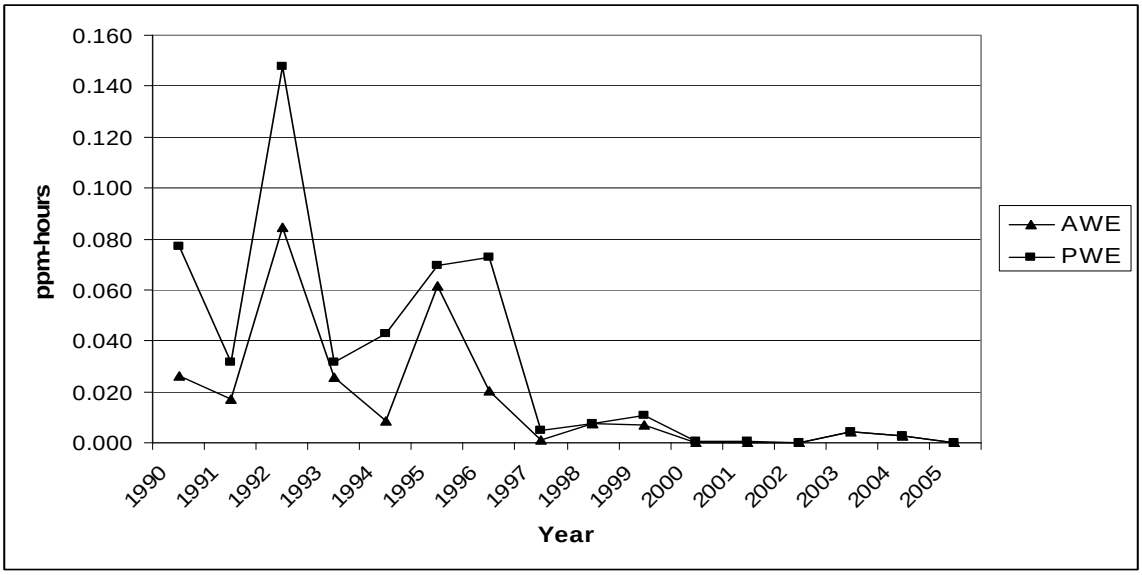
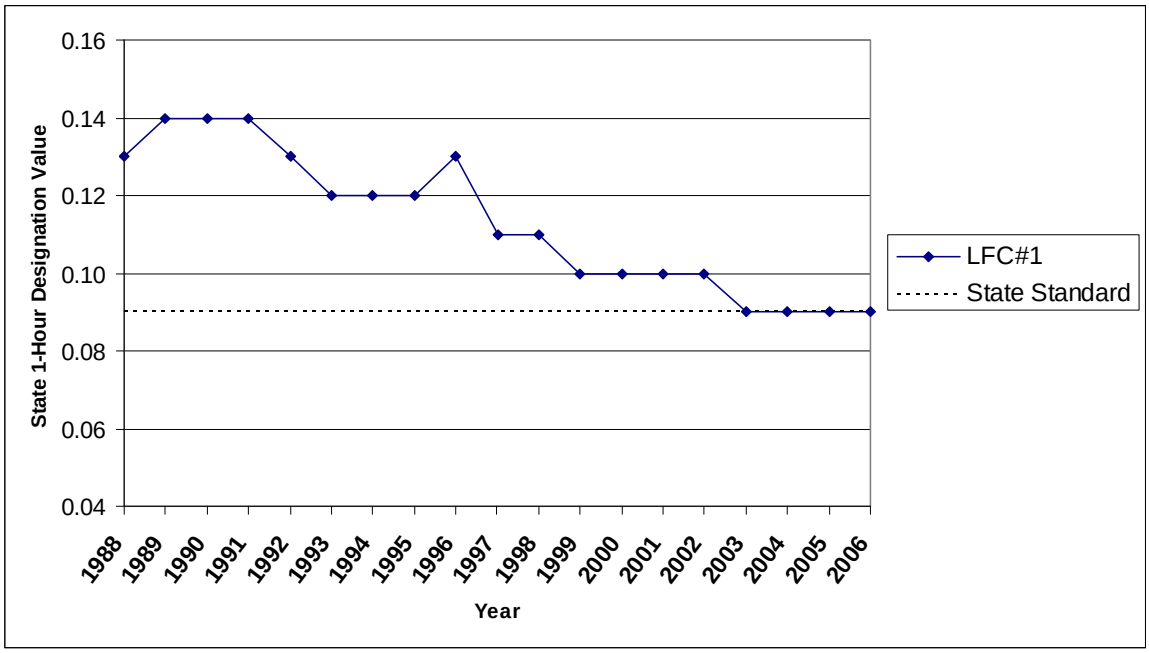


FIGURE 2-6
1988 - 2006 DESIGNATION VALUES
LAS FLORES CANYON AND PARADISE ROAD

LAS FLORES CANYON



PARADISE ROAD

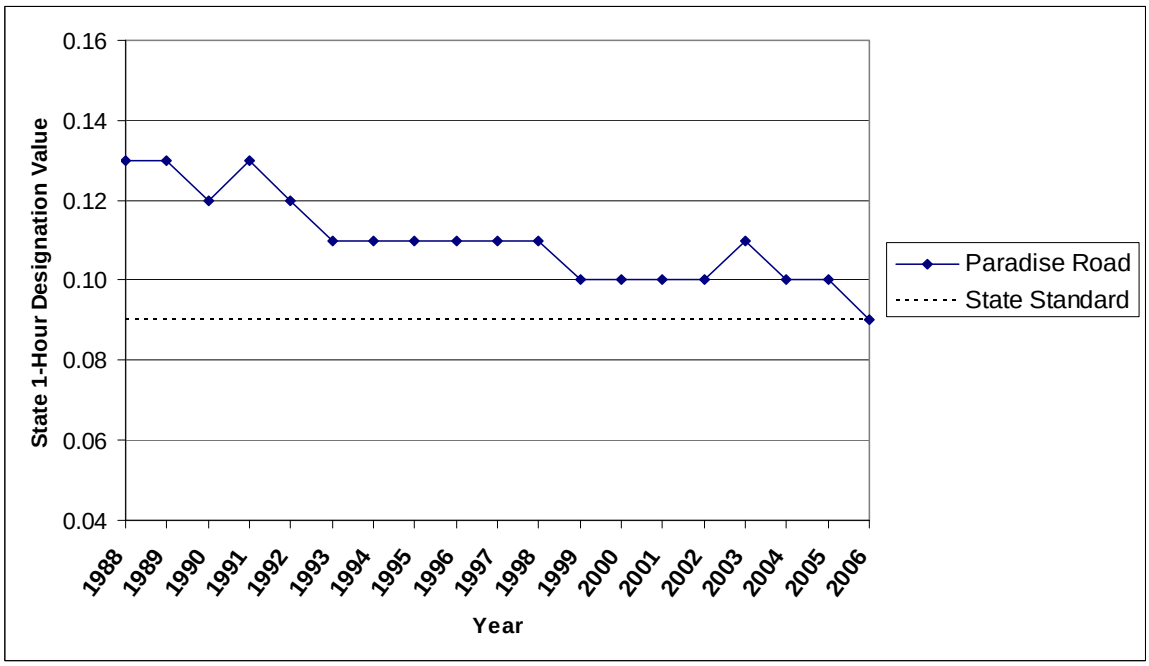
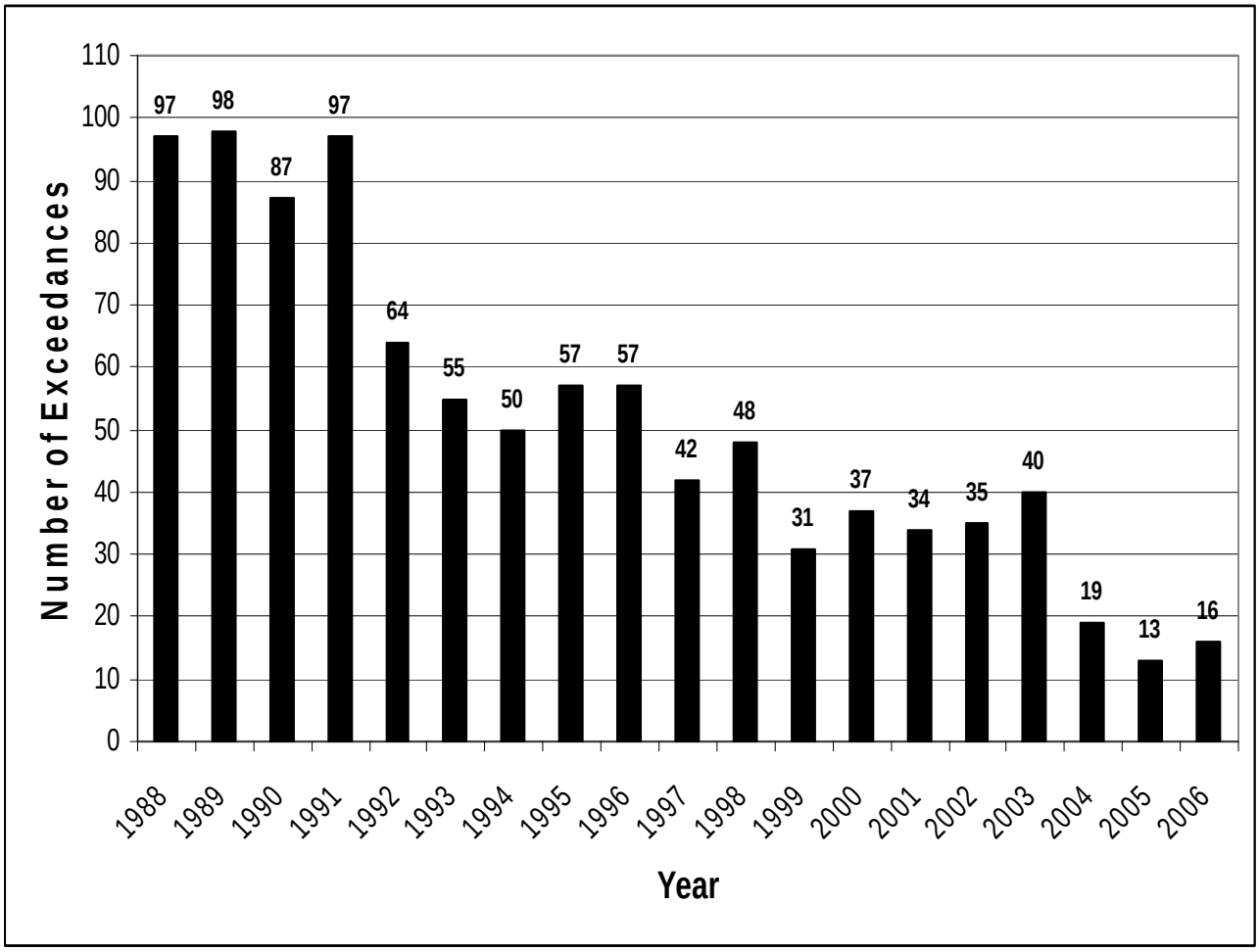


FIGURE 2-7
NUMBER OF DAYS EXCEEDING STATE 8-HOUR OZONE STANDARD
SANTA BARBARA COUNTY
1988 - 2006*



*2006 data are preliminary

CHAPTER 3

EMISSION INVENTORY

- INTRODUCTION
- POLLUTANTS
- EMISSION INVENTORY HIERARCHY
- 2002 ANNUAL EMISSION INVENTORY
- 2002 PLANNING EMISSION INVENTORY
- CONCLUSION

3. EMISSION INVENTORY

3.1 INTRODUCTION

This chapter describes the 2002 emission inventory used in the development of this 2007 Clean Air Plan (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 "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 2002 Annual Emission Inventory, known as the "2002 Planning Emission Inventory," which will be used as the base year to forecast emissions for the years 2010, 2015, and 2020. Please refer to *Chapter 6, Emission Forecasting*, for more discussion on how the 2002 Planning Emission Inventory is used to forecast future emissions.

The 2002 Planning Emission Inventory is a modified subset of the 2002 Annual Emission Inventory and they differ from each other in three ways. First, the creation of the 2002 Planning Emission Inventory involves adjusting the 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 2002 Annual Emission Inventory are excluded from the 2002 Planning Emission Inventory since they are not regulated or controlled through implementation of emission control measures. Finally, the annual emissions in the 2002 Annual Emission Inventory are converted to daily emissions in the 2002 Planning Emission Inventory.

This chapter presents both the 2002 Annual Emission Inventory and the 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 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 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 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): Solvents 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 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 processes 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 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 2007 Plan will provide analysis of the On-Road Motor Vehicle inventory.

The On-Road Motor Vehicles major source category includes 17 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 transportation.
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 ARB has the primary responsibility for estimating the emissions from these categories, the APCD currently estimates the emissions from ships, commercial boats (diesel), OCS crew & supply boats, aircraft, and trains.

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

Virtually all of the Other Mobile Source emissions are related to 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 eight 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, 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.
D. Windblown Dust.

Based on information presented in Sections 3.2 and 3.3, the 2002 Annual Emission Inventory and the 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 2002 ANNUAL EMISSION INVENTORY

The 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 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 2002. The largest sources of each pollutant and their percent of contribution are as follows:

2002 Santa Barbara County ROC Annual Emissions: 43,440 tons per year

- **7% Stationary Sources: 3,211 tons per year**
  Primarily coatings and process solvents, degreasing, adhesives and sealants, and oil and gas production.
- **9% Area-Wide Sources: 3,732 tons per year**
  Primarily consumer products, pesticides, forest management, and farming livestock waste.
- **11% Mobile Sources – On-Road Motor Vehicles: 4,846 tons per year**
  Predominantly light duty passenger cars and light duty trucks.
- **7% Other Mobile Sources: 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.
- **66% Natural Sources: 28,608 tons per year**
  Mostly biogenic sources with a significant contribution from geogenic sources.

2002 Santa Barbara County NO_x Annual Emissions: 16,155 tons per year

- **15% Stationary Sources: 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).
- **3% Area-Wide Sources: 412 tons per year**
  Mostly residential fuel combustion (natural gas space heating and water heating) and forest management.
- **43% Mobile Sources – On-Road Motor Vehicles: 6,877 tons per year**

The majority from light duty passenger cars, light duty trucks, and heavy-heavy duty diesel trucks.

- **34% Other Mobile Sources: 5,515 tons per year**
  Contributors are trains, diesel construction and mining equipment, and diesel agricultural equipment, and transport refrigeration units.
- **5% Natural Sources: 882 tons per year**
  Exclusively biogenic sources.

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, trains, off-road equipment and farm equipment, also contribute large amounts of NO_x emissions.

3.4.2 OCS ANNUAL EMISSIONS

The 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 2002. The largest sources of each pollutant and their percent of contribution are discussed below.

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

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

2002 OCS NO_x Annual Emissions: 14,325 tons per year

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

The 2002 marine shipping inventory was developed using 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 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), 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 grams per kilowatt-hour for container ships. It is assumed that the ships operate at 70 percent load while in transit.

Of the 12,940 tons of NO_x emissions in 2002, about 88% are from foreign motor ships with about 9% from U.S. motor ships.

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, 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 NO_x emissions.

3.5 2002 PLANNING EMISSION INVENTORY

The 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 2002. The largest sources of each pollutant and their relative contribution are discussed in the following section.

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

- **23% Stationary Sources: 9.31 tons per day**
  Primarily coatings and process solvents, degreasing, adhesives and sealants, and oil and gas production.
- **24% Area-Wide Sources: 9.92 tons per day**
  Primarily consumer products, pesticides, forest management, and farming livestock waste.
- **33% Mobile Sources – On-Road Motor Vehicles: 13.28 tons per day**
  Predominantly light duty passenger cars and light duty trucks.
- **20% Other Mobile Sources: 8.34 tons per day**
  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.

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

- **16% Stationary Sources: 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).
- **1% Area-Wide Sources: 0.63 ton per day**
  Mostly residential fuel combustion (natural gas space and water heating) and forest management.
- **46% Mobile Sources – On-Road Motor Vehicles: 18.84 tons per day**
  The majority from light duty passenger cars, light duty trucks, and heavy-heavy duty diesel trucks.
- **37% Other Mobile Sources: 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 2002 OCS Planning Emission Inventory is presented in **Table 3-4**. 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 2002. The largest sources of each pollutant and their percent of contribution are discussed as follows.

2002 OCS ROC Planning Emissions: 3.88 tons per day

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

2002 OCS NO_x Planning Emissions: 39.26 tons per day

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

In summary, the most significant contributors of ROC and NO_x emissions to the Planning Emission Inventory on the OCS are from ships (foreign motor ships).

3.6 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 2007 Plan is on the ozone precursors of ROC and NO_x. We have also discussed the development of the 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 2010, 2015, and 2020.

In Santa Barbara County, the largest contributor of ROC emissions is from natural sources in the Annual Emission Inventory and 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 other mobile sources (predominately international marine shipping activities).

TABLE 3 – 1 2002 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	1.84	0.0050	8.89	0.0244
020	COGENERATION	13.08	0.0358	43.18	0.1183
030	OIL AND GAS PRODUCTION (COMBUSTION)	86.63	0.2374	561.21	1.5376
040	PETROLEUM REFINING (COMBUSTION)	0.81	0.0023	18.13	0.0497
050	MANUFACTURING AND INDUSTRIAL	30.73	0.0853	420.20	1.1559
052	FOOD AND AGRICULTURAL PROCESSING	45.40	0.1226	1,102.56	3.0207
060	SERVICE AND COMMERCIAL	12.79	0.0295	231.80	0.4787
099	OTHER (FUEL COMBUSTION)	0.00	0.0000	0.00	0.0000
	Fuel Combustion Total	**191.28**	**0.5179**	**2,385.97**	**6.3853**
Waste Disposal					
110	SEWAGE TREATMENT	0.10	0.0003	3.23	0.0088
120	LANDFILLS	123.06	0.3372	1.25	0.0034
130	INCINERATORS	0.34	0.0009	3.14	0.0086
140	SOIL REMEDIATION	94.69	0.8064	0.00	0.0000
199	OTHER (WASTE DISPOSAL)	0.00	0.0000	0.00	0.0000
	Waste Disposal Total	**218.19**	**1.1448**	**7.62**	**0.0208**
Cleaning and Surface Coatings					
210	LAUNDERING	2.01	0.0055	0.00	0.0000
220	DEGREASING	577.91	1.5860	0.00	0.0000
230	COATINGS AND RELATED PROCESS SOLVENTS	723.15	1.9794	0.00	0.0000
240	PRINTING	165.10	0.4523	0.00	0.0000
250	ADHESIVES AND SEALANTS	313.57	0.8591	0.00	0.0000
299	OTHER (CLEANING AND SURFACE COATINGS)	35.15	0.0963	0.00	0.0000
	Cleaning and Surface Coatings Total	**1816.90**	**4.9786**	**0.00**	**0.0000**
Petroleum Production and Marketing					
310	OIL AND GAS PRODUCTION	657.90	1.8019	27.01	0.0740
320	PETROLEUM REFINING	16.07	0.0441	0.05	0.0001
330	PETROLEUM MARKETING	217.91	0.5971	0.00	0.0000
	Petroleum Production and Marketing Total	**891.88**	**2.4431**	**27.06**	**0.0741**
Industrial Processes					
410	CHEMICAL	9.49	0.0260	0.00	0.0000
420	FOOD AND AGRICULTURE	44.75	0.1329	0.00	0.0000
430	MINERAL PROCESSES	4.01	0.0110	17.34	0.0475
440	METAL PROCESSES	NA	NA	NA	NA
450	WOOD AND PAPER	NA	NA	NA	NA
470	ELECTRONICS	0.11	0.0006	0.00	0.0000
499	OTHER (INDUSTRIAL PROCESSES)	34.17	0.0523	30.62	0.0839
	Industrial Processes Total	**92.53**	**0.2228**	**47.96**	**0.1314**
	STATIONARY SOURCES TOTAL	**3,210.78**	**9.3072**	**2,468.61**	**6.6116**

	TABLE 3 – 1 2002 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	1,114.24	3.0527	0.00	0.0000
520	ARCHITECTURAL COATINGS AND SOLVENTS	616.30	1.6885	0.00	0.0000
530	PESTICIDES/FERTILIZERS	1,138.29	3.1186	0.00	0.0000
540	ASPHALT PAVING/ROOFING	79.40	0.2755	0.00	0.0000
	Solvent Evaporation Total	**2,948.23**	**8.1353**	**0.00**	**0.0000**
	Miscellaneous				
610	RESIDENTIAL FUEL COMBUSTION	52.80	0.1273	308.58	0.4875
620	FARMING OPERATIONS	454.13	1.2442	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	1.28	0.0035	0.40	0.0011
670	MANAGED BURNING AND DISPOSAL	264.81	0.3828	103.44	0.1440
690	COOKING	10.46	0.0287	0.00	0.0000
699	OTHER (MISCELLANEOUS PROCESSES)	0.00	0.0000	0.00	0.0000
	Miscellaneous Total	**783.48**	**1.7865**	**412.42**	**0.6326**
	AREA-WIDE SOURCES TOTAL	**3,731.71**	**9.9218**	**412.42**	**0.6326**
	MOBILE SOURCES				
	On-Road Motor Vehicles				
710	LIGHT DUTY PASSENGER	2,230.52	6.1110	1,853.84	5.0790
722	LIGHT DUTY TRUCKS – 1	997.55	2.7330	1,105.22	3.0280
723	LIGHT DUTY TRUCKS – 2	697.52	1.9110	1,062.15	2.9100
724	MEDIUM DUTY TRUCKS	154.03	0.4220	310.62	0.8510
732	LIGHT HEAVY DUTY GAS TRUCKS – 1	107.31	0.2940	79.21	0.2170
733	LIGHT HEAVY DUTY GAS TRUCKS – 2	124.47	0.3410	109.50	0.3000
734	MEDIUM HEAVY DUTY GAS TRUCKS	142.72	0.3910	118.99	0.3260
736	HEAVY HEAVY DUTY GAS TRUCKS	112.06	0.3070	317.19	0.8690
742	LIGHT HEAVY DUTY DIESEL TRUCKS – 1	0.73	0.0020	11.68	0.0320
743	LIGHT HEAVY DUTY DIESEL TRUCKS – 2	3.65	0.0100	85.78	0.2350
744	MEDIUM HEAVY DUTY DIESEL TRUCKS	13.51	0.0370	669.78	1.8350
746	HEAVY HEAVY DUTY DIESEL TRUCKS	55.12	0.1510	790.23	2.1650
750	MOTORCYCLES	147.46	0.4040	33.95	0.0390
760	HEAVY DUTY DIESEL URBAN BUSES	1.10	0.0030	130.31	0.3570
762	HEAVY DUTY GAS URBAN BUSES	12.41	0.0340	8.40	0.0230
770	SCHOOL BUSES	6.21	0.0170	78.84	0.2160
776	OTHER BUSES	10.22	0.0280	37.23	0.1020
780	MOTOR HOMES	29.57	0.0847	74.10	0.2030
	On-Road Motor Vehicles Total	**4,846.11**	**13.2770**	**6,876.97**	**18.8410**

TABLE 3 – 1 2002 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	282.66	0.7744	31.56	0.0865
820	TRAINS	51.06	0.1399	951.74	2.6075
830	SHIPS AND COMMERCIAL BOATS	14.50	0.0406	176.54	0.4931
840	RECREATIONAL BOATS	502.28	1.3761	35.81	0.0981
850	OFF-ROAD RECREATIONAL VEHICLES	607.25	1.6637	28.25	0.0774
860	OFF-ROAD EQUIPMENT	1,091.35	2.9900	2,969.82	8.1365
870	FARM EQUIPMENT	264.59	0.7249	1,321.74	3.6212
890	FUEL STORAGE AND HANDLING	229.07	0.6276	0.00	0.0000
	Other Mobile Sources Total	**3,042.77**	**8.3372**	**5,515.46**	**15.1203**
	MOBILE SOURCES TOTAL	**7,888.88**	**21.6142**	**12,412.43**	**33.9613**
NATURAL SOURCES					
Natural Sources					
910	BIOGENIC SOURCES	22,532.47	0.0000	882.48	0.0000
920	GEOGENIC SOURCES	6,075.73	0.0000	0.00	0.0000
930	WILDFIRES	0.00	0.0000	0.00	0.0000
940	WINDBLOWN DUST	0.00	0.0000	0.00	0.0000
	Natural Sources Total	**28,608.20**	**0.0000**	**882.48**	**0.0000**
	NATURAL SOURCES TOTAL	**28,608.20**	**0.0000**	**882.48**	**0.0000**
	2002 SANTA BARBARA COUNTY TOTAL	**43,439.57**	**40.8432**	**16,155.94**	**41.2055**

TABLE 3 – 2 2002 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)	24.96	0.0685	295.28	0.8090
	Fuel Combustion Total	**24.96**	**0.0685**	**295.28**	**0.8090**

Cleaning and Surface Coatings

230	COATINGS AND RELATED PROCESS SOLVENTS	19.82	0.0542	0.00	0.0000
	Cleaning and Surface Coatings Total	**19.82**	**0.0542**	**0.00**	**0.0000**

Petroleum Production and Marketing

310	OIL AND GAS PRODUCTION	381.10	1.0440	9.88	0.0271
	Petroleum Production and Marketing Total	**381.10**	**1.0440**	**9.88**	**0.0271**

	STATIONARY SOURCES TOTAL	**425.88**	**1.1667**	**305.16**	**0.8361**

MOBILE SOURCES

Other Mobile Sources

810	AIRCRAFT	7.81	0.0214	5.68	0.0156
830	SHIPS AND COMMERCIAL BOATS	478.47	1.3119	13,978.24	38.3060
840	RECREATIONAL BOATS	508.28	1.3761	35.81	0.0981
	Other Mobile Sources Total	**994.56**	**2.7094**	**14,035.51**	**38.4197**

	MOBILE SOURCES TOTAL	**994.56**	**2.7094**	**14,019.73**	**38.4197**

NATURAL SOURCES

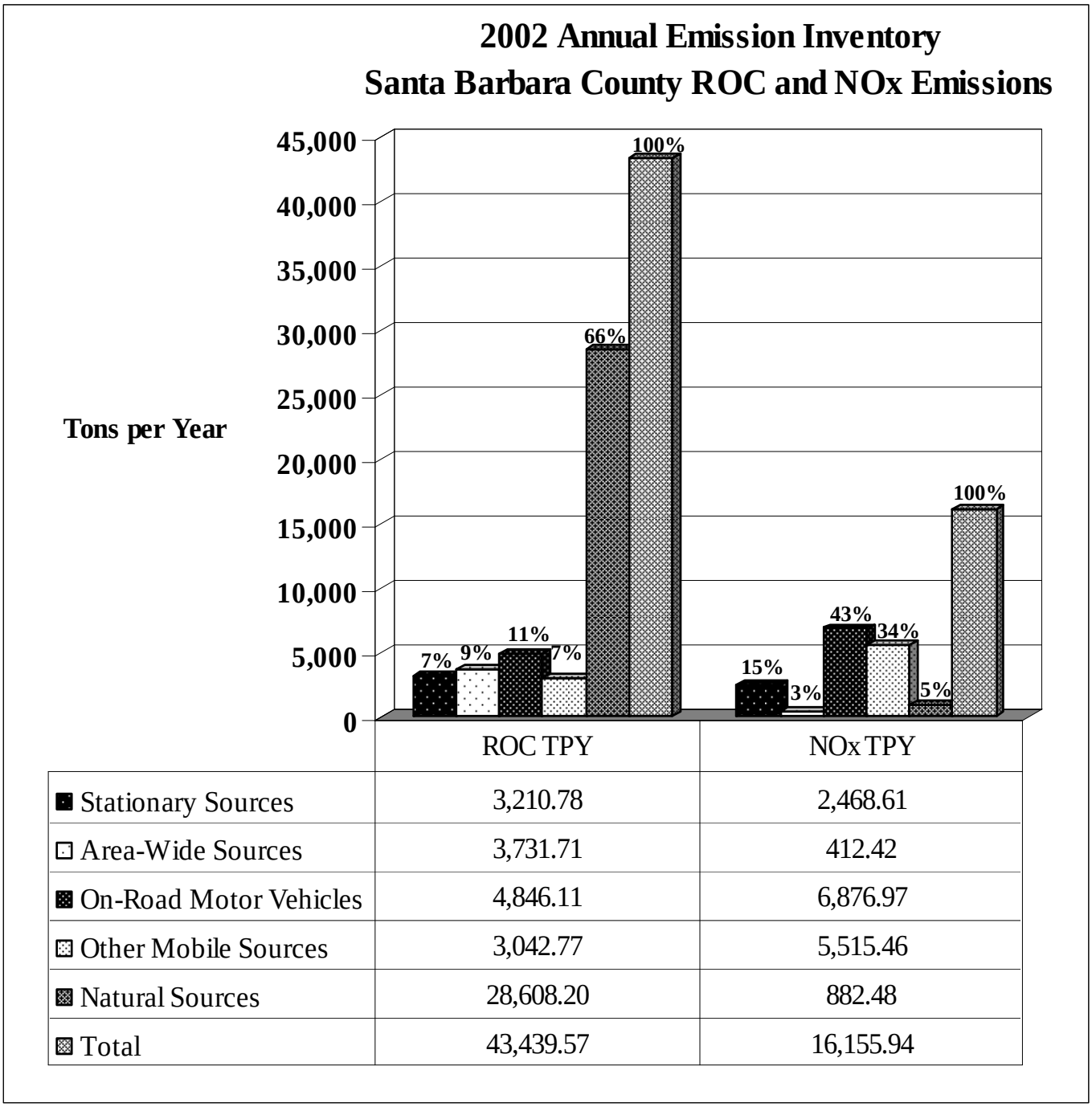
Natural Sources

920	GEOGENIC SOURCES	2,078.90	0.0000	0.00	0.0000
	Natural Sources Total	**2,078.90**	**0.0000**	**0.00**	**0.0000**

	NATURAL SOURCES TOTAL	**2,078.90**	**0.0000**	**0.00**	**0.0000**

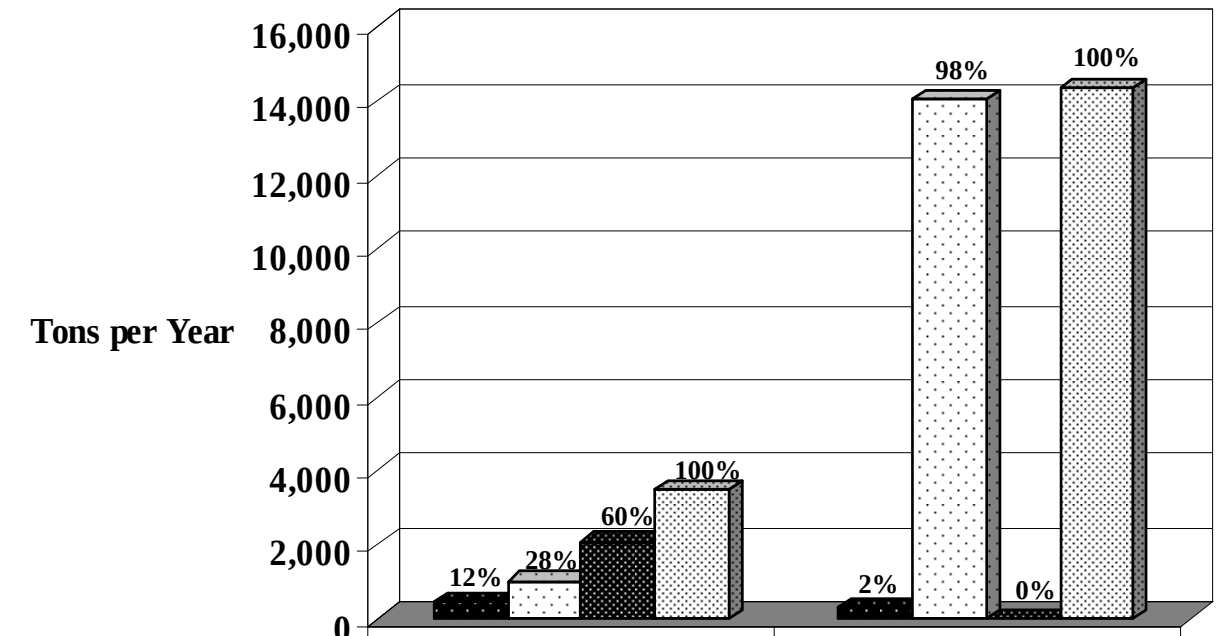
2002 OUTER CONTINENTAL SHELF TOTAL	**3,499.342**	**3.8761**	**14,324.89**	**39.2558**

FIGURE 3-1



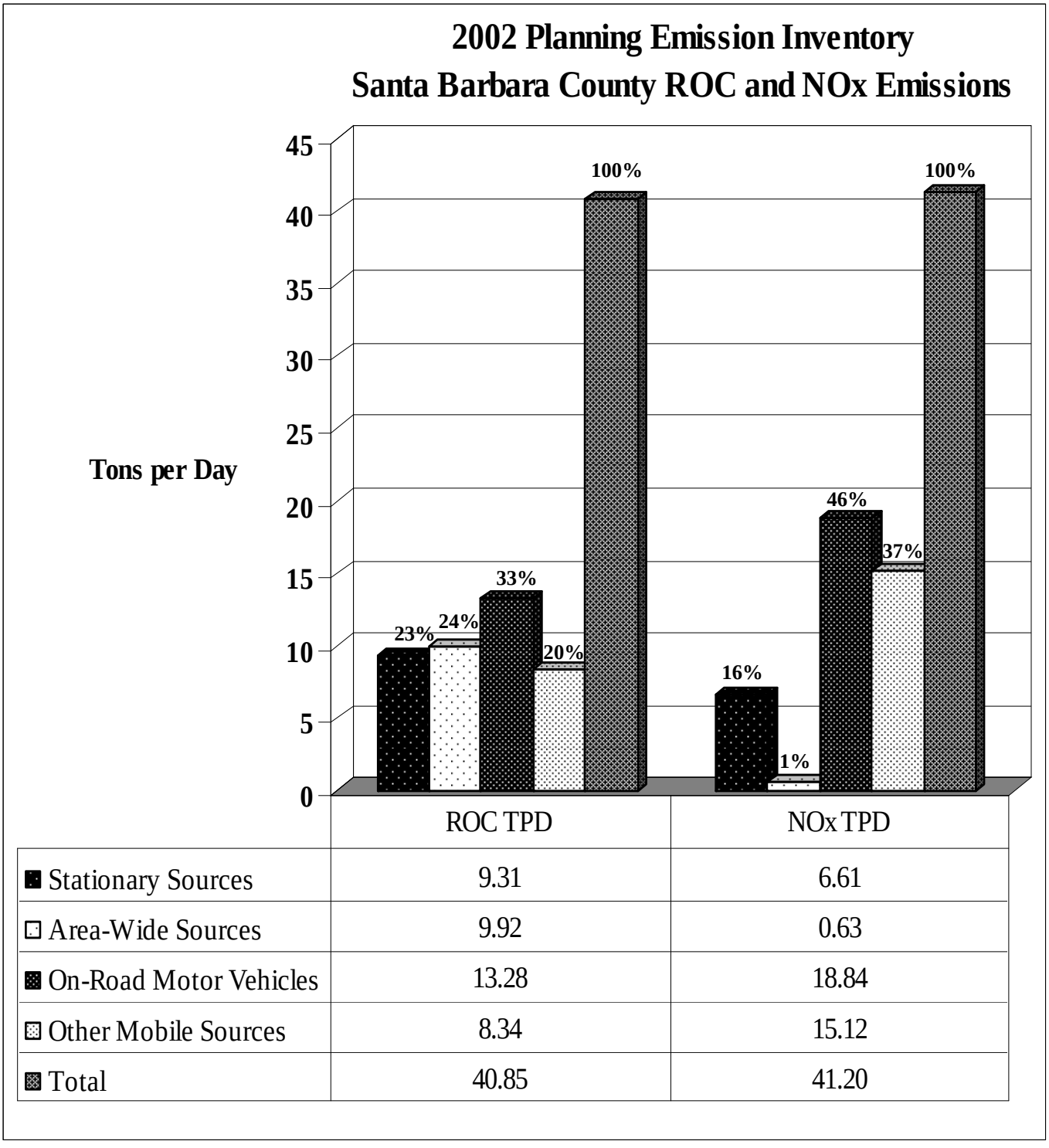
	ROC TPY	NOx TPY
Stationary Sources	3,210.78	2,468.61
Area-Wide Sources	3,731.71	412.42
On-Road Motor Vehicles	4,846.11	6,876.97
Other Mobile Sources	3,042.77	5,515.46
Natural Sources	28,608.20	882.48
Total	43,439.57	16,155.94

FIGURE 3-2



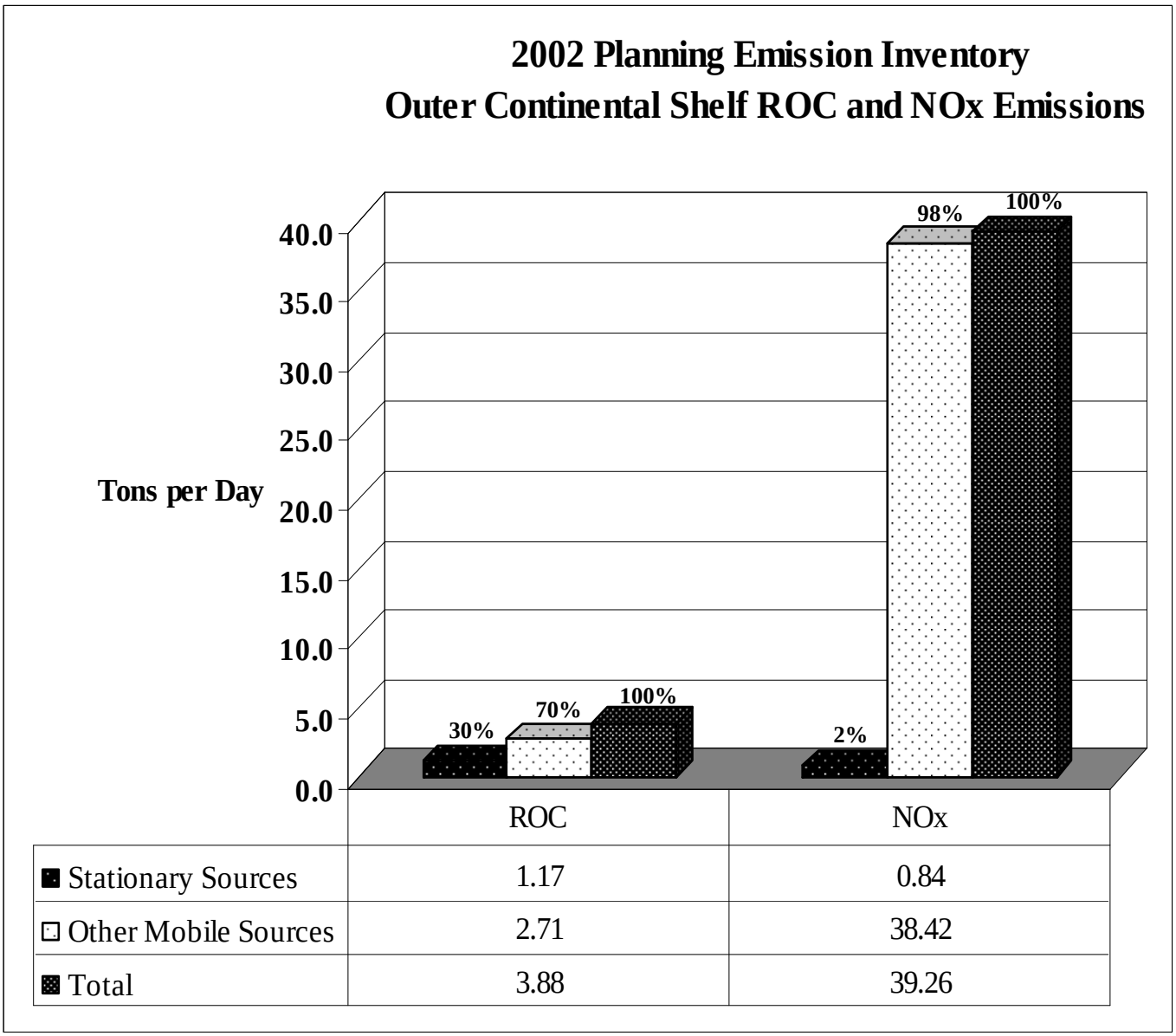
	ROC	NOx
Stationary Sources	425.88	305.16
Other Mobile Sources	994.56	14,019.73
Natural Sources	2,078.90	0.00
Total	3,499.34	14,324.89

FIGURE 3-3



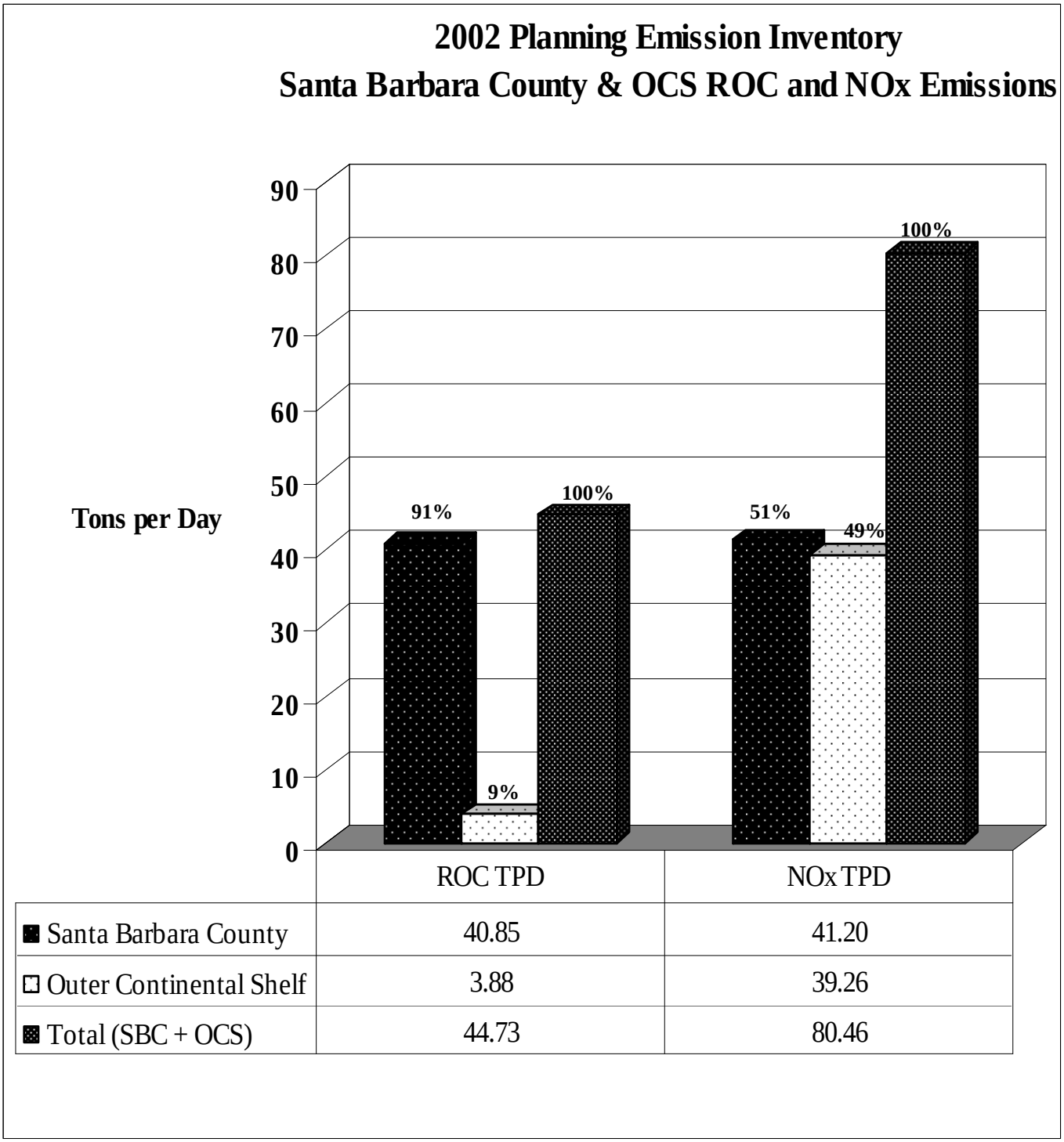
	ROC TPD	NOx TPD
Stationary Sources	9.31	6.61
Area-Wide Sources	9.92	0.63
On-Road Motor Vehicles	13.28	18.84
Other Mobile Sources	8.34	15.12
Total	40.85	41.20

FIGURE 3-4



	ROC	NOx
Stationary Sources	1.17	0.84
Other Mobile Sources	2.71	38.42
Total	3.88	39.26

FIGURE 3-5



	ROC TPD	NOx TPD
Santa Barbara County	40.85	41.20
Outer Continental Shelf	3.88	39.26
Total (SBC + OCS)	44.73	80.46

CHAPTER 4

EMISSION CONTROL MEASURES

- INTRODUCTION
- EMISSION CONTROL MEASURE MANDATES
- EMISSION CONTROL MEASURES ADOPTED BEFORE 2004
- EMISSION CONTROL MEASURES ADOPTED DURING THE REPORTING PERIOD (2004 - 2006)
- PROPOSED EMISSION CONTROL MEASURES
- EMISSION CONTROL MEASURES FOR FURTHER STUDY
- CALIFORNIA AIR RESOURCES BOARD AND U.S. EPA CONTROL MEASURES
- CONCLUSION

4. EMISSION CONTROL MEASURES

4.1 INTRODUCTION

This chapter addresses emission control measures adopted and proposed by the Santa Barbara County Air Pollution Control District (APCD), the California Air Resources Board (ARB), and the United States Environmental Protection Agency (USEPA) to reduce ROC or NO_x emissions and identifies additional ***stationary source*** control measures for further study. This chapter also addresses the state triennial plan assessment and update requirements specified in Health and Safety Code Sections 40924 and 40925. Control measures that focus on reducing local transportation-related emissions are discussed in *Chapter 5 – Transportation Control Measures*.

The control measures presented in this chapter are founded on the following plans:

- 1989 Air Quality Attainment Plan
- 1991 Air Quality Attainment Plan
- 1993 Rate-Of-Progress Plan
- 1994 Clean Air Plan
- 1998 Clean Air Plan
- 2001 Clean Air Plan
- 2004 Clean Air Plan

Control measures are evaluated and classified as *adopted*, *proposed*, or *further study,* based on an analysis of the measures applicability to Santa Barbara County, potential emission reductions, and the implementation of similar measures in other areas of California. The following describes the control measure classes:

- ***Adopted*** control measures are those that the APCD has formally adopted as APCD rules for inclusion into the State Implementation Plan (SIP). These are also adopted for the purpose of attaining the state ozone standards. **Table 4-1** lists the control measures adopted before 2004 and **Table 4-2** identifies the control measures adopted or modified within the reporting period (2004 to 2006) for this 2007 Plan.
- ***Proposed*** control measures, as used in this 2007 Clean Air Plan, have a dual meaning. When related to attainment of the **state** 1-hour and 8-hour ozone standards, *proposed* control measures are considered *proposed.* When related to maintaining the **federal** 8-hour ozone standard, *proposed* control measures are considered *contingency*. These measures are scheduled as either near-term (2007 - 2009) or mid-term (2010 - 2012). **Table 4-3** shows the proposed control measures for this 2007 Plan.
- ***Further study*** measures are emission reduction techniques that the APCD plans to investigate further before making a commitment to adopt them in our next triennial plan update and revision. **Tables4-4** and **Table 4-5** identify the control measures for further study.

Through a public process, the APCD Board of Directors adopts control measures as local rules. Once the APCD Board adopts a rule, the APCD is responsible to ensure that the affected parties comply with the rule. Some rules impose emission limits and other requirements on businesses and industry. Other rules require manufacturers and retailers to comply with requirements that limit emissions.

The ARB and the U.S. EPA adopt emission control measures that apply throughout the state. These measures apply to a variety of sources including automobiles, consumer products, off-road equipment and others. Section 4.7 provides a summary of these measures.

4.2 EMISSION CONTROL MEASURE MANDATES

The air pollution control strategy identified in this chapter is proposed to meet both the federal and California Clean Air Act requirements. An area that the U.S. EPA has redesignated as an ozone attainment area must submit a "maintenance plan" that provides for the maintenance of the federal ozone standard for at least 10 years after redesignation.[a] This plan relies on measures adopted by the APCD, ARB, and the U.S. EPA to comply with this federal requirement. Section 4.7 summarizes the ARB and the U.S. EPA control measures.

Under the California Clean Air Act, each district that is nonattainment for the state ozone standards must demonstrate a five percent reduction in emissions per year or adopt every feasible measure available to that district.[b] The APCD has taken the approach of evaluating and adopting every feasible measure since the 1991 AQAP failed to produce the state mandated five percent per year emission reductions and was approved by ARB under the every feasible measure option.[c]

To ensure that the APCD has adopted or has proposed to adopt every feasible measure, staff:

1. Compared the APCD's rules to rules of other California air districts using ARB's document titled, "Identification of Performance Standards," April 1999, which evaluates emission control measures adopted throughout the state.

2. Reviewed and considered information provided in the California Air Pollution Control Officer Association document titled, "Potential All Feasible Measures," September 2003.

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[a] Section 175A(a) of the federal Clean Air Act. Additionally, pursuant to a memo from Lydia N. Wegman (Director, Air Quality Strategies and Standards Division, USEPA), areas such as Santa Barbara must address the maintenance requirements in Section 110(a)(1) of the federal Clean Air Act.

[b] Health and Safety Code Section 40914(b).

[c] The Air Resources Board interprets *the adoption of every feasible measure* to mean that, at a minimum, a district consider regulations that have been successfully implemented elsewhere. The districts should also consider going beyond what has already been accomplished by evaluating new technologies and innovative approaches that may offer potential emission reductions. Further, districts should consider not only technological factors, but also social, environmental, economic (e.g., cost-effectiveness), and energy factors which prevail in the district, along with the resources realistically available to the district to adopt, implement, and enforce the measures.

4.3 EMISSION CONTROL MEASURES ADOPTED BEFORE 2004

Table 4-1 identifies the APCD emission control measures adopted before 2004.

TABLE 4-1
EMISSION CONTROL MEASURES ADOPTED BEFORE 2004

Rule	CAP Control Measure ID	Description	Rule Adoption Date	Full Implementation Date
316	R-PM-1	Gasoline Bulk Plants	November 1990	1992
316	R-PM-2	Gasoline Dispensing Phase I Vapor Recovery	November 1990	1992
316	R-PM-3	Gasoline Dispensing Phase II Vapor Recovery	November 1990	1992
320	R-SL-1	Petroleum Solvent Dry Cleaners	June 1979	1985
321	R-SL-2	Solvent Cleaning (Degreasers)	July 1997	1998
323	R-SC-1	Architectural Coatings	February 1990	1994
325	R-PT-2	Crude Oil Production and Separation	January 1994	1996
326	R-PT-2	Storage of Reactive Organic Compound Liquids	December 1993	1995
329	R-SL-3	Cutback and Emulsified Asphalt	February 1992	1992
330	R-SC-2	Surface Coating of Metal Parts and Products	November 1990	1992
331	R-PG-1	Fugitive Emissions I & M	December 1991	1992 (1995 OCS)
333[a]	N-IC-1	IC Engines (Gas-Fired)	December 1991	1994 (1995 OCS)
333[a]	N-IC-3	IC Engines (Diesel-Fired)	December 1991	1994 (1995 OCS)
337	R-SC-2	Surface Coating of Aircraft or Aerospace vehicle Parts and Products	July 1990	1992
339	R-SC-4	Motor Vehicle and Mobile Equipment Coating Operations	May 1994	1994
341[b] / 901	R-GN-1	Landfill Gas Emissions	September 1997	2001
342	N-XC-4	Small Industrial and Commercial Boilers	March 1992	1996
342	N-XC-5	Large Industrial and Commercial Boilers	March 1992	1996
342	N-XC-6	Process Heaters	March 1992	1996

[a] EPA has not taken final SIP action to grant approval, disapproval, or limited approval/disapproval of Rule 333. The Federal Register of February 1, 1995 (60 FR 6049) indicates the EPA was considering the granting of limited approval and limited disapproval of the rule.
[b] The California Air Resources Board withdrew Rule 341 for SIP consideration on April 24, 2001 because the rule implements the requirements of 40 CFR Part 60, Section 111(d) and Rule 341 is already federally enforceable by EPA's approval of the 111(d) State Plan.

TABLE 4-1

EMISSION CONTROL MEASURES ADOPTED BEFORE 2004 (CONT.)

Rule	CAP Control Measure ID	Description	Rule Adoption Date	Full Implementation Date
343	R-PT-1	Petroleum Storage Tank Degassing	December 1993	1995
344	R-PP-1	Petroleum Sumps, Pits, and Well Cellars	November 1994	1998
346	R-PP-9	Loading of Organic Liquid Cargo Vessels	October 1992	1995
349	R-SL-5	Polyester Resin Operations	April 1993	1994
351	R-SC-5	Surface Coating of Wood Products	August 1998	2005
352	N-XC-1	Residential Water Heaters	September 1999	2000
352	N-XC-3	Natural-Gas Fired Fan-Type Central Furnaces	September 1999	2000
353	R-SL-9	Adhesives and Sealants	August 1999	2000
354	R-SL-7	Graphic Arts – Rotogravure/Flexographic Printing	June 1994	1995
359	N-XC-8	Petroleum Flares & Relief Gas Oxidizers	June 1994	1999
360	N-XC-2	Large Water Heaters and Small Boilers	October 2002	2003

As seen in Table 4-1, the APCD has adopted a wide range of control measures that reduced ROC and NO_x emissions both onshore and on the outer continental shelf.

4.4 EMISSION CONTROL MEASURES ADOPTED DURING THE REPORTING PERIOD (2004 - 2006)

Rulemaking activities during the 2004 - 2006 period focused on the development of revisions to control measures N-IC-1 (Rules 202 and 333), N-IC-3 (Rules 202 and 333), R-SL-2 (Rule 321), and R-SC-2 (Rules 330 and 337). Due to delays experienced during these rule revisions and other rules and control measures described below, the development of the final packages for Rules 202, 333, 321, 330, and 337 experienced delays. We now anticipate that modifications of control measures N-IC-1, N-IC-3, R-SL-2, and R-SC-2 will occur in 2007.

In addition to the control measures identified for the 2004 – 2006 period, several other rulemaking projects and mandates displaced staff from working on revising the control measures originally scheduled in the 2004 Clean Air Plan. These include:

- ❖ Industry-requested revisions to Rule 331, Fugitive Emissions and Inspection and Maintenance,[a]
- ❖ Pursuant to Senate Bill 656 (SB 656, Sher), an assessment of the ambient particulate matter air quality, an evaluation of ARB's list of measures, identification of feasible and cost-effective measures, and the adoption of an implementation schedule for the locally-appropriate control measures.
- ❖ Revisions to Rule 102 (ROC definitions).
- ❖ Revisions to Rule 202 for implementation of the state Airborne Toxic Control Measure for stationary diesel-fired internal combustion engines.
- ❖ Revision to Rule 210 to recover costs for our Air Toxics Program based on the amount of air toxics produced by applicable permitted facilities.

Health and Safety Code Section 40924(b)(2) requires the APCD to identify the *expected* emission reductions that were in the 2004 CAP and the current *revised* emission reductions for each measure scheduled for adoption during the reporting period. **Table 4-2** provides information on the rules proposed for adoption during the 2004 to 2006 reporting period of this plan to fulfill this requirement.

On the Rule 333 figures, changes to the NOx reduction estimates (and to the ROC increase estimates) are due to changing the baseline year from 2000 to 2002 and assuming offshore well drilling engines will be subject to permitting and the Rule 333 requirements. The solvent rules' ROC reductions estimates changed due to changing the baseline year from 2000 to 2002 and revising the exemption projections.

[a] The APCD eventually withdrew the proposed revisions to Rule 331 due to U.S. EPA concerns.

TABLE 4-2
EMISSION CONTROL MEASURES SCHEDULED FOR ADOPTION DURING THE REPORTING PERIOD (2004 - 2006)

Rule #	CAP Control Measure ID	Description	Rule Adoption Date	Full Implementation Date	Pollutant	2004 CAP EXPECTED EMISSION REDUCTIONS (Tons/Day)			REVISED EMISSION REDUCTIONS (Tons/Day)		
						2010	2015	2020	2010	2015	2020
202 & 333	N-IC-1 N-IC-3	Control of Emissions from Engines (Rev's to address ARB & U.S. EPA concerns.)	2007	2007	ROC	-0.0034	-0.0031	-0.0029	-0.0051[a]	-0.0047[a]	-0.0043[a]
202 & 333	N-IC-1 N-IC-3	Same as above.	2007	2007	NO_x	0.0152	0.0140	0.0129	0.0246[a]	0.0233[a]	0.0220[a]
321[b]	R-SL-2	Solvent Cleaning Machines and Solvent Cleaning	2007	2008	ROC	0.7745	0.8552	0.9359	0.6516	0.7204	0.7891
330 & 337	R-SC-2	Add Solvent Cleaning Requirements to These Existing Coating Rules	2007	2008	ROC	0.0586	0.0651	0.0717	0.0218	0.0238	0.0258
TOTALS FOR ROC						0.8297	0.9172	1.0047	0.6684	0.7395	0.8106
TOTALS FOR NO_x						0.0152	0.0140	0.0129	0.0246	0.0233	0.0220

[a] These emission reduction estimates are based on previously exempt engines needing to comply with Rule 333 (e.g., spark ignition engines rated > 50 but < 100 brake horsepower and offshore well drilling engines) and diesel engines being subject to a lower NO_x limit.

[b] These figures include the emission reductions from implementing new solvent cleaning requirements (e.g., wipe cleaning). In the 2004 Clean Air Plan, the solvent cleaning emission reductions were attributed to a proposed new Rule 362 (R-SL-10). Staff decided to integrate the proposed new "general" solvent cleaning requirements into Rule 321 (R-SL-2). The 2004 CAP estimate for Rule 321 shown above includes the previous emission reductions attributed to Rule 362.

4.5 PROPOSED EMISSION CONTROL MEASURES

The proposed control measures are summarized in **Table 4-3**. These control measures are scheduled as either near-term (2007 - 2009) or mid-term (2010 - 2012).

TABLE 4-3
PROPOSED EMISSION CONTROL MEASURES

Rule (Status)	CAP Control Measure ID	Description	Adoption Schedule	Emission Reductions (Tons per Day) from the Control Measure When Fully Implemented (Unless Otherwise Specified)	
				ROC	NO_X
202 (Revised) & 333 (Revised)	N-IC-1 N-IC-3	Control of Emissions from Engines (Rev's to address ARB & EPA concerns.)	2007[a]	-0.0051	0.0246
321 (Revised)	R-SL-2	Solvent Cleaning Machines and Solvent Cleaning (Revisions to Revise Solvent Degreaser Requirements and Add New Solvent Cleaning Provisions)	2007[a]	0.6516	—
330 (Revised)	R-SC-2	Surface Preparation and Coating of Metal Parts and Products (Revisions to Include Solvent Cleaning Requirements)	2007[a]	0.0214	—
337 (Revised)	R-SC-2	Surface Preparation and Coating of Aircraft or Aerospace Vehicle Parts and Products (Revisions to Include Solvent Cleaning Requirements)	2007[a]	0.0004	—
339 (Revised)	R-SC-4	Motor Vehicle and Mobile Equipment Surface Preparation and Coating Operations (Revisions to Include Solvent Cleaning Requirements and the State Suggested Control Measure for Limiting Coating ROC Content)	Near-Term: 2007 – 2009	0.1404	—

[a] These rule revisions were delayed from their 2004 - 2006 timeframe and are expected to be completed in 2007.

TABLE 4-3

PROPOSED EMISSION CONTROL MEASURES (CONT.)

Rule (Status)	CAP Control Measure ID	Description	Adoption Schedule	Emission Reductions (Tons per Day) from the Control Measure When Fully Implemented (Unless Otherwise Specified)	
				ROC	NO_X
202 (Revised) & 361 (New)	N-XC-4	Small Industrial and Commercial Boilers, Steam Generators, and Process Heaters (> 2 MMBtu/hr to < 5 MMBtu/hr) (Revision to the Rule 202 Permitting Threshold and the New Rule 361 will Establish NOx Limits for the Previously Unregulated Range)	Near-Term: 2007 – 2009	––	0.0467[a]
351 (Revised)	R-SC-5	Surface Preparation and Coating of Wood Products (Revisions to Include Solvent Cleaning Requirements)	Near-Term: 2007 – 2009	0.0016	––
349 (Revised)	R-SL-5	Polyester Resin Operations (Revisions to Include Solvent Cleaning Requirements)	Near-Term: 2007 – 2009	0.0028	––
353 (Revised)	R-SL-9	Adhesives and Sealants (Revisions to Include Solvent Cleaning Requirements)	Near-Term: 2007 – 2009	0.0018	––
202 (Revised) & 354 (Revised)	R-SL-7	Graphic Arts (Revision to the Rule 202 to Eliminate Printing Exemptions and Revisions to Rule 354 to Include Solvent Cleaning and Additional Requirements for Rotogravure, Flexographic, Lithographic, Letterpress, and Screen Printing)	Mid-Term: 2010 – 2012	0.0577	––
352 (Revised)	N-XC-6	Residential Water Heaters; Residential and Commercial Space Heaters (Revisions to Reduce the NOx Limits on the Residential Water Heaters)	Mid-Term: 2010 – 2012	––	0.0397[b]
321 or 323 (Revised)	R-SC-1	Architectural Coatings (Revision to Regulate the Cleaning of Application Equipment used in Architectural Coating Applications)	Mid-Term: 2010 – 2012	0.0873	––
Total for the local control measures				0.9600	0.1238

[a] This year 2020 figure is based on the requirement that all existing boilers, steam generators, and process heaters in the range of > 2 MMBtu/hr to < 5 MMBtu/hr will comply with the Rule 361 provisions by 2020.
[b] This is the NOx emissions reductions in year 2020 with 60 percent implementation.

The following is a summary of the changes to the control measures shown in **Table 4-3**. The revisions to Rules 102, 202, and 333 will affect definitions, engine permitting and exemption thresholds, and engine operating requirements (including emission limits). The rulemaking action is intended to address all deficiencies that were identified by the California Air Resources Board and by the U.S. Environmental Protection Agency regarding the permitting of and the emission limits for internal combustion engines and to incorporate Air Resources Board Reasonable Available Control Technology guidance. The revisions will also incorporate staff- and industry-requested revisions to permit exemptions and other changes to clarify the rules.[a]

The APCD plans to make changes to Rule 321 to 1) revise solvent cleaning machine requirements and 2) add new "general" solvent cleaning requirements to the rule. For rule clarification, new definitions will be added. In general, *solvent cleaning* means those activities, operations, and processes using a solvent that occur outside of a *solvent cleaning machine*.

The 2001 and 2004 Clean Air Plans indicate a new rule (362) similar to the South Coast AQMD Rule 1171, Solvent Cleaning Operations, would be adopted to implement the new "general" solvent cleaning control measure. However, preliminary work on the project showed that there are advantages to integrating the solvent cleaning requirements within existing Rule 321 and the appropriate operation-specific rules. Thus, we will implement the new solvent cleaning control measure provisions and obtain the emission reductions committed to in the 2001 and 2004 plans by revising the existing rules and existing control measures.

After completing changes to Rule 321, the APCD intends to add new solvent cleaning requirements to several operation-specific rules. Staff anticipates that the order of the operation-specific rule revisions will be consistent with those shown in prior clean air plans:[b]

1. Rule 330, Surface Preparation and Surface Coating of Metal Parts and Products.
2. Rule 337, Surface Preparation and Surface Coating of Aircraft or Aerospace Vehicle Parts and Products.
3. Rule 339, Motor Vehicle and Mobile Equipment Surface Preparation and Coating Operations.[c]
4. Rules 351, Surface Preparation and Surface Coating of Wood Products.
5. Rule 349, Polyester Resin Operations.

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[a] For example, the APCD proposes to delete the construction engine and the OCS well drilling engine exemptions. The deletion of these exemptions is needed to facilitate the implementation of the State Airborne Toxic Control Measures for portable and stationary compression ignition engines. Other revisions include, but are not limited to, making the powder coating exemption more general, requiring permits for non-certified distributed generation units, adding a provision that the ratings of all engines or combustion equipment used in the same process be accumulated to determine exemption applicability, and modifying the gas turbine engine exemption to allow limited stacking under strict restrictions.

[b] The actual sequence of the proposed rule revisions may change within their respective near- or mid-term timeframes.

[c] In addition to the new solvent cleaning requirements, the rule revisions will include changes recommended by the California Suggested Control Measure for Automotive Coatings (approved by the Air Resources Board on October 20, 2005). The state guidance includes limiting the cleaning solvents' ROC content to 25 grams of ROC per liter and revising the surface coating material ROC content limits.

6. Rule 353, Adhesives and Sealants.
7. Rule 354, Graphic Arts.[a]
8. Rule 321, Solvent Cleaning Machines and Solvent Cleaning, or Rule 323, Architectural Coatings, to implement a 25 grams of ROC per liter solvent ROC-content limit when cleaning application equipment (e.g., spray guns) used in architectural coating operations.[b]

For the new and revised solvent requirements, we plan to use terms, concepts, limits, control techniques, and other provisions gleaned from the following:

- For solvent cleaning machines:
  - 40 CFR, Part 63, Subpart T - National Emission Standards for Halogenated Solvent Cleaning (40 CFR §63.460 et seq.)
  - South Coast AQMD Rule 1122, Solvent Degreasers
  - San Joaquin Valley Unified APCD Rule 4662, Organic Solvent Degreasing Operations
  - Ventura County Air Pollution Control District Rule 74.6, Surface Cleaning and Degreasing, and Rule 74.6.1, Batch Loaded Vapor Degreasers

- For solvent cleaning:
  - South Coast AQMD Rule 1171, Solvent Cleaning Operations
  - San Joaquin Valley Unified APCD Rule 4663, Organic Solvent Cleaning, Storage, and Disposal
  - Ventura County Air Pollution Control District Rule 74.6, Surface Cleaning and Degreasing

Table 4-3 also includes control measures for combustion equipment (other than internal combustion engines). Staff anticipates the adoption of a new Rule 361 in the near-term, which will fill in a gap that currently exists in the water heater, boiler, steam generator, and process heater combustion rules. Rule 352 covers water heaters rated from 0 to less than (<) 75,000 British thermal units (Btu) per hour. Rule 360 regulates emission units from 75,000 to 2 million Btu per hour and Rule 342 applies to units 5 million Btu per hour and greater. Proposed new Rule 361 will provide combustion equipment requirements for the currently unregulated range of greater than (>) 2 million to < 5 million Btu per hour.[c]

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[a] Besides incorporating the solvent cleaning requirements, the proposed changes will include ink, coating, adhesive, resists, wash primers, and fountain solution ROC-content requirements. The revised rule will include components or be modeled on provisions in the South Coast AQMD Rule 1130, Graphic Arts, and Rule 1130.1, Screen Printing Operations, San Joaquin Valley Unified APCD Rule 4607, Graphic Arts, and/or Ventura County Rule 74.19 Graphic Arts, and Rule 74.19.1 Screen Printing Operations. Rule 202 exemptions and Rule 354 exemptions, definitions, and rule requirements are planned to be revised for promulgating and implementing control techniques for gravure, flexography, lithography, letterpress, and screen printing methods.

[b] The SBCAPCD may add new state Suggested Control Measure provisions regarding Architectural Coatings during this rulemaking effort as well.

[c] All of these ratings are on a heat input basis.

The new Rule 361 requirements will include tune-ups for units that operate less than 1.8 billion Btu per year. Equipment not subject to the tune up provision will need to limit emissions to 400 parts per million of carbon monoxide at 3 percent oxygen and 30 parts per million of NO_x by volume at 3 percent oxygen or 0.037 pounds of NOx per million Btu of heat input.

Concurrent with the adoption of Rule 361, the APCD will revise the Rule 202.G.1 permitting threshold to require permits for equipment rated greater than 2 million Btu per hour. Currently, Rule 202.G.1 requires combustion equipment rated at 5 million Btu per hour or greater to be permitted.[a] Rule 361 requirements will apply to equipment with ratings < 5 million Btu per hour (but > 2 million Btu per hour). Thus, permitting these units will facilitate the implementation of Rule 361. The South Coast AQMD presently requires permits for combustion equipment rated > 2 million Btu per hour and the Ventura County APCD current permitting threshold is 1 million Btu per hour.

Rule 361 information in the 2001 and 2004 Clean Air Plans indicated that the APCD will decide to adopt Rule 361 as a point-of-sale or a retrofit rule during the rulemaking process. We have decided to eliminate the point-of-sale rule option for several reasons. If we adopted a point-of-sale rule:

- The emission reductions would be achieved in small increments over a long timeframe.
- We would need to oversee an equipment certification program and dedicate significant resources to ensure compliance with no mechanism to generate revenue necessary to pay the costs of the effort.

Also, most of the other air districts in California that regulate combustion equipment rated between 2 and 5 million Btu per hour require compliance by the equipment owner (not the manufacturer). Thus, there is a minimal existing point-of-sale certification infrastructure in place to rely on for units to be regulated by Rule 361. Rule 352 and Rule 360 for the smaller sized units are acceptable (and SIP-approved) rules because other air districts take the point-of-sale approach and a significant certification infrastructure currently exists.

The APCD now envisions that Rule 361 (> 2 million Btu per hour to < 5 million Btu per hour combustion equipment) will be adopted with the following provisions regarding applicability:

1. The requirements (e.g., compliance with emissions limits) will apply to new boilers, steam generators, and process heaters (i.e., units for which installation commences on or after the date of Rule 361 adoption).

2. For boilers, steam generators, and process heaters existing as of the date of Rule 361 adoption, the requirement to comply with the rule will become effective upon:

[a] Units that burn natural gas or produced gas not meeting PUC standards or LPG not meeting the Gas Processors Association Standards (e.g., diesel fuel, landfill gas, digester gas, etc) are not exempt under the Rule 202.G provision regardless of the equipment size.

A. replacement of the boiler, steam generator, or process heater, or
B. replacement of the boiler's, steam generator's, or process heater's burner; or
C. January 1, 2020; whichever occurs first.

On the Rule 352 revision, the APCD proposes that the natural gas-fired water heater NO_x limit be lowered to 30 parts per million by volume of NO_x at 3 percent oxygen (0.035 pounds of NO_x per million Btu on a heat input basis). The rule will remain a *point-of-sale* rule and the emission limits for the central furnaces would remain unchanged.

4.6 EMISSION CONTROL MEASURES FOR FURTHER STUDY

Additional potential control measures and existing control measures that merit further study are shown in **Table 4-4** (Further Study – New Rules) and **Table 4-5** (Further Study – Existing Rules).

TABLE 4-4
FURTHER STUDY - NEW RULES

Description	Comments	APCD/AQMD Rule that could be used to model a SBCAPCD Rule
Gas Turbines	Staff reclassified this category from *proposed* (as listed in the 2001 CAP) to a *further study* control measure. This action is based on the 2001 CAP showing no emission reductions from adopting gas turbine control requirements and the need for more analyses to determine the potential onshore and offshore gas turbine emission reductions to be realized through the adoption of an *all feasible* control measure.	Ventura Rule 74.23 and San Joaquin Rule 4703
Natural Gas Fuel Specifications	The SBCAPCD may set a *higher heating value*[a] limit on natural gas to eliminate: 1) potential equipment problems associated with engines designed for low-Btu gas that are fueled by "hot gas," and 2) to prohibit increased emissions from the use of or disposal of "hot gas." The South Coast AQMD included this control measure in their 2003 AQMP.	Future South Coast AQMD rule

[a] "Higher Heating Value" means the total heat liberated per mass of fuel burned (British thermal unit per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

TABLE 4-4

FURTHER STUDY - NEW RULES (CONT.)

Description	Comments	APCD/AQMD Rule that could be used to model a SBCAPCD Rule
Pleasure Craft Fuel Transfer	According to ARB, this measure should be retained pending technology development and ARB action in this category.	None
Wineries and Breweries	Carried forward from the 2004 CAP.	San Joaquin Valley APCD, Rule 4694 Wine Fermentation and Storage Tanks (Adopted December 15, 2005)

Table 4.5 shows APCD rules currently in the rulebook that have been implemented in a more stringent fashion elsewhere in the state.

Table 4-5
FURTHER STUDY – EXISTING RULES

Rule	CAP Control Measure ID	Description	Comments	APCD/AQMD Rule that could be used to model a SBCAPCD Rule
342	N-XC 4 and N-XC-5	Boilers, Steam Generators and Process Heaters ≥ 5 MMBtu/hr	Revisions to Reduce the NOx Limits. [a]	San Joaquin Valley APCD Rule 4306, Sacramento Metropolitan AQMD Rule 411, and/or South Coast AQMD Rule 1146
331	R-PG-1	Fugitive Emissions Inspection and Maintenance	This is an ARB-identified performance standard and a CAPCOA-identified all feasible measure category. The South Coast AQMD and Bay Area AQMD rules have lower thresholds for leaks.	South Coast AQMD Rule 1173 and Bay Area AQMD Reg. 8, Rule 18
333	N-IC-3	IC Engines (Diesel-Fired)	Possibly change NOx limit for compression ignition internal combustion engines (ICEs) to 600 ppmv (or less).	San Joaquin Valley APCD Rule 4702 and South Coast AQMD Rule 1110.2
333	N-IC-1	IC Engines (Gas-Fired)	Possibly change NOx limit for cyclically-loaded ICEs from 300 to 50 ppmv.	San Joaquin Valley APCD Rule 4702

[a] If the APCD does not receive an application for emission reduction credits that are to be generated by retrofitting low-NO_x technology (e.g., a burner designed to emit 9 ppmv NOx at 3% O2 or less or a selective catalytic convertor designed to emit 5 ppmv NO_x at 3% O2 or less) on combustion equipment subject to Rule 342 by July 1, 2009 and Santa Barbara County is nonattainment for the state 1-hour or 8-hour ozone standard, the next Clean Air Plan will list this as a near-term proposed control measure.

TABLE 4-5

FURTHER STUDY – EXISTING RULES (CONT.)

Rule	CAP Control Measure ID	Description	Comments	APCD/AQMD Rule that could be used to model a SBCAPCD Rule
320	R-SL-1	Petroleum Solvent Dry Cleaners	Carried forward from the 2001 CAP. The South Coast rule requires the phase-out of transfer-type machines.	South Coast AQMD Rule 1102
362	R-SL-10	Solvent Cleaning Operations	This is a CAPCOA-identified AFM category that the SBCAPCD needs to revise to be an all feasible measure. That is, we would need to change the rule limit from 50 to 25 grams per liter.	South Coast AQMD Rule 1171 and Ventura County APCD Rule 74.6
321	R-SL-2	Solvent Degreasers	This is a CAPCOA-identified AFM category that the SBCAPCD needs to revise to be an all feasible measure. That is, we would need to change the rule limit from 50 to 25 grams per liter.	South Coast AQMD Rule 1122 and Sacramento Metropolitan AQMD Rule 454
326	R-PT-2	Storage of Reactive Organic Compound Liquids	The Bay Area Rule 8-5 applies to tanks 264 gallons or greater and the San Joaquin Rule 4602 applies to tanks 1,100 gallons or greater, whereas the SBCAPCD rule exempts tanks that are less than or equal to 5,000 gallons capacity.	Bay Area AQMD Reg. 8, Rule 5 and San Joaquin Valley APCD Rule 4602

4.7 CALIFORNIA AIR RESOURCES BOARD AND U.S. EPA EMISSION CONTROL MEASURES

The ARB and the U.S. EPA have adopted numerous regulations that reduce pollution from motor vehicles, off-road equipment, consumer products and fueling operations. Emission reductions from these adopted control measures will help maintain attainment with the federal 8-hour ozone standard and help make progress toward the state ozone standards in Santa Barbara County. In addition, emission reductions from some of these measures will also reduce the precursors of secondary particulate, helping make progress toward attaining the state PM10 standard.

Some of the mobile source control measures and consumer product were initially presented in California's 1994 State Implementation Plan (SIP) for Ozone, adopted by the Air Resources Board (ARB or Board) on November 15, 1994. Since 1994, ARB has adopted many of the SIP measures, and also identified and adopted additional measures to further reduce emissions. **Table 4-6** lists the adopted state and federal control measures that apply to Santa Barbara County. Additional details on the "2003 State and Federal Strategy for the California SIP" are available at this link: http://www.arb.ca.gov/planning/sip/stfed03/stfed03.htm .

TABLE 4-6
STATE AND FEDERAL MEASURES ADOPTED SINCE 1994 SIP

Description of Control Measure	Responsible Agency	Adopted
Defined Measures in 1994 Ozone SIP		
M1: Light-duty vehicle scrappage	ARB	1998
M2: Low Emission Vehicle II program	ARB	1998
M3: Medium-duty vehicles	ARB	1995
M4: Incentives for clean engines (Moyer Program)	ARB	1999
M5: California heavy-duty diesel vehicle standards	ARB	1998
M6: National heavy-duty diesel vehicle standards	U.S. EPA	1998
M7: Heavy-duty vehicle scrappage	ARB	Replaced with M17
M17: In-use reductions from heavy-duty vehicles	ARB	No
M8: Heavy-duty gasoline vehicle standards	ARB	1995
M9: CA heavy-duty off-road diesel engine standards	ARB	2000
M10: National heavy-duty off-road diesel engine standards	U.S. EPA	1998
M11: CA large off-road gas/LPG engine standards	ARB	1998
M12: National large off-road gas/LPG engine standards	U.S. EPA	2002
M13: Marine vessel standards	U.S. EPA	1999
M14: Locomotive engine standards	U.S. EPA	1997
M15: Aircraft standards	U.S. EPA	No
M16: Marine pleasurecraft standards	U.S. EPA	1996
CP2: Consumer products mid-term measures	ARB	1997/1999
CP3: Aerosol paint standards	ARB	1995/1998
Enhanced I/M (Smog Check II)	BAR[a]	1995
DPR-1: Emission reductions from pesticides	DPR[b]	Voluntary
Adopted measures not originally included in 1994 Ozone SIP		
Clean fuels measures	ARB	Multiple
Marine pleasurecraft (reductions beyond M16)	ARB	1998/2001
Motorcycle standards	ARB	1998
Urban transit buses	ARB	2000
Enhanced vapor recovery program	ARB	2000
Medium/heavy-duty gasoline standards (beyond M8)	ARB	2000
2007 heavy-duty diesel truck standards (beyond M5 and M6)	ARB/U.S. EPA	2001
Small off-road engine standard revisions	ARB	1998

[a] Bureau of Automotive Repair.
[b] Department of Pesticide Regulation.

4.8 CONCLUSION

The APCD, SBCAG, county, cities, and ARB have developed a comprehensive air pollution control strategy for Santa Barbara County. This strategy is updated in this 2007 Plan and identifies every feasible measure available to make progress toward attainment of the state ozone standards and maintenance of the federal 8-hour standard. Staff considered the ARB-identified performance standards, the California Air Pollution Control Officers Association (CAPCOA)-identified potential all feasible measures, the commitments in the 2004 Plan, and other APCD and AQMD rules to derive the proposed control measures and control measures for further study.

The 2007 Plan control measures include controls on all inventory categories contributing ROC and NO_x emissions: industrial processes, combustion sources, petroleum handling, solvent use, consumer products, waste burning, and mobile sources. The control measures evaluated and identified in this chapter, combined with the emissions reductions expected from on-road mobile sources in *Chapter 5, Transportation Control Measures*, show that Santa Barbara County is making significant progress in reducing emissions from sources subject to our control.

CHAPTER 5

TRANSPORTATION CONTROL MEASURES

- BACKGROUND
- HISTORICAL TRENDS IN VEHICLE ACTIVITY
- TRANSPORTATION CONTROL MEASURES
- ON-ROAD MOBILE SOURCE EMISSIONS ANALYSIS
- EMISSION RESULTS

5. TRANSPORTATION CONTROL MEASURES

5.1 BACKGROUND

In June 1993, the boards of the Santa Barbara County Association of Governments (SBCAG) and the Santa Barbara County Air Pollution Control District (APCD) jointly approved a Memorandum of Understanding (MOU), which effectively placed the responsibility for developing the transportation elements of the air quality plans with SBCAG. This MOU allows SBCAG to assist the APCD in a cooperative effort toward meeting the APCD's responsibilities for developing the transportation elements of its state and federal air quality plans. Under the MOU, SBCAG is responsible for the development and analysis of the 2007 Plan's on-road mobile source emission estimates and Transportation Control Measures (TCMs). SBCAG also provides the APCD with socio-economic projections, that form the basis for many of the stationary and area source growth forecasts for this 2007 Plan.

Since 1993, the following four State Implementation Plan (SIP) updates have been developed under the MOU: 1. 1993 Rate of Progress Plan; 2. 1994 Clean Air Plan (1-hour Ozone Attainment Demonstration Plan); 3. 1998 Clean Air Plan; and, 4. 2001 Clean Air Plan (Maintenance Plan). All these plans were developed under the auspices of Section 176(c)(4) of the 1990 federal Clean Air Act Amendments (Federal Act), which requires that regional transportation planning and programming activities be consistent with the region's air quality planning goals.

To facilitate implementation of the federal Act Section 176(c)(4), past SIP updates for Santa Barbara County explicitly identified an on-road mobile source emission control strategy (TCMs) and the on-road mobile source emission budgets for ozone precursors. These emission budgets established an upper limit on vehicular emissions that the area could accommodate and still achieve and/or maintain the federal 1-hour ozone standard.

Re-designation of Santa Barbara County as an 8-hour ozone attainment area (effective June 15, 2004) ended the applicability of Section 176(c)(4) of the Clean Air Act and the federal transportation conformity regulation to Santa Barbara County on June 15, 2005. Santa Barbara County is now defined as an area that is designated unclassifiable/attainment for the federal 8-hour ozone standard and was previously designated attainment for the federal 1-hour ozone standard with an approved maintenance plan. This requires Santa Barbara County to submit a federal Act Section 110(a)(1) maintenance plan (2007 Clean Air Plan) no later than June 15, 2007. Pursuant to a May 20, 2005 EPA memorandum[a] the 2007 Plan will not establish emission budgets for conformity purposes nor will the on-road mobile source emission control strategy identified in the 2007 Plan be subject to the expeditious implementation requirements of the federal conformity regulation. This 2007 Plan and future SIP updates will continue to be developed using the Interagency Consultation and Public Participation Procedures given that these procedures were locally adopted as APCD Rule 701. Similarly, the federal Department of Transportation's metropolitan planning regulations require that future regional transportation plan/program updates must continue to meet the Financially Constrained requirement.

[a] Memorandum from Lydia N. Wegman, Director, Air Quality Strategies and Standards Division, USEPA, to Air Division Directors, Regions I-X, May 20, 2005.

5.2 HISTORICAL TRENDS IN VEHICLE ACTIVITY

5.2.1 STATE ACT PERFORMANCE MEASURE

The state Act requires areas classified as having a "moderate" non-attainment classification for the state 1-hour ozone standard, such as Santa Barbara County, to track and meet the following transportation performance standard: a substantial reduction in the rate of increase in passenger vehicle trips and Vehicle Miles Traveled (VMT).[b] ARB has defined substantial reduction as holding growth in VMT and trips to the same growth rate as population.

Figure 5-1 shows that the annual VMT growth rate since 1990 has been highly variable with many peaks accompanied by negative growth occurring during the recession years of 1991 and 1995. For 12 of the 17 years monitored since the passage of the California Clean Air Act in 1988, the annual VMT growth rate has exceeded the annual population growth rate in Santa Barbara County. However, since the year 2000, the VMT growth rate has been declining and over the past two years (2003-2004), total VMT has declined, creating a negative growth rate. As a result, the population growth rate has exceeded the VMT growth rate since 2002. As shown in **Table 5-1,** the average annual VMT growth rate from 1990 to 1999 was 1.31 percent. The trend over the last five years has been a further decline in the VMT growth rate. For the period 2000 to 2004, the average annual VMT growth rate is 1.23 percent. The annual average population growth rate over these analysis periods is 0.63 percent and 1.06 percent respectively – below the comparable average annual rates of VMT growth. However, ratios of these rates indicate that the VMT growth rate is near to leveling off with the population growth rate.

As indicated by the negative spikes during 1991 and 1995, VMT is sensitive to a host of economic variables and conditions - especially fuel prices. Although non-discretionary trip making (e.g. commuting) can be somewhat insensitive to the price of fuel, discretionary trip making (e.g. tourism, recreational) is. Although causality is difficult to verify, rising fuel prices are considered a major influence on the decline in VMT growth rates in Santa Barbara County beginning in 2002. Conversely, this is somewhat offset by the draw of the County's destination resort attractions.

5.2.2 COMPARATIVE ANALYSIS OF VMT AND TRIP RATE TRENDS

A comparative analysis was completed to show how Santa Barbara County fares on VMT growth with other mid- and large-size counties in the state. **Figure 5-2** shows total Daily VMT (DVMT) between 2000 and 2004 for California counties that have populations greater than 250,000. As shown, Santa Barbara County has the fourth lowest VMT growth rate (2.3 percent) for the period between 2000 and 2004. **Figure 5-3** shows a similar graph summarizing growth in each county's daily VMT per capita. As shown, Santa Barbara County is in the middle of the pack, with a DVMT per capita growth rate of 1.6% since 2000.

[b] VMT is considered a surrogate for vehicle trips for state Act performance standard monitoring.

5.3 TRANSPORTATION CONTROL MEASURES

TCMs are programs or activities that states and localities can implement to encourage the traveling 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 address the need for the traveling public to carefully consider: 1) the implications of continued reliance on the single occupant vehicle as the major choice 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. While the greatest on-road mobile source emission reductions (over 95 percent) are attributable to motor vehicle emission controls established by federal and state laws and the natural attrition of older more polluting vehicles (i.e., fleet turnover), TCMs should be considered as an integral part of air quality plans given that they help meet multiple objectives (e.g., congestion relief, energy efficiency, etc.).

Table 5-2 summarizes the implementation characteristics of all currently adopted TCM categories in the county. Identified are: 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. All currently adopted TCMs except for T-18 (Alternative Fuels) are listed as TCMs by the U.S. EPA in Section 108(f) of the federal Act.

For state air quality planning purposes, control measures are classified as being adopted, proposed, contingency, further study, or deleted. Adopted TCMs are those projects and programs that the APCD has formally adopted and included in the federal SIP. These TCM projects/programs were developed as part of the 1994, 1998, 2001 and 2004 Plans and are listed in **Table 5-3**. These measures meet the every feasible control measure (Health and Safety Code, Section 40914(b)) provisions of the state Act.

All TCMs evaluated as part of the last triennial update (2004 Plan) are listed below.

Currently Adopted

T-1 Trip Reduction Ordinance
T-2 Employer Based Transportation Demand Management Programs
T-3 Work Schedule Changes
T-4 Area-wide Ridesharing Incentives
T-5 Improve Commuter Public Transit Service
T-7 Traffic Flow Improvements
T-8 Parking Management
T-9 Park-and-Ride / Fringe Parking
T-10 Bicycle and Pedestrian Programs
T-13 Accelerated Retirement of Vehicles
T-17 Telecommunications
T-18 Alternative Fuels
T-19 Public Education

Proposed for Adoption
None.

Proposed For Further Study
T-6 High Occupancy Vehicle (HOV) Lanes/High Occupancy Toll (HOT) Lanes
T-14 Activity Centers (i.e., Indirect Source Review – Land use measures)
T-15 Extended Vehicle Idling
T-20 Parking Management to Reduce Non-commute Single Occupant Vehicle Use

Proposed As Contingency Measures
T-21 Enhanced Inspection and Maintenance Program

Proposed For Rejection
None.

The TCMs proposed for further study and as contingency measures under state air quality planning requirements (2004 Clean Air Plan) and projects included in the 101-In-Motion Implementation Plan will form the basis for the 2007 Plan on-road mobile source control strategy. Also included are measures that have been implemented during the reporting period 2004-2006 such as new transit routes (e.g., MTD Valley Express) and traffic flow improvements (e.g., SBCAG Freeway Service Patrol). **Table 5-4, Table 5-5, and Table 5-6** list these measures and the process by which the implementation feasibility will be assessed.

As shown in **Table 5-4**, the source of most of the TCMs proposed for adoption is the Highway 101 Deficiency Plan (SBCAG, June 2002) and the 101-In-Motion Implementation Plan (SBCAG, July 2006). The potential air quality impacts of the worsening Highway 101 congestion in the South Coast of Santa Barbara County have been outlined in previous Clean Air Plans. The worsening congestion on the 4-lane segment of Highway 101 between the Ventura-Santa Barbara County line and the City of Santa Barbara continues to have an affect on the local economy, air quality, and mobility within the South Coast area. In 2002, SBCAG joined with other agencies to prepare the Highway 101 Deficiency Plan to address the growing congestion on Highway 101 within the South Coast. The plan, adopted by local agencies and SBCAG, included short-term congestion relief improvements and committed adopting agencies to complete the 101-In-Motion Plan.

The goal of the 101-In-Motion Plan was to develop long-term solutions for addressing congestion on 101 through a process that would include a broad range of public members. A Stakeholder Advisory Committee was formed to include major employers, representatives from the business community, commuters, environmental interests, automobile advocates, alternative transportation advocates, non-profit community organizations, and neighborhood/homeowner associations. Members of the public were invited to community meetings and many proposed solutions and provided information on what was most important to them regarding possible solutions. A "package" of solutions was identified through this extensive public outreach process and was formally approved by the SBCAG board in October 2005. The 101-In-Motion Plan was completed in July 2006, and incorporates the recommendations made through the public outreach process. The major components of the Implementation Plan include; widening

Highway 101 between the Ventura County line and Milpas Street to provide HOV lanes on both sides of the freeway, commuter rail service between Ventura County and Goleta, extensive transportation demand management programs, and intelligent transportation systems (ITS) improvements. It should be noted that each of these are considered feasible transportation control measures. However, some elements are entirely dependent on the Measure D sales tax being renewed, particularly the commuter rail proposal. The long-term solutions identified in the 101-In-Motion Plan will be incorporated into the 101 Deficiency Plan and the Regional Transportation Plan for Santa Barbara County. Major elements of the 101-In-Motion Plan are also being incorporated into the 2007 Plan as transportation control measures. With the community consensus achieved through the outreach process, all of the elements of the 101 Deficiency Plan and 101-In-Motion Implementation Plan are now proposed for adoption.

It should be noted that some of the measures proposed for adoption will likely be implemented beyond the horizon year of this Clean Air Plan.

As shown in **Table 5-6**, the enhanced commuter rail between the North and South County is proposed for rejection. Commuter rail between the north and south counties was studied as part of the 101-In-Motion process and was found to be infeasible since rail stations in the North County are distant from North County population centers and existing regional bus service offers more direct and timely alternative transportation to job centers in the South Coast.

Also proposed for rejection is the Activity Centers/Indirect Source Review measure. This measure is related to APCD's preparation of land use strategies that local agency planners can implement to address issues of air quality. The 2001 Plan contained a chapter detailing this connection between land use decisions and air quality. APCD staff also prepared a Land Use Strategies chapter for the 2004 Plan, with the support of a majority of the members of the Community Advisory Council, but the APCD board voted to not include the Land Use Strategies chapter in the 2004 Plan. Regional government involvement in land use issues is a controversial issue with our elected officials in Santa Barbara County. Recently, SBCAG staff brought forth to its board a proposal to obtain a grant through the Regional Blueprint Planning program as part of its Overall Work Program. The program would have required SBCAG to prepare a plan that would have addressed the link between transportation and land use decisions. The board voted unanimously not to pursue the grant, stating that the program might interfere with local control of land use issues. Based on these past experiences with our local elected officials, it is recommended that the Activity Centers TCM be proposed for rejection at this time.

5.3.1 TCM FUNDING

Since, the passage of the Inter-modal Transportation and Efficiency Act (ISTEA) in 1991 and continuing with the reauthorization of the national transportation bill, SAFETEA-LU, in 2005, the source of funding for transportation control measures primarily comes from the federal Congestion Management and Air Quality (CMAQ) program. The CMAQ program was specifically created to provide a funding source for TCMs in areas designated non-attainment or maintenance for the national ambient air quality standards (NAAQS). With the attainment classification for the federal 8-hour ozone standard and revocation of the 1-hour federal ozone standard in April 2005, annual apportionments of federal CMAQ funds will end for Santa Barbara County. In April 2006, SBCAG began a joint process with the Association of Monterey

Bay Area Governments (AMBAG) to create a two year CMAQ "phase-out" program that would allow SBCAG and the Monterey Bay region to receive SAFETEA-LU CMAQ funds, even though our areas are in attainment of the Federal standards. The measure was approved by the Senate in September 2006, resulting in $1.27 million for Santa Barbara County through fiscal year 2007/08. This amount will be used to support, maintain, and implement the transportation demand management programs administered by SBCAG Traffic Solutions.

A local sales tax referendum approved by the voters in 1989 (Measure D) currently generates approximately $25 million per year for specific transportation improvements and roadway maintenance needs in Santa Barbara County. Measure D will sunset in March 2010. In order to continue to meet these needs, an effort to renew Measure D was initiated by SBCAG. Working closely with local agencies and the public, staff developed a Measure D renewal transportation expenditure plan, which was unanimously approved by the SBCAG board in April 2006. The plan proposed a continuation of the existing ½ percent sales tax plus an addition of a ¼ percent to the sales tax to fund specific projects and programs. In the November 2006 election, the Measure D renewal did not receive the 2/3 voter approval necessary. SBCAG has undertaken listening sessions with those groups that expressed opinions for and against the Measure D renewal and is working on developing another renewal effort for the 2008 election.

The renewal of Measure D is vital to many of the TCM projects listed above and will allow them to be implemented in a timely manner. It will fund a large share of the planned South Coast U.S. 101 improvements, as well as provide a major boost for local transit operators, regional transit and other alternative transportation projects, and programs such as SBCAG Traffic Solutions. In the absence of Measure D funding, the commuter rail, interregional bus service, and carpool/vanpool programs detailed in the 101-In-Motion Plan will not likely be implemented. Furthermore, with Measure D funds available, the timing on the delivery of the entire six lane project south of Cabrillo-Hot Springs, will likely extend beyond 2020 (beyond the horizon year of this Plan), but are expected to be constructed by 2030. The operational improvements north of Milpas Street to Fairview Avenue would also be constructed by 2030. Without Measure D funds available, these large projects would not be constructed until 2040 or beyond. Based on this uncertainty, emissions benefits of these measures were not calculated nor incorporated into this Plan. These projects will need to be accounted for in future Plans.

5.4 ON-ROAD MOBILE SOURCE EMISSIONS ANALYSIS

On-road mobile source emissions are estimated using the California Air Resources Board (ARB) on-road mobile source emissions inventory model (EMFAC). At this time, ARB is currently seeking EPA approval of the EMFAC 2007v2.3 model. ARB has made the EMFAC 2007v2.3 available for use by Districts to develop their on-road mobile source planning inventories. The on-road emission estimates documented in this Chapter were developed using the EMFAC 2007v2.3 emissions model.

On-road mobile source emission forecasts were generated using the EMFAC 2007v2.3 model for 2002 (baseline year), 2010, 2015 and 2020. The transportation activity data (e.g., regional vehicle miles of travel (VMT), regional vehicle trips, and VMT by speed class distributions) generated by SBCAG's Santa Barbara Travel Model provided the basis for the on-road mobile

source emission estimates contained in this plan. In order to calculate 2002 base year trips and VMT, staff applied growth factors developed from Caltrans' estimates of VMT for Santa Barbara County to the SBCAG model year 2000 estimate of VMT and trips. For the 2015 emission forecasts, on-road activity data was interpolated from the 2010 and 2020 model forecasts.

5.4.1 ON-ROAD ACTIVITY DATA INPUTS

Table 5-7 lists the transportation and emissions modeling assumptions of the 2007 Plan on-road mobile source emissions analysis.

The countywide VMT and vehicle trips were derived from SBCAG's Transcad Travel Demand Model. The SBCAG model is fully calibrated in accordance with the federal and state guidelines and performance standards for model accuracy.

The most current modeling products available from the model are a 2000 (base year) and 2010 and 2020 forecasts. These products will be utilized in SBCAG's pending Vision 2030 Regional Transportation Plan (RTP). The coded transportation networks for each forecast scenario reflect road improvements identified in the 2006 Federal Transportation Improvement Program (FTIP). The activity forecasts assume completion of all of the programmed projects (those projects for which specific funding sources have been secured) listed in the 2006 FTIP. It should be noted that some of the projects listed may not be completed until after 2010 and 2015; however, inclusion of these projects in the short-term forecasts does not have any noticeable affect on the activity data. A list of the programmed projects is provided in **Table 5-8**. Past Clean Air Plans have included planned projects in future forecasts; however a number of the planned projects contained in the RTP are contingent on Measure D funding, so they were not included in the model forecasts. It should be noted that the TCMs listed in **Table 5-4** related to the 101 In Motion and Deficiency Plans are currently given the status of "planned". Therefore, the activity data presented here do not account for some of the short-term improvements that are planned on the South Coast of the 101 corridor, such as ITS improvements and commuter rail.

The socio-economic inputs (employment and households) that form the basis for the transportation model are based on SBCAG's 2002 Regional Growth Forecast (RGF). The 2002 RGF forecasts population, housing, and employment growth in Santa Barbara County out to 2030. **Table 5-9** shows the major activity indicators from the 2002 Regional Growth Forecast. The vehicle activity forecasts generated by the SBCAG Travel Model are provided in **Table 5-10**. These forecasts reflect countywide non-commercial vehicle activity.

Figure 5-4 summarizes the 2005 through 2030 forecasted average annual VMT growth rates and their relationship to population growth rates over the same period. The Plan's horizon year is 2020; however, 2030 data was included due to its availability in the SBCAG's Draft Regional Transportation Plan. This graph indicates that both population and annual average VMT will continue to grow, but at a declining growth rate. VMT growth will outpace population growth by about eight-tenths of one percent by 2020. By 2030, the VMT growth rate will only outpace population growth by about 3-tenths of one percent. This represents a departure of trends experienced between 1980 and 2000 and is closer to the trend seen in VMT growth between 2000 and 2004.

The forecasted population and VMT growth rate trend is interesting but not entirely unexpected. VMT change is a product of demographic, social, and economic factors that vary over time. The 1970s through the 1980s were characterized by: post-second world war children having a baby boom; significant increases in the female labor force; and significant increases in vehicle ownership per licensed driver. These factors dramatically impacted the demand for travel over this twenty year period. However, these factors have now reached saturation and will be less significant in the future. For example, during the 1990s the female labor force participation rate (% females 16 - 60 or so who are working) stabilized and has probably reached its peak; the post WWII baby boom generation has had their children; and, the number of vehicles per licensed driver is near or at 1.0. Hence, it has been postulated by transportation researchers that in the absence of "new" demographic and/or socio-economic changes, VMT growth in the future should track more closely with overall population growth.

Social factors emerged in the 1990s that impacted travel. Given the increase in dual income families, more vehicle trips resulted (e.g., two working parents requiring two work trips instead of one; an added trip to the day care center; a trip to the gym on the way to or from work etc.). Another potential factor in future demand is the change in ethnic composition. At this time, change in ethnic composition and its impact on travel is not well understood. The emergence of the Hispanic population can be seen in elementary school enrollment data. This ethnic age cohort will age and turn into licensed drivers, but their driving characteristics may differ from the past drivers that were dominated by the white ethnic group. At this time, travel forecasting models do not account for ethnicity and its impact on travel behavior.

Another economic trend that is impacting travel demand in Santa Barbara County is the high cost of housing in the South Coast. With median housing costs over $1 million, many workers in the South Coast are opting to buy more affordable homes in northern Santa Barbara County or Ventura County – living farther from the worksite and increasing VMT. The U.S. Census indicates that between 1990 and 2000, Santa Barbara County experienced approximately a 20 percent increase in the number of commuters who must travel 30 minutes or more from within or to Santa Barbara County for work[c]. The resulting jobs-housing imbalance that these housing costs have fostered is a contributing factor to VMT growth rates into the future.

5.4.2 EMISSIONS MODELING

Two basic quantities are required to calculate a given emission estimate, an emission factor and an activity factor. In general, the emission factor is the amount of emissions generated by a certain amount of motor vehicle activity. A countywide on-road mobile source emission estimate is calculated by summing the product between the vehicle activity (VMT and trips) and the emission factors contained in the EMFAC emissions model developed by ARB.

EMFAC 2007v2.3 computes emissions associated with the following emitting processes:

[c] This estimate includes inter-county commuting into Santa Barbara County from outside counties (e.g., LA, Ventura and San Luis Obispo) and implicitly assumes that these inter-county commutes require 30 minutes or more to achieve.

1) Running exhaust emissions based on VMT;
2) Cold start incremental emissions and hot start incremental emissions based on the number of vehicles starts as a function of time after engine shutoff;
3) Diurnal emissions based on numbers of vehicles;
4) Hot soak emissions based on total numbers of vehicle starts;
5) Evaporative running losses based on VMT, and;
6) Resting loss emissions based on number of vehicles.

EMFAC 2007v2.3 will produce two types of inventories, an annual average inventory and a planning inventory. This 2007 Plan is based on a summer ozone season (April to October) average daily emissions planning inventory. Refer to *Chapter 3, Emission Inventory*.

ARB distributions were used to allocate VMT and vehicle trips into 24 1-hour time periods within EMFAC. To compute running emissions, each time period's VMT total was stratified into 13 speed classes, or bins (0-65 miles per hour (mph) in 5 mph increments) by vehicle classification. Hence, for the 13 vehicle classifications modeled by EMFAC, there are 24 VMT by Speed Class Distributions (SCD). The SCD estimates for 2002, 2010, and 2020 are derived from SBCAG's travel model. SCD from the A.M. and P.M. peak hour loaded networks were applied to all of the vehicle types except the Urban Bus category, which has a unique drive cycle. For the Urban Bus class, ARB default distributions were applied. The off-peak VMT by SCD were derived by subtracting the A.M. and P.M. peak hour activity from the daily activity for each of the 13 EMFAC speed class bins (0-65 mph by 5 mph increments) and re-calculating the percentage distribution. For the interim year 2015, the VMT by SCD for year 2020 was used, given that it is likely all of the programmed projects would be constructed and functioning by that time.

Traffic analyses completed over the last few years have revealed that the duration of traffic congestion on the County's major freeways is expected to increase in the future. Peak spreading refers to the amount of time freeways experience congestion. Peak spreading is accounted for in the emissions modeling for the 2007 Plan by extending the A.M. and P.M. peak VMT by SCD up to 4 hours (2 hours in the A.M. and 2 hours in the P.M.) for the year 2010 and 6 hours for the years 2015 and 2020. These adjustments to the SCD are described below:

Year	A.M. Peak		P.M. Peak	
	Duration of Congestion	**Time Period**	**Duration of Congestion**	**Time Period**
2002	1 hour	7:00-8:00 AM	1 hour	5:00-6:00 PM
2010	2 hours	6:00-8:00 AM	2 hours	4:00-6:00 PM
2015	3 hours	6:00-9:00 AM	3 hours	4:00-7:00 PM
2020	3 hours	6:00-9:00 AM	3 hours	4:00-7:00 PM

The Countywide VMT and VMT by SCD estimates for years 2000, 2010, 2020, and 2030 from SBCAG's travel model were submitted to ARB for their use in developing the EMFAC 2007v2.3 model. ARB approved these estimates and has included them in the EMFAC 2007v2.3 model.

The emissions associated with vehicle starts are accounted for in the EMFAC model based on the distribution of vehicle starts by vehicle classification, vehicle technology class, and operating mode. This allows the model to compute emissions associated with vehicle starts and evaporative processes (for reactive organic compounds - ROC). EMFAC adds these vehicle start and evaporative emissions to running emissions to compute total on-road mobile source emissions.

Historically, SBCAG has adjusted the ARB estimates of vehicle starts for Santa Barbara County. ARB estimates the vehicle starts by factoring the County's vehicle registration data. SBCAG staff has noted that this excludes vehicles that are operating within the County that are registered outside the County (i.e. Ventura or San Luis Obispo residents working in Santa Barbara County). Furthermore, the SBCAG model estimates trip ends, rather than trip-starts. As such, the reliance on trip starts lessens the sensitivity to future mode split/vehicle trip changes resulting from HOV facilities, new transit services, transit fare policy changes, and other TCMs. Based on these concerns, SBCAG revised the estimate of total Countywide vehicle trip starts by applying the EMFAC7G trip-end to vehicle start adjustment factors to SBCAG's travel model output for trip-ends. The revised vehicle start control totals were then input into EMFAC and allocated by vehicle type based on EMFAC's existing activity data distribution percentages.

The on-road activity data used in calculating the daily emissions for the 2007 Plan is summarized in **Table 5-11**.

5.5 EMISSION RESULTS

The 2007 Plan emission results are summarized below. The model output data (VMT, trips, VMT by SCD) is summarized in **Table 5-11**. The output sheets from the EMFAC model runs are included at the end of this Chapter.

From 2002-2020, ROC on-road mobile source emissions are forecast to decrease as follows:

2002 ROC Baseline	13.28 tons/day
2010 ROC Forecast	8.24 tons/day
2015 ROC Forecast	5.87 tons/day
2020 ROC Forecast	4.58 tons/day
Total On-Road Mobile Source ROC Emission Decrease 2002 – 2020	**8.7 tons/day**

From 2002-2020, NO_x on-road mobile source emissions are forecast to decrease as follows:

2002 NO_x Baseline	18.84 tons/day
2010 NO_x Forecast	14.09 tons/day
2015 NO_x Forecast	9.92 tons/day
2020 NO_x Forecast	6.98 tons/day
Total On-Road Mobile Source NO_x Emission Decrease 2002-2020	**11.86 tons/day**

On-road mobile source emissions of ROC and NO_x are forecast to decline by 8.7 and 11.86 tons per day respectively. This represents a 66 and 63 percent reduction in ROC and NO_x respectively over the 18 year planning horizon of the 2007 Plan. ROC emissions are forecast to decline between 20-30 percent every five years. NO_x emissions are forecast to decline over 25 percent every five years after 2010. These ROC and NO_x emission reductions will primarily result from state and federal controls on light duty vehicle and heavy-duty diesel emissions and the natural attrition of older vehicles being replaced by newer vehicles (i.e., fleet turnover). **Figure 5-5** illustrates how the on-road mobile source emissions are distributed among six major vehicle type categories. These figures show that light-duty autos and trucks will continue to be the primary source of ROC whereas light-duty trucks and heavy-duty vehicles will be the primary source of NO_x into the future. The relative contribution of ROC emissions will decline over time for light duty vehicles while heavy duty vehicles will increase its share of NO_x emissions in the future.

TABLE 5-1
SANTA BARBARA COUNTY ANNUAL AVERAGE POPULATION AND VMT GROWTH RATES

TIME PERIOD	ANNUAL AVG. GROWTH RATE POPULATION	ANNUAL AVG. GROWTH RATE VEHICLE MILES OF TRAVEL	ANNUAL AVG. GROWTH RATIO (POP:VMT)
1990-1999	0.63 %	1.31 %	1:2.08
2000-2004	1.06 %	1.23 %	1:1.16

TABLE 5-2
SANTA BARBARA COUNTY 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)
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	TDM Program (SBCAG)
T-5	Public Transportation	Programmed	County and Cities	SBMTD; SMAT; SBCAG; APCD; COLT; SYVT	FTIP and RTIP; SRTP, TDP	RTP List of Programmed Projects(SBCAG)
T-7	Traffic Flow Improvement	Programmed	County and Cities	County and Cities; Caltrans; SBMTD; SBCAG	FTIP and RTIP	RTP List of Programmed Projects (SBCAG)
T-8	Parking Management	Parking Ordinance	City of Santa Barbara	City of Santa Barbara	Not Applicable	City of Santa Barbara Parking Task Force
T-9	Park-and-Ride Fringe Parking	Voluntary; Programmed	County and Cities	County and Cities; Caltrans	FTIP and RTIP	Caltrans, District 5; RTP List of Programmed Projects (SBCAG)
T-10	Bicycle/Pedestrian	Programmed	County and Cities	County and Cities; Caltrans; SBCAG	FTIP and RTIP; General Bikeway Elements; Bikeway Master Plans	RTP List of Programmed Projects (SBCAG)
T-13	Accelerated Retirement of Vehicles	Voluntary	APCD	APCD	Contract APCD/Engineering	APCD
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
T-19	Public Education	Committal; Voluntary	County and Cities APCD; SBCAG	County and Cities APCD; SBCAG	Interagency Agreements Unnecessary	Not Applicable; CMP Conformance (SBCAG)

TABLE 5-3
EXISTING SIP TCM COMMITMENTS

TCM	DESIGNATION	CLEAN AIR PLAN YEAR	PROJECT SPONSOR	PROJECT/PROGRAM DESCRIPTION	IMPLEMENTATION STATUS	SIP ANALYSIS?
1-4	Travel Demand Management	1994/1998/2004	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/ Private Sector	Flexible Work Hours	Program On-Going	No
5	Public Transportation	1994	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' Bus	Service On-Going	Yes
			City of Lompoc	COLT Expansion – 2 Buses and Farebox Recovery 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
		1998	City of Santa Maria	Transit Bus and expanded service to Guadalupe	Service On-Going	Yes
			County of Santa Barbara	Goleta Rail Platform – San Diegan Extension	Service On-Going	Yes
			County of Santa Barbara	Surf Rail Platform – San Diegan Extension	Service On-Going	Yes
			City of Guadalupe	Guadalupe Rail Platform – San Diegan Extension	Service On-Going	Yes
7	Traffic Flow Improvements	1994	Caltrans	Crosstown Freeway Project	Completed	Yes
			County/Caltrans	Rte. 101 / Patterson Avenue interchange	Completed	Yes
			SBCAG/Caltrans	Rte. 101 / La Cumbre Road interchange	Completed	Yes
			SBCAG/Caltrans	Rte. 101 / Storke Road interchange	Completed	Yes
			SBCAG/Caltrans	Rte. 101 / Betteravia Road interchange	Completed	Yes
			County/Caltrans	Rte. 101 / Fairview Avenue interchange	Completed	Yes
			City of Santa Maria	Rte. 135 / Betteravia Road intersection	Completed	Yes
			County of Santa Barbara	Hollister Avenue / Fairview Avenue intersection	Completed	Yes
				Castillo Street / Montecito Street intersection	Completed	Yes
			City of Santa Barbara	Signal Synchronization – Hollister Avenue	Completed	Yes
			County of Santa Barbara			
8	Parking Management	1994/1998/2004	City of Santa Barbara	Residential Parking Program	On-going	No
9	Park-n-Ride Lots	1998	County of Santa Barbara	Lompoc Park-n-Ride Lot – Ocean Ave./7th St.	Completed	Yes
				Santa Maria Park-n-Ride Lot – Clark Ave./Hwy. 101	Completed	Yes

TCM	DESIGNATION	CLEAN AIR PLAN YEAR	PROJECT SPONSOR	PROJECT/PROGRAM DESCRIPTION	IMPLEMENTATION STATUS	SIP ANALYSIS?
10	Bicycle/Pedestrian	1994	City of Santa Maria	Santa Maria Valley Railroad Bikeway	Completed	Yes
			City of Santa Maria	Battles Road Bicycle and Pedestrian Project	Completed	Yes
			City of Solvang	Alamo Pintado Creek Bikeway/Pedestrian Bridge	Pending	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 Dr./Cabrillo Blvd. Bikeway	Completed	No
			County of Santa Barbara	Fairview Ave. Bike lane	Completed	Yes
			County of Santa Barbara	Bradley Road Bikeway	Completed	Yes
			County of Santa Barbara	El Capitan Ranch Bikeway	Completed	No
		1998	City of Santa Maria	1 Bike Locker	Completed	Yes
			County of Santa Barbara	Class II Bikeway in Santa Ynez – Alamo Pintado Rd.	Completed	Yes
			County of Santa Barbara	Refugio Road Class II Bikeway – Samantha Dr.-SR 246	Completed	Yes
			County of Santa Barbara	Phelps Road Class II Bikeway	Completed	Yes
			County of Santa Barbara	Via Real Class II Bikeway – Cravens Lane to Padaro	Completed	No
			County of Santa Barbara	Maria Ygnacio Creek Class I Bikeway	Completed	No
13	Old Car Buyback	1994/1998/2004	APCD	Vehicle Buyback Program (1996-1999, 2004+)	Program On-Going	Yes
18	Alternative Fuel Program	1994	APCD	Innovative Technologies Group` Program	On-going	Yes
			APCD	Clean Air Express Expansion	On-going	Yes T-5
			SBMTD	Waterfront Shuttle Service Expansion	On-going	Yes T-5
			SBMTD	Easy Lift Conversion of 5 vans to CNG	On-going	Yes
			SBMTD	Gillig bus refurbishment	On-going	Yes
			SBMTD	AMG bus refurbishment	On-going	Yes
		1998	UCSB	2 CNG Truck conversions/fuel maker	On-going	Yes
			City of Lompoc	NG Garbage Truck, roll-off bins, compactors	Project dropped	Yes T-5
			City of Santa Maria	Purchase dual fuel van	On-going	Yes T-5
			City of Santa Maria	Purchase 1 CNG bus	Project Dropped	Yes
19	Public Education	1994/1998/2004	APCD	Overall Work Program	On-going	No
			SBCAG	Overall Work Program	On-going	No
		1998	SB Bike Coalition	Bicycle Video	On-going	No
			County of Santa Barbara	Local Regulations for Electric Vehicles	On-going	No

TABLE 5-4
TRANSPORTATION CONTROL MEASURES PROPOSED FOR ADOPTION

TCM	DESIGNATION	PROJECT SPONSOR	PROJECT/PROGRAM DESCRIPTION	PROCESS
2	Travel Demand Management	Traffic Solutions	Individualized Marketing	101 IM (b) (d)
4	Areawide Ridesharing	Traffic Solutions	Carpool/Vanpool Pricing Incentives	101 IM (b) (d)
5	Public Transportation	SBCAG/ Transit Operators	Interregional Bus Service Program (Clean Air Express, Coastal Express) (a)	101 IM (b) (d)
		SBCAG/ Transit Operators	Local/Regional Bus Service Program	101 IM (b) (d)
		MTD/SBCAG	Express Bus Transit Service – Carpinteria to Santa Barbara (a)	101 Def (c)
		MTD/SBCAG	Express Bus Transit Service – UCSB Line 24 Extension (a)	101 Def (c)
		SBCAG/VCTC	Enhanced Commuter Rail Service – Ventura to Carp/SB/Gol. (a)	101 IM (b) (d)
		SMAT/COLT/SBCAG	Intercommunity Transit Service (Breeze) (a)	CMAQ/TDA
		SBCAG/ Transit Operators	Bus connections to rail stations and transit hubs	(c) 101 IM (b) (d)
		MTD	Valley Express – Service between SY Valley and South Coast	
		MTD	Calle Real/Old Town Shuttle	N/A (c)
		SMAT	Route 24 – Service from Town Center to Hidden Pines/Preisker Park area	N/A (c) N/A (c)
		SMAT	Route 8 – Increased service to West McCoy Ln. and airport industrial area.	N/A (c)
		SMAT	Extension of Route 3 to Edwards Community Center and Pioneer Valley High School	N/A (c)
		COLT	New Route 5 between Mission Plaza and the Com. Center	N/A (c)
6	High Occupancy Vehicle (HOV)/ Toll (HOT) Lanes	Caltrans/SBCAG	HOV Lane on Rte. 101 between Ventura County line to Milpas (HOT Lane dropped by 101 IM as infeasible) (a)	101 IM (b) (d)
7	Traffic Flow Improvements	Caltrans/SBCAG	Network Surveillance – CCTV & Loop Detectors on Rte. 101 between Ventura County line and Hollister Ave. (a)	SHOPP/ Demo
		Caltrans/SBCAG	Changeable Message Signs – Junction of Rte. 101/154 (N & S) and Junction of Route 101/1. (a)	SHOPP
		Caltrans/CHP	CT D5 Traffic Management Center expansion (SLO) – Integrated freeway and arterial control. (a)	101 Def
		MTD	Transit Operations – Vehicle tracking, passenger counts, electronic fare collection, surveillance and communications (a)	101 Def
		Caltrans/SBCAG	Operational Improvements – Milpas to Fairview Ave.: Auxiliary lanes, full lanes and/or interchange improvements.	101 IM (b) (d)
		MTD/Local Agencies	Bus Priority Treatments – Improvements at intersections to provide extra exclusive lanes for buses, bulb-outs at bus stops, and extension of green lights at intersections.	101 IM (b)
		Caltrans/SBCAG	Smart Call Boxes on Rte. 101 between Ventura County line and Hollister Ave. (a)	101 Def (b)
		Caltrans/SBCAG	Ramp Metering – Installation of ramp meters along South Coast 101 corridor, where feasible	101 IM (d)
		City of Santa Maria SBCAG	Skyway Dr./Betteravia Rd. Signal Interconnect (10 signals) Freeway Service Patrol	Local SBCAG
8	Parking Management	SBCAG/Cities of Goleta, Santa Barbara; County; UCSB	Variable Parking Rates by Location (voluntary)	101 IM (d)
9	Park-n-Ride Lots	City of Buellton	Lot near south end of Avenue of the Flags (completed)	Local
13	Old Car Buyback	APCD	Vehicle Buyback Program	ITG/DMV (c)
18	Alternative Fuel Program	MTD	Purchase of ~~5~~ 8 hybrid buses for replacement.	CMAQ/ TDA

(a) Measure augments those proposed for further study in the 2004 Clean Air Plan.
(b) Denotes TCMs for which the timing of implementation is contingent on renewal of the Measure D sales tax and specific allocation of these revenues to these projects. Lack of these local sales tax funds will impact the feasibility of these projects
(c) Denotes projects that are currently operational.
(d) Denotes projects that will not be completed by 2020. These projects are not included in the quantitative analysis of emissions.

TABLE 5-5
TRANSPORTATION CONTROL MEASURES PROPOSED FOR FURTHER STUDY AND CONTINGENCY MEASURES

TCM	DESIGNATION	PROJECT SPONSOR	PROJECT/PROGRAM DESCRIPTION	PROCESS
Proposed for Further Study				
8	Parking Management	City of Santa Barbara	Residential Parking Program	-
9	Park-n-Ride Lots	City of Carpinteria Caltrans/SBCAG	Park-n-Ride Lot – Rte. 101/Bailard Ave. interchange – Contingent on Bailard Ave. interchange improvements Countywide – SLO and Ventura County	SBCAG OWP SBCAG OWP
15	Extended Vehicle Idling	City of Santa Barbara	City Ordinance restricting extended bus idling in the vicinity of the County Courthouse continues. (scale of applicability too small)	N/A
19	Public Education	APCD SBCAG	On-going efforts On-going efforts	APCD SBCAG
Contingency Measure				
21	Inspection and Maintenance	BAR	Enhanced I/M Program	Pending

TABLE 5-6
TRANSPORTATION CONTROL MEASURES PROPOSED FOR REJECTION

TCM	DESIGNATION	PROJECT SPONSOR	PROJECT/PROGRAM DESCRIPTION	REASON
5	Public Transportation	SBCAG	Enhanced Commuter Rail Service – North to South County	North County rail stations too distant from population centers; projected low ridership
14	Activity Centers	Local Agencies/ SBCAG	Indirect Source Review/ Land Use Measures	Insufficient support from local agencies at this time.

TABLE 5-7
2007 PLAN ON-ROAD MOBILE SOURCE ACTIVITY MODELING ASSUMPTIONS

MODELING ASSUMPTIONS	2007 PLAN ASSUMPTIONS
Socio-economic growth assumptions	2002 Regional Growth Forecast (SBCAG)
Vehicle Activity Levels (trips, VMT)(LDA, LDT, MDT, MCY)	SBCAG Travel Model (2000, 2010, 2020)
Vehicle Activity Levels (trips, VMT) (UB, SBUS)	EMFAC2007 v 2.3 (ARB) ARB Default Activity (2002, 2010, 2015, 2020)
VMT by Speed Class Distributions (LDA, LDT, MDT, HDDT, HDGT, SBUS, MCY)	SBCAG Travel Model (2000, 2010, 2020)
VMT by Speed Class Distributions (UB)	EMFAC2007 v 2.3 (ARB) ARB Default Activity (2002, 2010, 2015, 2020)
Transportation Model Networks	SBCAG Travel Model (2000, 2010, 2020)
Infrastructure Improvements & Schedules	2006 FTIP Programmed Projects
Emission Model	EMFAC2007 v 2.3 (ARB)
Vehicle Type/Technology & Demographic Distributions	EMFAC2007 v 2.3 (ARB)
Vehicle Population	Adjusted by SBCAG
Vehicle Starts	Adjusted by SBCAG - Travel Model vehicle trip output and 7G trip start to trip end factors
HDDT & HDGT Activity	EMFAC2007 v 2.3 (ARB)

TABLE 5-8
REGIONALLY SIGNIFICANT PROGRAMMED PROJECTS

State Highways
Rt.135/UVP - Const. at-grade intersection
Rt.101/Hollister - Relocate interchange to join C. Oaks Extension.
Rt.101 SM Way-SLO County line - Widen to 6-lane (currently under construction)
Rt.154, SB to Lake Cachuma, Group II Operational Improvements
101/Milpas Interchange reconstruction, const. Cacique under-crossing
Rt.101 (Rt.144 to Hot Springs SB) - Add auxiliary. lane
Rt.101 (Hot Springs - Milpas NB) - Add 3rd lane
Rt.101 Hot Springs/Cabrillo - Improve interchange
Rt.101/Linden & C Pass – Reconstruction I/C + Via Real between ICs & extension to Creek.
Via Real - Const. frontage road between ICs (part of I/C project)
Rt.101/Carrillo Blvd - Widen NB ramp to 2-ln, Ramp metering. No aux
Rt.101/UVP - Const. full diamond interchange
City of Carpinteria
Via Real Extension across Carp. Creek (part of I/C project)
County of Santa Barbara - South County
Evans Ave/Ortega Hill Rd - Improve intersection, widen 101 NB ramp
El Colegio (Camino Corto to UCSB West gate) - Widen to 4-lane
Lillie Ave./Evans Rd. Intersection - intersection improvement
S. Fairview, Const cap modification, landscape, bike lane
City of Goleta
Hollister at Patterson Ave - Add exclusive RT on Hollister WB appr.
Fowler Rd Ext. - Const. road ext & I/S at Kellogg w/roundabout @ Pine
Ekwill Rd Ext. - Const. road ext & I/S at Kellogg w/roundabout @ Fairview
Fairview/Calle Real - Add NB LT on Fairview & EB LT on Calle Real
Hollister/L. Carneros - Add NB LT on L. Carneros, LT on WB Hollister
North County
Hummel Drive Extension, connect UVP & Hobbs Ln
City of Santa Barbara
Las Positas Road/Cliff Drive Intersection Improvement
City of Santa Maria
UVP - Const. E/W 2-ln arterial from Hummel Dr to Blosser Road
Blosser Rd (Cook to north city limit) - Widen to 4-lane
Miller St. (Stowell - Cook St.) - Widen to 4-lane
Miller St. (Chapel to Alvin Ave.) - Widen to 4-lane
Betteravia (101-135) widen to 6 lanes, signalize (2007)

TABLE 5-9
2007 PLAN ACTIVITY INDICATORS

INDICATOR	UNITS	2002*	2010	2015	2020
Population	Residents	414,000	462,000	488,000	505,000
Housing	Households	140,638	154,053	160,724	164,641
Employment	Workers	178,146	200,587	212,560	221,655

* Interpolated from the 2000 data and 2005 forecasts.
Source: SBCAG 2002 Regional Growth Forecast.

TABLE 5-10
PRELIMINARY VEHICLE ACTIVITY FORECASTS

ACTIVITY	2002	2010	2015	2020
VMT	9,952,000	12,064,000	13,107,500	14,151,000
Trip Ends	1,317,500	1,499,500	1,577,750	1,656,000

TABLE 5-11A
ARB/SBCAG ON-ROAD ACTIVITY DATA (2002 & 2010)

Year: 2002

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	148,033	5,034,116	669,387	1.668	1,116,537
LDT1-TOT	58,594	2,106,271	264,667	1.766	467,402
LDT2-TOT	49,435	1,825,830	226,996	1.766	400,874
MDV-TOT	13,542	599,394	62,959	1.630	102,624
LHDT1-TOT	1,496	58,261	34,272	1.630	55,863
LHDT2-TOT	2,589	97,759	51,025	1.630	83,171
MHDT-TOT	2,807	150,000	97,628	1.000	97,628
HHDT-TOT	915	131,000	21,423	1.000	21,423
OBUS-TOT	185	10,000	7,268	1.000	7,268
SBUS-TOT	506	23,000	2,024	1.000	2,024
UB-TOT	127	17,000	508	1.000	508
MH-TOT	3,843	45,000	384	1.000	384
MCY-TOT	7,457	57,273	10,846	1.000	10,846
TOTAL	**289,530**	**10,154,903**	**1,449,387**		**2,366,552**

2002 VMT by Speed Class Distribution (LDA, LDT1, LDT2, MDT, MCY, LHDT1, LHDT2, MHDT, HHDT, OBUS, SBUS, MH) - SBCAG Model

							% of VMT @					
Time Period	**0-5 mph**	**5-10 mph**	**10-15 mph**	**15-20 mph**	**20-25 mph**	**25-30 mph**	**30-35 mph**	**35-40 mph**	**40-45 mph**	**45-50 mph**	**50-55 mph**	**55-60 mph**	**60-65 mph**
12-6 AM	0.0348	0.071	0.2136	0.4404	0.6574	1.7323	8.791	6.1431	16.1034	16.0525	19.6667	10.8424	19.2513
7-8 AM	0.0525	0.2546	0.1678	0.1664	0.5752	2.0393	8.1439	5.1532	14.4879	11.4758	19.1239	10.6352	27.7242
9 AM-3 PM	0.0348	0.071	0.2136	0.4404	0.6574	1.7323	8.791	6.1431	16.1034	16.0525	19.6667	10.8424	19.2513
4-5 PM	0.103	0.2275	0.147	0.2102	0.9537	2.9172	10.9662	7.6496	15.4302	14.2538	20.5679	8.968	17.6056
6-11 PM	0.0348	0.071	0.2136	0.4404	0.6574	1.7323	8.791	6.1431	16.1034	16.0525	19.6667	10.8424	19.2513

2002 VMT by Speed Class Distribution (UB) - ARB Default

Year: 2010

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	171,965	5,912,699	695,455	1.668	1,160,019
LDT1-TOT	60,228	2,039,035	238,895	1.766	421,888
LDT2-TOT	70,909	2,547,535	288,722	1.766	509,883
MDV-TOT	26,042	1,035,125	107,184	1.630	174,709
LHDT1-TOT	5,245	240,657	94,458	1.630	153,966
LHDT2-TOT	3,420	136,943	55,371	1.630	90,254
MHDT-TOT	3,814	226,000	124,417	1.000	124,417
HHDT-TOT	1,028	151,000	16,194	1.000	16,194
OBUS-TOT	271	15,000	10,082	1.000	10,082
SBUS-TOT	586	27,000	2,342	1.000	2,342
UB-TOT	201	28,000	805	1.000	805
MH-TOT	4,034	48,000	404	1.000	404
MCY-TOT	13,017	121,839	16,896	1.000	16,896
TOTAL	**360,759**	**12,528,832**	**1,651,223**		**2,681,859**

2010 VMT by Speed Class Distribution (LDA, LDT1, LDT2, MDT, MCY, LHDT1, LHDT2, MHDT, HHDT, OBUS, SBUS, MH) - SBCAG Model

							% of VMT @					
Time Period	**0-5 mph**	**5-10 mph**	**10-15 mph**	**15-20 mph**	**20-25 mph**	**25-30 mph**	**30-35 mph**	**35-40 mph**	**40-45 mph**	**45-50 mph**	**50-55 mph**	**55-60 mph**	**60-65 mph**
12-5 AM	0.0244%	0.1461%	0.1840%	0.2908%	0.4953%	8.6900%	5.4091%	9.0768%	12.7835%	15.5105%	18.0550%	8.9182%	20.4163%
6-8 AM	0.0410%	0.2377%	0.1160%	0.1558%	0.7796%	7.4607%	3.2544%	5.6791%	21.5346%	12.0174%	15.7282%	11.1647%	21.8308%
9 AM-3 PM	0.0244%	0.1461%	0.1840%	0.2908%	0.4953%	8.6900%	5.4091%	9.0768%	12.7835%	15.5105%	18.0550%	8.9182%	20.4163%
4-6 PM	0.1020%	0.2228%	0.4439%	0.8111%	1.8666%	9.6737%	5.1798%	16.7195%	15.2458%	14.2572%	12.7329%	8.9525%	13.7921%
6-11 PM	0.0244%	0.1461%	0.1840%	0.2908%	0.4953%	8.6900%	5.4091%	9.0768%	12.7835%	15.5105%	18.0550%	8.9182%	20.4163%

2010 VMT by Speed Class Distribution (UB) - ARB Default

TABLE 5-11B
ARB/SBCAG ON-ROAD ACTIVITY DATA (2015 & 2020)

Year: 2015

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	188,194	6,515,463	735,517	1.668	1,226,842
LDT1-TOT	65,519	2,238,963	249,107	1.766	439,924
LDT2-TOT	77,425	2,730,887	302,180	1.766	533,649
MDV-TOT	28,525	1,069,884	111,929	1.630	182,445
LHDT1-TOT	5,738	240,901	101,158	1.630	164,888
LHDT2-TOT	3,745	149,804	57,527	1.630	93,769
MHDT-TOT	4,168	249,000	133,931	1.000	133,931
HHDT-TOT	1,009	162,000	12,884	1.000	12,884
OBUS-TOT	296	17,000	10,497	1.000	10,497
SBUS-TOT	632	29,000	2,528	1.000	2,528
UB-TOT	217	30,000	869	1.000	869
MH-TOT	4,355	53,000	436	1.000	436
MCY-TOT	14,228	131,585	17,847	1.000	17,847
TOTAL	**394,052**	**13,617,487**	**1,736,411**		**2,820,509**

2015 VMT by Speed Class Distribution (LDA, LDT1, LDT2, MDT, MCY, LHDT1, LHDT2, MHDT, HHDT, OBUS, SBUS, MH) - SBCAG Model

						% of VMT @						
Time Period	**0-5 mph**	**5-10 mph**	**10-15 mph**	**15-20 mph**	**20-25 mph**	**25-30 mph**	**30-35 mph**	**35-40 mph**	**40-45 mph**	**45-50 mph**	**50-55 mph**	**55-60 mph**	**60-65 mph**
12-5 AM	0.0078%	0.0621%	0.2271%	0.3818%	1.0789%	9.4300%	6.1113%	7.9800%	16.9666%	16.6839%	16.0880%	8.1151%	16.8674%
6-9 AM	0.1114%	0.1969%	0.7426%	0.2343%	2.4464%	11.0449%	3.4181%	11.8049%	14.8753%	11.8295%	14.6060%	13.0401%	15.6496%
10 AM-3 PM	0.0078%	0.0621%	0.2271%	0.3818%	1.0789%	9.4300%	6.1113%	7.9800%	16.9666%	16.6839%	16.0880%	8.1151%	16.8674%
4-7 PM	0.2011%	0.8765%	0.6149%	0.5897%	3.2135%	11.3390%	7.4933%	14.1486%	16.0015%	12.2517%	13.7141%	9.3912%	10.1648%
8-11 PM	0.0078%	0.0621%	0.2271%	0.3818%	1.0789%	9.4300%	6.1113%	7.9800%	16.9666%	16.6839%	16.0880%	8.1151%	16.8674%

2015 VMT by Speed Class Distribution (UB) - ARB Default

Year: 2020

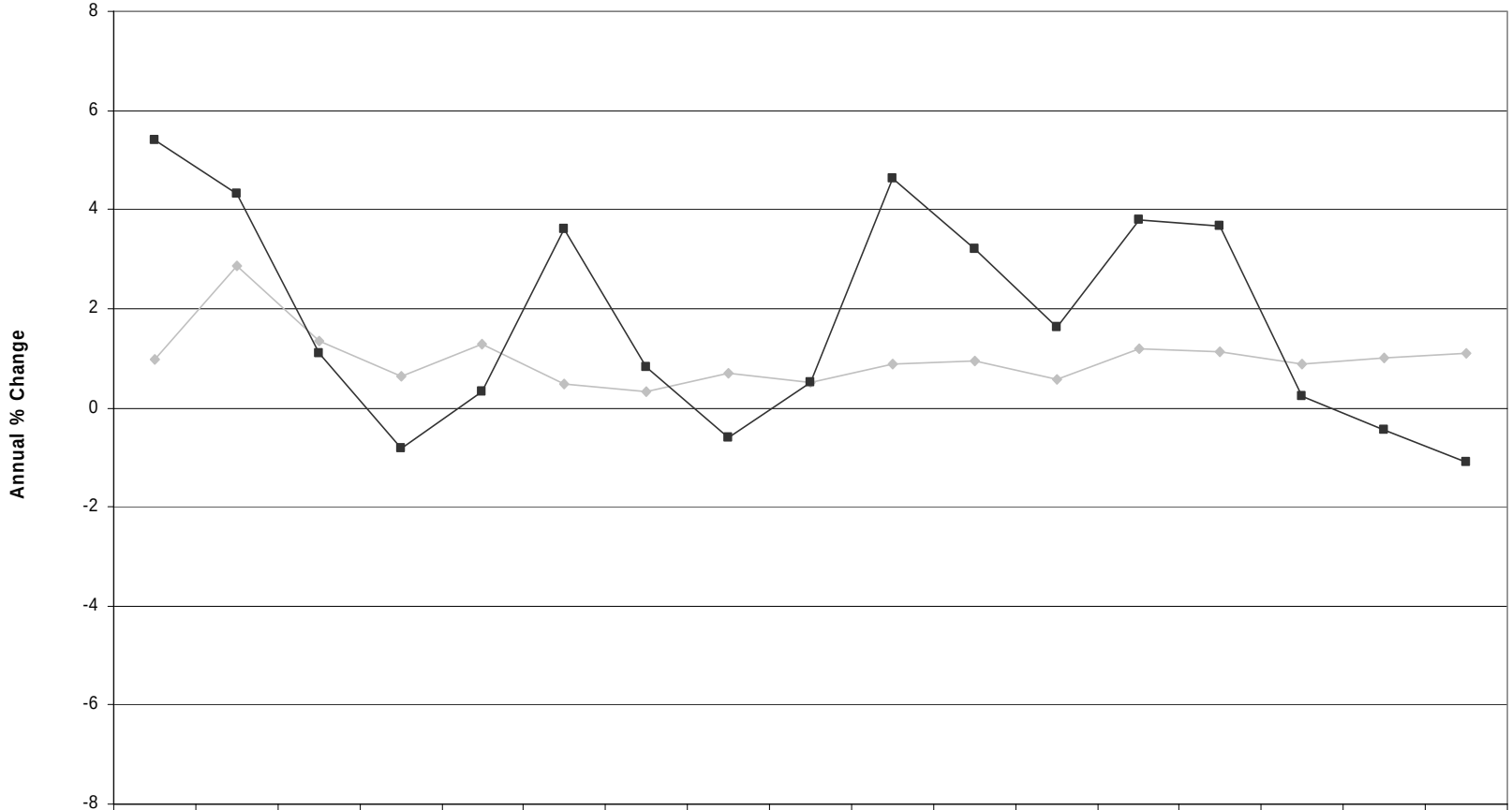
	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	203,704	7,029,374	773,324	1.668	1,289,904
LDT1-TOT	70,496	2,458,520	261,039	1.766	460,994
LDT2-TOT	83,617	2,933,518	315,393	1.766	556,983
MDV-TOT	30,902	1,146,236	116,892	1.63	190,534
LHDT1-TOT	6,207	249,575	107,706	1.63	175,561
LHDT2-TOT	4,058	162,023	60,333	1.63	98,344
MHDT-TOT	4,555	270,000	145,221	1	145,221
HHDT-TOT	991	168,000	10,377	1	10,377
OBUS-TOT	323	19,000	10,992	1	10,992
SBUS-TOT	682	32,000	2,729	1	2,729
UB-TOT	235	32,000	938	1	938
MH-TOT	4,702	59,000	470	1	470
MCY-TOT	15,383	141,896	18,786	1	18,786
TOTAL	**425,855**	**14,701,142**	**1,824,199**		**2,961,833**

2020 VMT by Speed Class Distribution (LDA, LDT1, LDT2, MDT, MCY, LHDT1, LHDT2, MHDT, HHDT, OBUS, SBUS, MH) - SBCAG Model

						% of VMT @						
Time Period	**0-5 mph**	**5-10 mph**	**10-15 mph**	**15-20 mph**	**20-25 mph**	**25-30 mph**	**30-35 mph**	**35-40 mph**	**40-45 mph**	**45-50 mph**	**50-55 mph**	**55-60 mph**	**60-65 mph**
12-5 AM	0.0078%	0.0621%	0.2271%	0.3818%	1.0789%	9.4300%	6.1113%	7.9800%	16.9666%	16.6839%	16.0880%	8.1151%	16.8674%
6-9 AM	0.1114%	0.1969%	0.7426%	0.2343%	2.4464%	11.0449%	3.4181%	11.8049%	14.8753%	11.8295%	14.6060%	13.0401%	15.6496%
10 AM-3 PM	0.0078%	0.0621%	0.2271%	0.3818%	1.0789%	9.4300%	6.1113%	7.9800%	16.9666%	16.6839%	16.0880%	8.1151%	16.8674%
4-7 PM	0.2011%	0.8765%	0.6149%	0.5897%	3.2135%	11.3390%	7.4933%	14.1486%	16.0015%	12.2517%	13.7141%	9.3912%	10.1648%
8-11 PM	0.0078%	0.0621%	0.2271%	0.3818%	1.0789%	9.4300%	6.1113%	7.9800%	16.9666%	16.6839%	16.0880%	8.1151%	16.8674%

2020 VMT by Speed Class Distribution (UB) - ARB Default

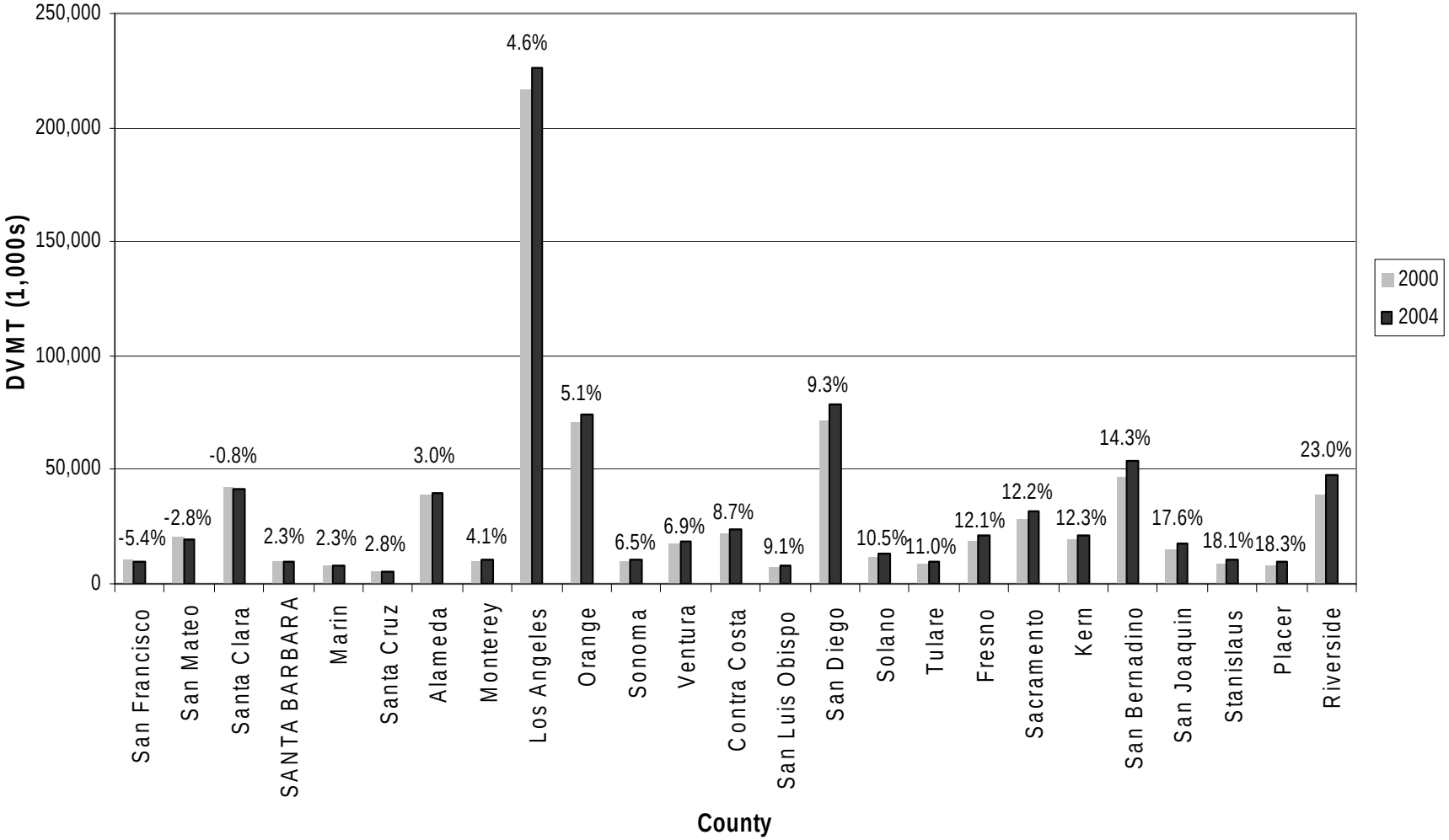
FIGURE 5-1
HISTORICAL POPULATION GROWTH RATE VS. DAILY VEHICLE MILES TRAVELED (DVMT) GROWTH RATE (1988-2004)



	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Population	0.97	2.85	1.35	0.62	1.29	0.48	0.32	0.71	0.50	0.88	0.93	0.56	1.19	1.13	0.87	1.01	1.1
DVMT	5.40	4.31	1.11	-0.82	0.32	3.59	0.81	-0.61	0.50	4.63	3.21	1.61	3.80	3.66	0.22	-0.44	-1.11

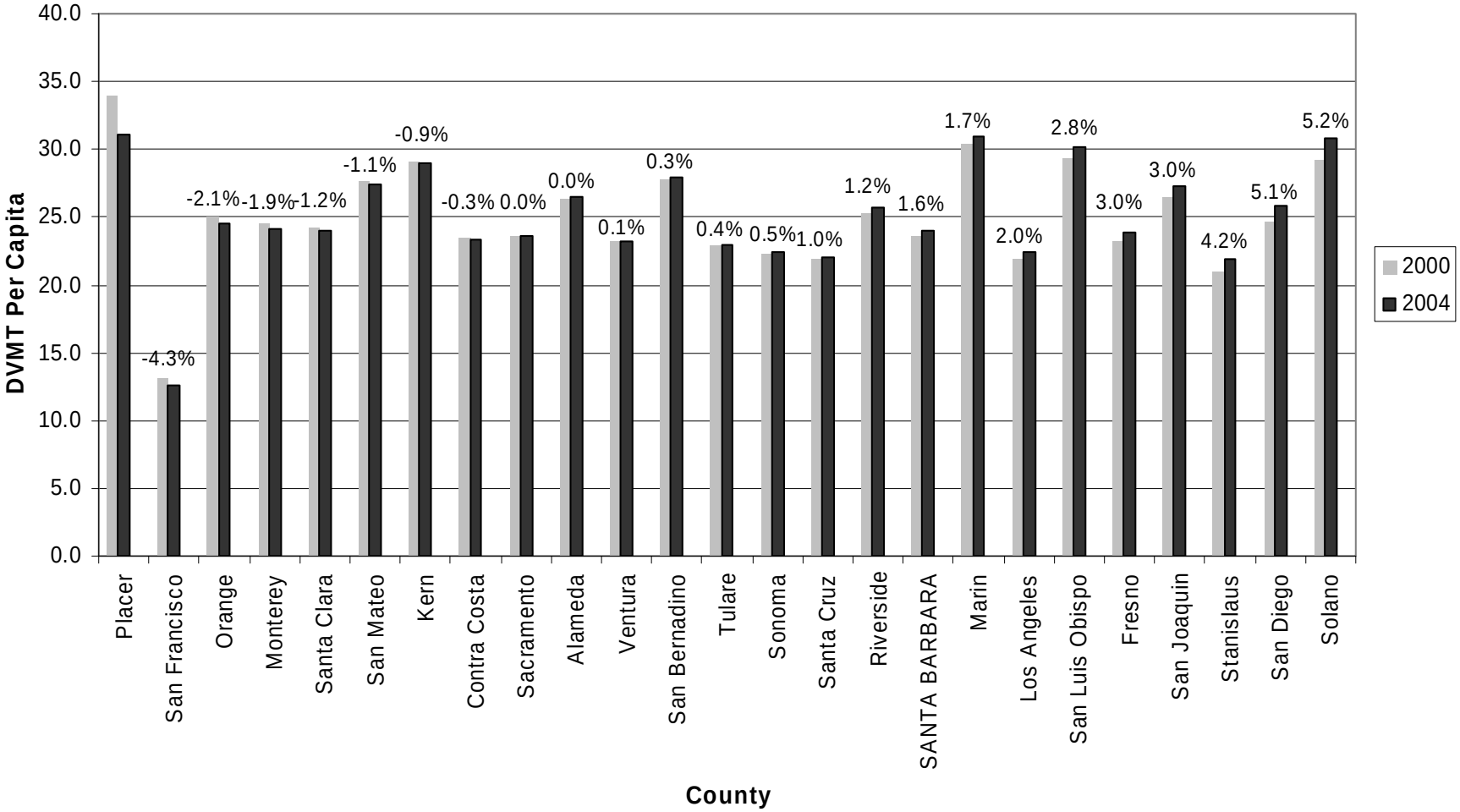
Population Source: Department of Finance
VMT Source: Caltrans HPMS/MVSTAFF Reports

FIGURE 5-2
COUNTYWIDE VMT AND VMT GROWTH FROM 2000 TO 2004 FOR CALIFORNIA COUNTIES WITH POPULATIONS GREATER THAN 250,000



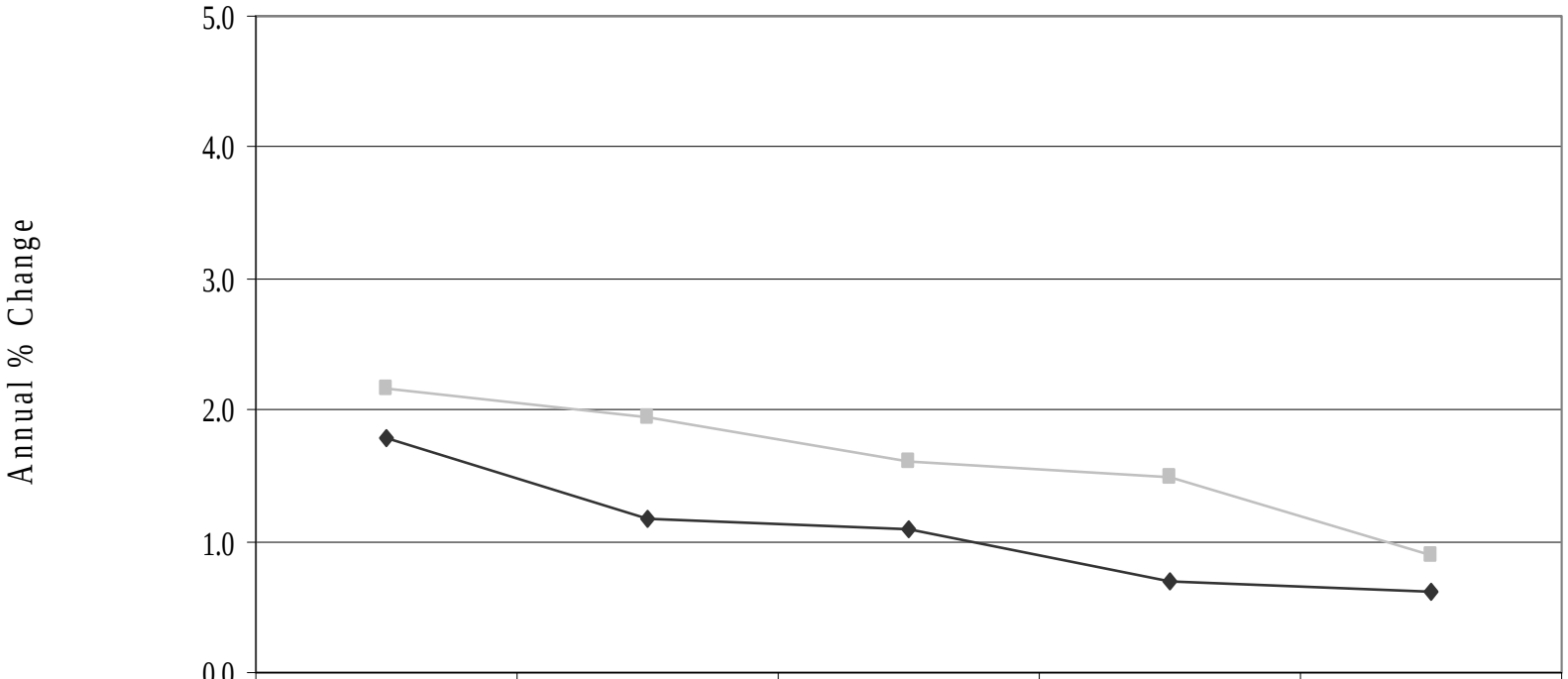
Population Source: Department of Finance
VMT Source: Caltrans HPMS Reports 2001-2005

FIGURE 5-3
COUNTYWIDE DVMT PER CAPITA AND GROWTH RATES FROM 2000 TO 2004 FOR CALIFORNIA COUNTIES WITH POPULATIONS GREATER THAN 250,000



Population Source: Department of Finance
VMT Source: Caltrans HPMS Reports 2001-2005

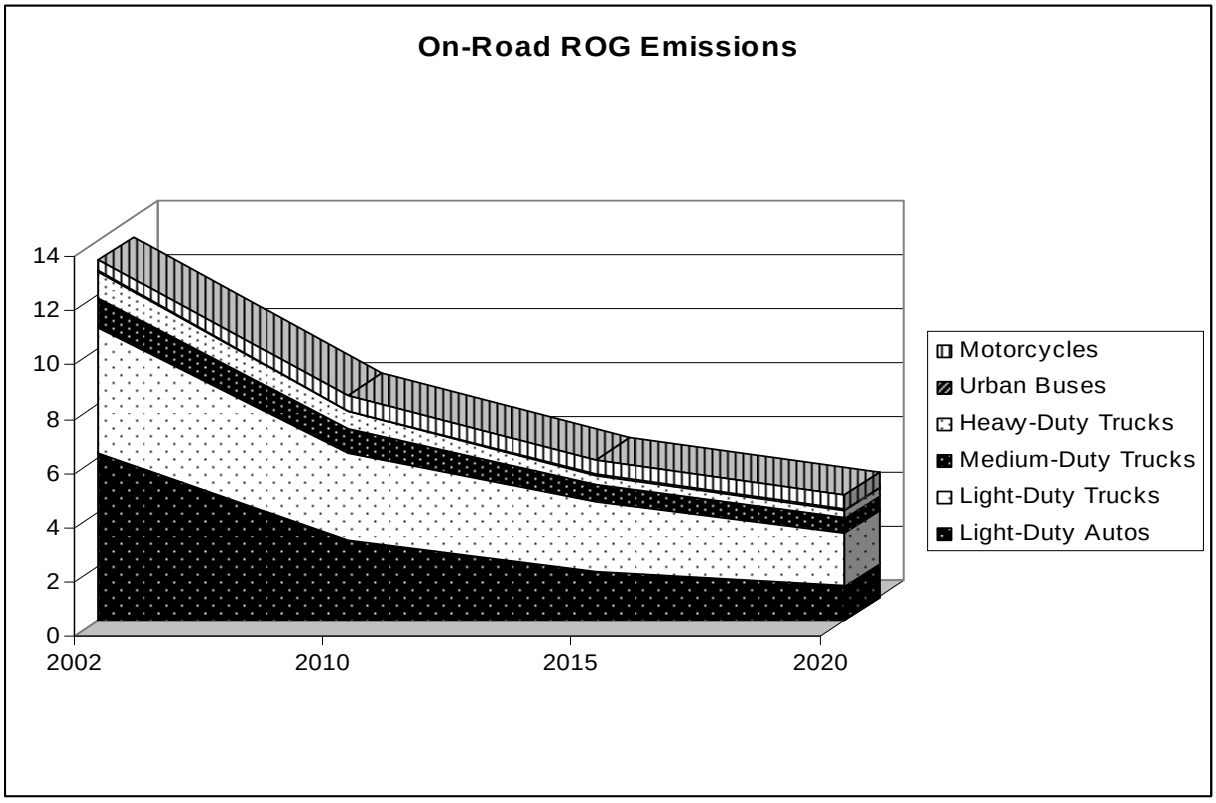
FIGURE 5-4
POPULATION GROWTH RATE VS. DAILY VMT AND TRIP ENDS GROWTH RATES (5-YEAR AVERAGE ANNUAL CHANGE) SANTA BARBARA COUNTY (2005-2020)

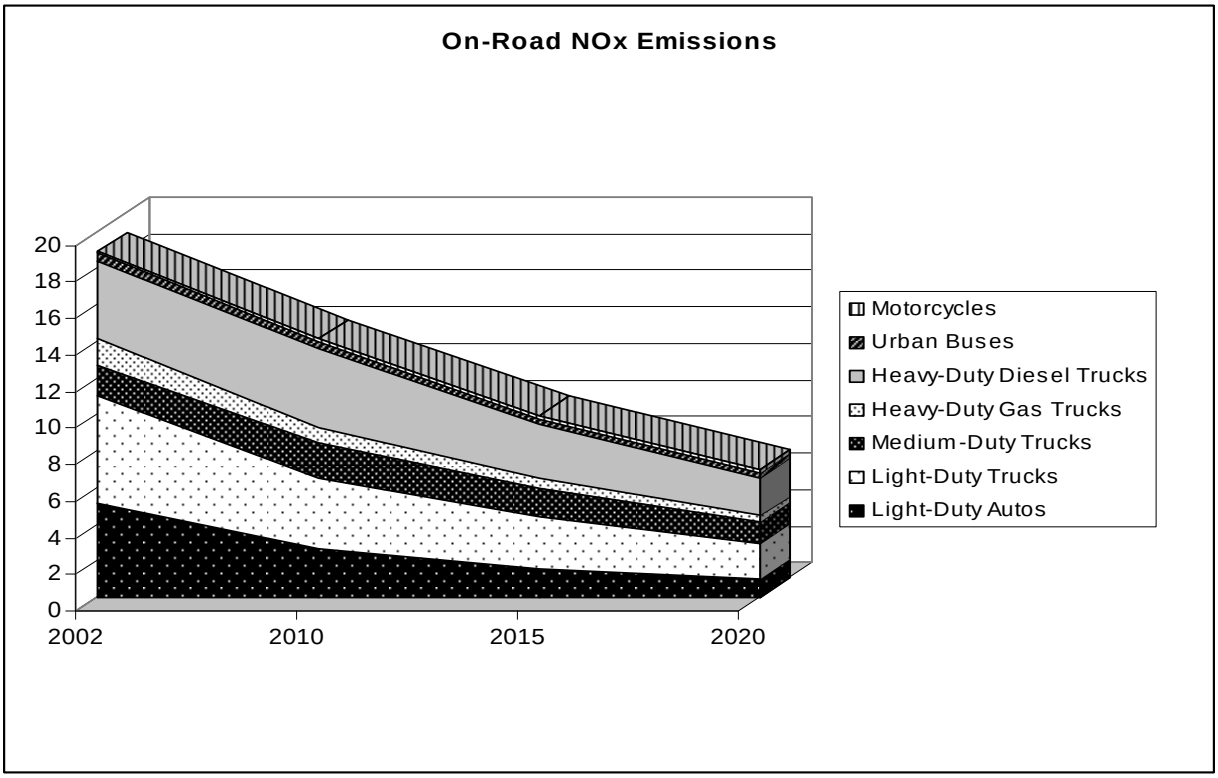


	2005	2010	2015	2020	2030
Population	1.79	1.17	1.10	0.69	0.61
DVMT	2.16	1.95	1.60	1.48	0.9

Year

FIGURE 5-5
ON-ROAD MOBILE SOURCE EMISSION RESULTS





Title : 2007 Plan - Summer 2002 Emissions
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2007/01/17 14:00:45
Scen Year: 2002 -- All model years in the range 1965 to 2002 selected
Season : Summer
Area : Santa Barbara (SCC)
I/M Stat : Enhanced Basic (1998)
Emissions: Tons Per Day

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty Trucks						
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	7181.	139704.	1147.	148033.	4789.	100882.	2357.	108029.	489.	16180.	958.	17627.	1058.	4267.	5324.	2931.	8256.	127.	7457.	289529.
VMT/1000	135.	4870.	30.	5034.	127.	3716.	89.	3932.	12.	704.	39.	755.	12.	124.	135.	223.	359.	17.	58.	10154.
Trips	38492.	1069890.	8157.	1116540.	28022.	821119.	19135.	868276.	10595.	217442.	13621.	241658.	17968.	55981.	73949.	54777.	128726.	508.	10846.	2366550.
Reactive Organic Gas Emissions																				
Run Exh	0.66	1.01	0.01	1.68	0.62	0.90	0.01	1.53	0.08	0.33	0.01	0.42	0.08	0.25	0.33	0.18	0.51	0.04	0.23	4.39
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.03
Start Ex	0.19	1.32	0.00	1.50	0.13	1.01	0.00	1.14	0.06	0.26	0.00	0.32	0.19	0.14	0.33	0.00	0.33	0.00	0.03	3.32
Total Ex	0.85	2.32	0.01	3.18	0.75	1.91	0.01	2.67	0.14	0.59	0.01	0.74	0.27	0.39	0.66	0.19	0.86	0.04	0.26	7.74
Diurnal	0.05	0.23	0.00	0.28	0.03	0.15	0.00	0.19	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.51
Hot Soak	0.12	0.32	0.00	0.43	0.08	0.22	0.00	0.30	0.01	0.03	0.00	0.04	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.80
Running	0.74	1.32	0.00	2.06	0.35	1.03	0.00	1.38	0.05	0.21	0.00	0.26	0.09	0.05	0.14	0.00	0.14	0.00	0.09	3.92
Resting	0.04	0.13	0.00	0.17	0.03	0.09	0.00	0.11	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.30
Total	1.79	4.31	0.01	6.11	1.24	3.40	0.01	4.64	0.21	0.85	0.01	1.07	0.37	0.45	0.82	0.19	1.01	0.04	0.40	13.28
Carbon Monoxide Emissions																				
Run Exh	9.73	27.35	0.02	37.10	9.09	29.44	0.05	38.58	1.64	5.59	0.05	7.28	2.18	4.41	6.59	0.97	7.57	0.21	3.29	94.03
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.01	0.02	0.02	0.05	0.07	0.00	0.00	0.10
Start Ex	1.23	13.08	0.00	14.31	0.90	11.54	0.00	12.45	0.52	3.13	0.00	3.64	1.94	2.11	4.05	0.00	4.05	0.01	0.11	34.56
Total Ex	10.96	40.43	0.02	51.41	10.00	40.99	0.05	51.03	2.16	8.74	0.05	10.95	4.13	6.53	10.66	1.02	11.69	0.22	3.40	128.69
Oxides of Nitrogen Emissions																				
Run Exh	0.74	3.44	0.05	4.23	0.68	4.26	0.15	5.08	0.07	0.92	0.27	1.26	0.07	1.01	1.08	4.18	5.26	0.38	0.09	16.30
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.13
Start Ex	0.06	0.80	0.00	0.85	0.04	0.81	0.00	0.86	0.01	0.37	0.00	0.38	0.03	0.30	0.33	0.00	0.33	0.00	0.00	2.42
Total Ex	0.79	4.24	0.05	5.08	0.72	5.07	0.15	5.94	0.08	1.28	0.27	1.64	0.10	1.31	1.41	4.31	5.72	0.38	0.09	18.84
Carbon Dioxide Emissions (000)																				
Run Exh	0.07	1.84	0.01	1.92	0.06	1.67	0.03	1.76	0.01	0.49	0.02	0.52	0.01	0.09	0.10	0.39	0.48	0.04	0.01	4.74
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01
Start Ex	0.01	0.09	0.00	0.10	0.01	0.08	0.00	0.09	0.00	0.02	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.21
Total Ex	0.07	1.93	0.01	2.02	0.07	1.75	0.03	1.85	0.01	0.51	0.02	0.55	0.01	0.09	0.10	0.40	0.50	0.04	0.01	4.97
PM10 Emissions																				
Run Exh	0.00	0.05	0.00	0.05	0.00	0.05	0.01	0.06	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.16	0.16	0.01	0.00	0.30
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Total Ex	0.00	0.05	0.00	0.06	0.00	0.06	0.01	0.07	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.16	0.16	0.01	0.00	0.32
TireWear	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.09
BrakeWr	0.00	0.07	0.00	0.07	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.14
Total	0.01	0.16	0.01	0.18	0.01	0.14	0.01	0.16	0.00	0.03	0.01	0.04	0.00	0.01	0.01	0.17	0.17	0.01	0.00	0.56
Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.11
Fuel Consumption (000 gallons)																				
Gasoline	9.65	205.01	0.00	214.66	8.81	186.30	0.00	195.11	1.65	53.94	0.00	55.59	2.07	10.44	12.51	0.00	12.51	0.30	1.34	479.50
Diesel	0.00	0.00	1.08	1.08	0.00	0.00	3.10	3.10	0.00	0.00	2.08	2.08	0.00	0.00	0.00	35.71	35.71	3.78	0.00	45.76

Title : 2007 Plan - Summer 2010 Emissions
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2007/01/17 14:18:00
Scen Year: 2010 -- All model years in the range 1966 to 2010 selected
Season : Summer
Area : Santa Barbara (SCC)
I/M Stat : Enhanced Basic (2005)
Emissions: Tons Per Day

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty Trucks						
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	2577.	168709.	679.	171965.	2019.	126896.	2222.	131137.	208.	31689.	2811.	34707.	385.	4741.	5125.	4607.	9733.	201.	13017.	360760.
VMT/1000	44.	5853.	16.	5913.	51.	4464.	72.	4587.	5.	1285.	123.	1412.	4.	111.	115.	352.	467.	28.	122.	12529.
Trips	11050.	1144930.	4038.	1160020.	9381.	906849.	15541.	931771.	2843.	379311.	36776.	418929.	6664.	57961.	64625.	88815.	153440.	805.	16896.	2681860.
Reactive Organic Gas Emissions																				
Run Exh	0.23	0.48	0.00	0.71	0.27	0.60	0.01	0.88	0.03	0.21	0.03	0.27	0.03	0.14	0.17	0.20	0.37	0.04	0.40	2.66
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.03
Start Ex	0.06	0.68	0.00	0.74	0.05	0.66	0.00	0.71	0.02	0.23	0.00	0.25	0.06	0.11	0.18	0.00	0.18	0.00	0.04	1.91
Total Ex	0.29	1.16	0.00	1.45	0.32	1.26	0.01	1.59	0.05	0.44	0.03	0.52	0.09	0.26	0.35	0.22	0.57	0.04	0.44	4.60
Diurnal	0.02	0.19	0.00	0.21	0.02	0.16	0.00	0.18	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.44
Hot Soak	0.03	0.24	0.00	0.28	0.03	0.22	0.00	0.25	0.00	0.03	0.00	0.04	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.57
Running	0.21	0.64	0.00	0.84	0.10	1.00	0.00	1.10	0.01	0.24	0.00	0.26	0.03	0.04	0.07	0.00	0.07	0.00	0.04	2.32
Resting	0.02	0.13	0.00	0.15	0.01	0.12	0.00	0.13	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.31
Total	0.57	2.35	0.00	2.92	0.48	2.76	0.01	3.24	0.06	0.76	0.03	0.85	0.13	0.31	0.43	0.22	0.65	0.04	0.54	8.24
Carbon Monoxide Emissions																				
Run Exh	3.15	16.06	0.01	19.22	3.68	21.09	0.04	24.80	0.60	4.46	0.15	5.21	0.70	2.43	3.13	1.09	4.22	0.21	4.80	58.45
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.02	0.02	0.07	0.09	0.00	0.00	0.14
Start Ex	0.36	7.28	0.00	7.64	0.31	7.90	0.00	8.21	0.14	2.57	0.00	2.71	0.72	1.66	2.39	0.00	2.39	0.01	0.16	21.12
Total Ex	3.51	23.34	0.01	26.86	3.98	28.99	0.04	33.01	0.73	7.09	0.15	7.97	1.43	4.11	5.54	1.15	6.69	0.22	4.96	79.71
Oxides of Nitrogen Emissions																				
Run Exh	0.23	1.75	0.03	2.01	0.26	2.83	0.12	3.21	0.03	0.75	0.60	1.38	0.02	0.55	0.57	4.12	4.69	0.34	0.17	11.80
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.21	0.21	0.00	0.00	0.22
Start Ex	0.02	0.55	0.00	0.57	0.01	0.68	0.00	0.69	0.00	0.53	0.00	0.53	0.01	0.25	0.26	0.00	0.26	0.00	0.01	2.06
Total Ex	0.25	2.30	0.03	2.58	0.28	3.51	0.12	3.91	0.03	1.28	0.61	1.92	0.03	0.80	0.83	4.33	5.16	0.34	0.18	14.09
Carbon Dioxide Emissions (000)																				
Run Exh	0.02	2.16	0.01	2.19	0.03	2.04	0.03	2.09	0.00	0.92	0.07	0.99	0.00	0.08	0.08	0.63	0.72	0.06	0.02	6.07
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.02
Start Ex	0.00	0.09	0.00	0.09	0.00	0.09	0.00	0.09	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Total Ex	0.02	2.25	0.01	2.28	0.03	2.13	0.03	2.18	0.00	0.95	0.07	1.03	0.00	0.08	0.09	0.64	0.73	0.06	0.02	6.31
PM10 Emissions																				
Run Exh	0.00	0.06	0.00	0.06	0.00	0.08	0.00	0.09	0.00	0.03	0.01	0.03	0.00	0.00	0.00	0.14	0.15	0.01	0.00	0.34
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Total Ex	0.00	0.07	0.00	0.07	0.00	0.09	0.00	0.10	0.00	0.03	0.01	0.04	0.00	0.00	0.00	0.15	0.15	0.01	0.00	0.36
TireWear	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.12
BrakeWr	0.00	0.08	0.00	0.08	0.00	0.06	0.00	0.06	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.18
Total	0.00	0.20	0.00	0.20	0.00	0.19	0.01	0.20	0.00	0.06	0.01	0.07	0.00	0.00	0.00	0.16	0.17	0.01	0.01	0.65
Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.06
Fuel Consumption (000 gallons)																				
Gasoline	3.12	234.65	0.00	237.77	3.54	222.98	0.00	226.51	0.55	98.91	0.00	99.46	0.71	9.37	10.08	0.00	10.08	0.73	2.85	577.41
Diesel	0.00	0.00	0.59	0.59	0.00	0.00	2.48	2.48	0.00	0.00	6.37	6.37	0.00	0.00	0.00	57.98	57.98	4.88	0.00	72.30

Title : 2007 Plan - Summer 2015 Emissions
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2007/01/17 14:26:21
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season : Summer
Area : Santa Barbara (SCC)
I/M Stat : Enhanced Basic (2005)
Emissions: Tons Per Day

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty Trucks: Gasoline Trucks			Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Total					
Vehicles	576.	187233.	385.	188194.	733.	140491.	1720.	142944.	94.	34883.	3031.	38008.	125.	5137.	5262.	5199.	10460.	217.	14228.	394052.
VMT/1000	9.	6497.	9.	6515.	18.	4899.	52.	4970.	2.	1336.	123.	1461.	1.	111.	112.	398.	510.	30.	132.	13618.
Trips	2316.	1222400.	2122.	1226840.	3143.	959273.	11157.	973573.	1032.	401594.	38477.	441102.	2372.	56904.	59276.	101000.	160276.	869.	17847.	2820510.
Reactive Organic Gas Emissions																				
Run Exh	0.05	0.30	0.00	0.35	0.10	0.45	0.00	0.55	0.01	0.10	0.02	0.12	0.01	0.06	0.06	0.12	0.18	0.04	0.38	1.62
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.03
Start Ex	0.01	0.40	0.00	0.42	0.02	0.47	0.00	0.48	0.01	0.18	0.00	0.19	0.02	0.09	0.11	0.00	0.11	0.00	0.04	1.24
Total Ex	0.06	0.70	0.00	0.77	0.12	0.92	0.00	1.04	0.02	0.28	0.02	0.32	0.03	0.15	0.18	0.14	0.31	0.04	0.41	2.89
Diurnal	0.00	0.15	0.00	0.15	0.01	0.16	0.00	0.16	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.37
Hot Soak	0.01	0.22	0.00	0.23	0.01	0.24	0.00	0.25	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.53
Running	0.04	0.48	0.00	0.52	0.02	0.94	0.00	0.96	0.00	0.24	0.00	0.25	0.01	0.04	0.04	0.00	0.04	0.00	0.03	1.80
Resting	0.00	0.12	0.00	0.12	0.00	0.13	0.00	0.13	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.29
Total	0.12	1.67	0.00	1.79	0.16	2.37	0.00	2.54	0.02	0.61	0.02	0.64	0.04	0.19	0.23	0.14	0.36	0.04	0.50	5.87
Carbon Monoxide Emissions																				
Run Exh	0.65	11.17	0.01	11.83	1.28	16.71	0.03	18.02	0.23	3.18	0.09	3.50	0.17	1.22	1.39	0.76	2.15	0.16	3.72	39.38
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.06	0.00	0.02	0.02	0.07	0.09	0.00	0.00	0.14
Start Ex	0.07	4.73	0.00	4.81	0.10	5.89	0.00	6.00	0.05	2.01	0.00	2.06	0.22	1.29	1.51	0.00	1.51	0.01	0.18	14.57
Total Ex	0.72	15.91	0.01	16.63	1.39	22.60	0.03	24.02	0.28	5.24	0.09	5.62	0.39	2.53	2.92	0.83	3.75	0.17	3.89	54.09
Oxides of Nitrogen Emissions																				
Run Exh	0.05	1.13	0.01	1.20	0.09	2.12	0.08	2.29	0.01	0.57	0.46	1.05	0.01	0.34	0.34	2.70	3.05	0.31	0.17	8.06
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.24	0.24	0.00	0.00	0.25
Start Ex	0.00	0.36	0.00	0.36	0.00	0.52	0.00	0.53	0.00	0.51	0.00	0.51	0.00	0.20	0.20	0.00	0.20	0.00	0.01	1.61
Total Ex	0.05	1.50	0.01	1.56	0.09	2.64	0.08	2.82	0.01	1.08	0.47	1.56	0.01	0.53	0.54	2.94	3.48	0.31	0.18	9.92
Carbon Dioxide Emissions (000)																				
Run Exh	0.00	2.38	0.00	2.39	0.01	2.25	0.02	2.28	0.00	0.83	0.07	0.90	0.00	0.07	0.07	0.70	0.77	0.06	0.02	6.42
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.02
Start Ex	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.03	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
Total Ex	0.01	2.48	0.00	2.49	0.01	2.35	0.02	2.38	0.00	0.87	0.07	0.94	0.00	0.07	0.07	0.72	0.79	0.06	0.02	6.67
PM10 Emissions																				
Run Exh	0.00	0.06	0.00	0.07	0.00	0.10	0.00	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.09	0.10	0.01	0.00	0.30
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Total Ex	0.00	0.07	0.00	0.07	0.00	0.11	0.00	0.11	0.00	0.03	0.00	0.04	0.00	0.00	0.00	0.10	0.10	0.01	0.00	0.33
TireWear	0.00	0.06	0.00	0.06	0.00	0.04	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.13
BrakeWr	0.00	0.09	0.00	0.09	0.00	0.07	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.19
Total	0.00	0.22	0.00	0.22	0.00	0.22	0.00	0.23	0.00	0.06	0.01	0.07	0.00	0.00	0.00	0.11	0.12	0.01	0.01	0.65
Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.06
Fuel Consumption (000 gallons)																				
Gasoline	0.67	256.48	0.00	257.15	1.26	244.11	0.00	245.37	0.20	89.79	0.00	89.99	0.20	7.48	7.68	0.00	7.68	0.87	3.09	604.15
Diesel	0.00	0.00	0.31	0.31	0.00	0.00	1.80	1.80	0.00	0.00	6.38	6.38	0.00	0.00	0.00	64.42	64.42	4.89	0.00	77.82

Title : 2007 Plan - Summer 2020 Emissions
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2007/01/17 14:33:28
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Summer
Area : Santa Barbara (SCC)
I/M Stat : Enhanced Basic (2005)
Emissions: Tons Per Day

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty Trucks						
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	28.	203473.	203.	203704.	61.	152954.	1097.	154113.	25.	37956.	3186.	41167.	10.	5505.	5515.	5738.	11253.	235.	15383.	425854.
VMT/1000	0.	7025.	4.	7030.	2.	5359.	32.	5392.	0.	1432.	125.	1558.	0.	115.	115.	432.	548.	32.	142.	14702.
Trips	108.	1288720.	1075.	1289900.	254.	1011090.	6630.	1017980.	155.	424733.	39550.	464439.	173.	56935.	57107.	112683.	169790.	938.	18786.	2961830.
Reactive Organic Gas Emissions																				
Run Exh	0.00	0.19	0.00	0.19	0.00	0.31	0.00	0.31	0.00	0.09	0.02	0.11	0.00	0.04	0.04	0.12	0.16	0.04	0.39	1.21
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.03
Start Ex	0.00	0.24	0.00	0.24	0.00	0.31	0.00	0.31	0.00	0.14	0.00	0.14	0.00	0.07	0.07	0.00	0.07	0.00	0.04	0.80
Total Ex	0.00	0.43	0.00	0.44	0.00	0.62	0.00	0.62	0.01	0.23	0.02	0.26	0.00	0.11	0.12	0.13	0.25	0.04	0.42	2.03
Diurnal	0.00	0.12	0.00	0.12	0.00	0.14	0.00	0.14	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.31
Hot Soak	0.00	0.19	0.00	0.19	0.00	0.22	0.00	0.22	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.47
Running	0.00	0.39	0.00	0.39	0.00	0.81	0.00	0.81	0.00	0.23	0.00	0.23	0.00	0.03	0.03	0.00	0.03	0.00	0.02	1.49
Resting	0.00	0.10	0.00	0.10	0.00	0.13	0.00	0.13	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.27
Total	0.00	1.23	0.00	1.24	0.01	1.91	0.00	1.92	0.01	0.55	0.02	0.58	0.00	0.15	0.15	0.13	0.28	0.04	0.51	4.58
Carbon Monoxide Emissions																				
Run Exh	0.02	7.89	0.00	7.91	0.11	12.38	0.02	12.51	0.09	2.73	0.14	2.96	0.02	0.73	0.75	0.80	1.55	0.16	3.49	28.58
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.06	0.00	0.02	0.02	0.07	0.09	0.00	0.00	0.15
Start Ex	0.00	3.03	0.00	3.04	0.01	4.08	0.00	4.08	0.01	1.58	0.00	1.59	0.02	0.96	0.98	0.00	0.98	0.01	0.19	9.89
Total Ex	0.02	10.92	0.00	10.95	0.11	16.46	0.02	16.59	0.10	4.37	0.15	4.61	0.03	1.70	1.74	0.87	2.61	0.17	3.68	38.62
Oxides of Nitrogen Emissions																				
Run Exh	0.00	0.77	0.01	0.77	0.01	1.51	0.05	1.56	0.00	0.40	0.32	0.73	0.00	0.17	0.17	1.80	1.97	0.29	0.18	5.51
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.26	0.26	0.00	0.00	0.27
Start Ex	0.00	0.22	0.00	0.22	0.00	0.36	0.00	0.36	0.00	0.47	0.00	0.47	0.00	0.15	0.15	0.00	0.15	0.00	0.01	1.19
Total Ex	0.00	0.98	0.01	0.99	0.01	1.87	0.05	1.92	0.01	0.87	0.33	1.20	0.00	0.32	0.32	2.06	2.38	0.30	0.19	6.98
Carbon Dioxide Emissions (000)																				
Run Exh	0.00	2.55	0.00	2.55	0.00	2.46	0.01	2.47	0.00	1.03	0.07	1.10	0.00	0.09	0.09	0.78	0.86	0.07	0.02	7.08
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.02
Start Ex	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Total Ex	0.00	2.65	0.00	2.65	0.00	2.56	0.01	2.57	0.00	1.07	0.07	1.14	0.00	0.09	0.09	0.79	0.88	0.07	0.03	7.34
PM10 Emissions																				
Run Exh	0.00	0.07	0.00	0.07	0.00	0.11	0.00	0.11	0.00	0.04	0.01	0.04	0.00	0.00	0.00	0.08	0.08	0.01	0.00	0.31
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Total Ex	0.00	0.08	0.00	0.08	0.00	0.12	0.00	0.12	0.00	0.04	0.01	0.05	0.00	0.00	0.00	0.08	0.09	0.01	0.00	0.34
TireWear	0.00	0.06	0.00	0.06	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.14
BrakeWr	0.00	0.10	0.00	0.10	0.00	0.07	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.21
Total	0.00	0.24	0.00	0.24	0.00	0.24	0.00	0.24	0.00	0.07	0.01	0.08	0.00	0.00	0.00	0.10	0.11	0.01	0.00	0.68
Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx	0.00	0.03	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.07
Fuel Consumption (000 gallons)																				
Gasoline	0.03	273.36	0.00	273.39	0.10	264.76	0.00	264.87	0.06	110.08	0.00	110.14	0.02	9.38	9.39	0.00	9.39	0.99	3.36	662.14
Diesel	0.00	0.00	0.15	0.15	0.00	0.00	1.09	1.09	0.00	0.00	6.49	6.49	0.00	0.00	0.00	71.19	71.19	5.05	0.00	83.97

CHAPTER 6

EMISSION FORECASTING

- INTRODUCTION
- EMISSION FORECAST
- EMISSION INVENTORIES
- IMPACTS OF MARINE SHIPPING EMISSIONS
- CONCLUSION

6. EMISSION FORECASTING

6.1 INTRODUCTION

Chapter 6 presents the three emission inventory forecasts used in the development of this 2007 Plan. These inventories are the 2010, 2015 and 2020 Planning Emission Inventory forecasts of reactive organic compounds (ROC) and oxides of nitrogen (NO_x) emissions in Santa Barbara County and the Outer Continental Shelf (OCS), offshore of Santa Barbara County.

The 2010, 2015 and 2020 Planning Emission Inventory forecasts are based on the 2002 Planning Emission Inventory, which is described in *Chapter 3, Emission Inventory*. This 2002 Planning Emission Inventory is the base year for emission forecasting and was developed by modifying the 2002 Annual Emission Inventory, (also described in *Chapter 3*). A Planning Emission Inventory is essentially a modified subset of an Annual Emission Inventory and differs from an Annual Emission Inventory in three ways. First, the creation of the Planning Emission Inventory involves adjusting the Annual Emission Inventory to account for seasonal variation because most exceedances of the state and federal 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 seeps and gas seeps, and wildfires are excluded from the Planning Emission Inventory since they are not regulated or controlled through implementation of emission control measures. Finally, the annual emissions in the Annual Emission Inventory are converted to daily emissions in the Planning Emission Inventory.

6.2 EMISSION FORECAST

The 2002 Planning Emission Inventory is used to forecast emissions in order to determine whether the emission control measures described in *Chapter 4* and *Chapter 5* of the 2007 Plan will reduce enough emissions in order to attain the state 1-hour and 8-hour ozone standards, and maintain the federal 8-hour ozone standard while accounting for the growth that is expected to occur in the county. The inventory approach to assessing progress assumes that if forecasted inventories are below base level values, then the reductions will be sufficient enough to meet air quality goals, particularly if an area is close to meeting the standard. It should be noted, however, that there are uncertainties with regard to using the emission inventory approach since there is not always a direct correlation between ozone precursor emissions and monitored ozone values. Important factors such as weather conditions and the transport of pollution from other areas can significantly influence local air quality and ozone concentrations. Photochemical modeling is often used in lieu of the inventory approach; however, due to resource limitations the Santa Barbara County Air Pollution Control District (APCD) is not able to provide modeling analyses for this 2007 Plan.

To forecast future year emissions, the estimate of the changes in the level of pollution producing activities, known as “activity indicators”, is used to grow the 2002 Planning Emission Inventory. In addition, emission reductions resulting from local control rules adopted by the APCD Board of Directors and from statewide regulations adopted by the California Air Resources Board (ARB) are estimated and accounted for in the future year forecasts.

Since we are using a 2002 emission inventory base year, future year forecasted emission inventories must be adjusted to account for the most recent Emission Reduction Credits (ERCs) that were in the APCD Source Register during the 3rd quarter of 2006. 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 ERC's must be treated as potential growth in forecast years. Total available ERC's in the Source Register for Santa Barbara County as of the 3rd quarter of 2006, were 0.3740 tons per day of ROC and 0.4377 tons per day of NO_x. These total ERC values are included in the emission forecast tables presented at the end of this chapter. A detailed list of each source that owns these ERC's are listed in **Table 6-1**.

TABLE 6 – 1

SANTA BARBARA COUNTY SOURCE REGISTER ERC's
(As of 3rd Quarter 2006) (Tons per day)

	NO_x	ROC
Arguello, Inc.	0.0011	0.1037
Boeing	0.0098	0.0020
BreitBurn Energy Company	0.0007	0.0010
Chevron	0.0000	0.0194
Dos Cuadros Offshore Resources, L.L.C	0.0000	0.0001
E&B Resource Management	0.0098	0.1074
ExxonMobil Production Company	0.0000	0.0025
GTC/Shell	0.0020	0.0076
Lockheed Martin Corporation	0.0057	0.0076
Plains Exploration and Production	0.0140	0.0483
Southern California Gas Company	0.0003	0.0301
Space X	0.0000	0.0053
US Air Force – VAFB*	0.3943	0.0390
TOTAL SOURCE REGISTER ERC's	**0.4377**	**0.3740**

* ERC's for the US Air Force – VAFB are only allowed to be used for projects at Vandenberg Air Force Base.

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) is the source for several of the activity indicator estimates. The ARB 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 2010, 2015 and 2020 forecast levels of activity to the 2002 level of activity. An activity factor of greater than one indicates an increase in growth, while an activity factor of less than one indicates a decline in activity relative to the 2002 value. While activity indicators and factors have been determined for the milestone years of 2010, 2015 and 2020, the indicators for any intermediate year can be estimated through simple linear interpolation. It is not expected that the activity data for the intermediate years will "spike" resulting in non-linear trends in the data. **Table 6-5** provides the 2002 level of activity, the predicted 2010, 2015 and 2020 levels of activity, the activity factors, and the source of the forecast for each of the activity indicators.

Activity indicators are assigned to each Stationary Source and Area-Wide Source category described in *Chapter 3*. The categories of On-Road Motor Vehicles and Other Mobile Sources are derived from ARB's EMFAC2000 and OFFROAD Model, respectively. The ARB also provided the APCD emission forecasts for Consumer Products and Architectural Coatings.

6.2.2 CONTROL MEASURES

The next step in forecasting future year emissions is to account for regulations and control measures that have been previously implemented or that are scheduled for implementation. 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 are reduced according to the expected efficiency of any control measures that apply to that source, taking into account any existing level of control. 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 seasonally adjusted emission inventory forecast.

6.2.3 VANDENBERG AFB AIRBORNE LASER MISSION GROWTH ALLOWANCE

During the preparation of the 2001 Plan, Vandenberg Air Force Base (VAFB) requested that the APCD include a General Conformity growth allowance into the 2001 Plan to account for an Airborne Laser (ABL) Mission that may potentially come to VAFB. On November 15, 2001, the APCD Board of Directors approved this request, with the condition that a portion of the emissions from the ABL Mission be offset by withdrawing Emission Reduction Credits (ERC's) from the VAFB Source Register. Although General Conformity is not directly applicable to this 2007 Plan

since Santa Barbara County is in attainment for the federal 8-hour ozone standard, projected ABL emissions are presented in this Plan at the request of VAFB (see Chapter 10, Section 10.4). **Table 6-2** shows the emissions from the ABL Mission estimated by VAFB, and the ERC's required from VAFB required to offset the ABL Mission. The remaining emissions from the ABL Mission are included as line items in **Table 6-3**.

TABLE 6 - 2

VANDENBERG AIR FORCE BASE (VAFB) AIRBORNE LASER (ABL) MISSION*		
	ROC	**NOx**
	(Tons per day)	***(Tons per day)***
Projected 2005 Emissions for the ABL Mission by VAFB	0.0552	0.0634
Projected 2010 Emissions for the ABL Mission by VAFB	0.0656	0.4867
Projected 2015 Emissions for the ABL Mission by VAFB	0.0656	0.4867
Projected 2020 Emissions for the ABL Mission by VAFB	0.0656	0.4867
Source Register ERC's required to offset the ABL Mission	0.0000	0.1265
2010 Emissions added to the 2004 Plan for the ABL	0.0656	0.3602
2015 Emissions added to the 2004 Plan for the ABL	0.0656	0.3602
2020 Emissions added to the 2004 Plan for the ABL	0.0656	0.3602

*According to EPA's April 30, 2004 Phase 1 Implementation Rule, general conformity requirements would not apply to Santa Barbara County once the federal 1-hour ozone standard is revoked.

6.3 EMISSION INVENTORIES

Planning emission inventory forecasts for 2010, 2015 and 2020 for both Santa Barbara County and the OCS are presented in **Tables 6-3** and **6-4** and **Figures 6-**1 through **6-4**, located at the end of the chapter. **Tables 6-3** and **6-4** provide a detailed summary of both ROC and NO_x emissions for each emission source category and for each forecast year. These tables also include base year (2002) estimates for each source category for ease of comparison with forecasted emissions. Table 6-5 presents activity data that are utilized to grow base year emissions data. **Figures 6-1** and **6-2** present a graphical time series representation of ROC and NO_x emissions for both Santa Barbara County and the OCS. **Figure 6-3** shows total NO_x emissions from both Santa Barbara County and the OCS, while **Figure 6-4** shows combined Santa Barbara County and OCS NO_x emissions, but does not include emissions from marine shipping.

The bar graph presented in **Figure 6-1** shows that Santa Barbara County onshore NO_x and ROC emissions are expected to decrease continually through 2020. Total onshore ROC emissions are forecasted to decrease from 40.84 tons per day in 2002 to 34.51 tons per day in 2020 representing about a 15 percent decrease in emissions. Total onshore NO_x emissions are projected to decrease from 41.21 tons per day in 2002 to 23.12 tons per day by 2020, about a 44 percent decrease in emissions.

On a source category basis, ROC emissions from onshore stationary sources are forecasted to increase from 9.31 tons per day in 2002 to 11.08 tons per day in 2020 while NO_x emissions from onshore stationary sources are expected to increase from 6.61 tons per day in 2002 to 6.63 tons per day in 2020. ROC emissions from area-wide sources are forecasted to increase from 9.92 tons per day in 2002 to 11.45 tons per day in 2020. Area-wide NO_x emissions are predicted to increase from 0.63 ton per day in 2002 to 1.14 tons per day by 2020.

The largest decreases in both onshore NO_x and ROC emissions are attributable to decreased emissions from onshore mobile sources (On-road Motor Vehicles and Other Mobile Sources). ROC emissions from onshore mobile sources are projected to decrease from 21.62 tons per day in 2002 to 11.97 tons per day in 2020 (45 percent decrease), while NO_x emissions from onshore mobile sources are expected to decrease to 15.36 tons per day by 2020 from 33.96 tons per day in 2002 (55 percent decrease).

Figure 6-2 presents forecasts for OCS ROC and NO_x emissions. The figure shows that total offshore ROC emissions are predicted to increase from 3.88 tons per day in 2002 to 4.53 tons per day in 2020. Total offshore NO_x emissions are anticipated to increase from 39.26 tons per day in 2002 to 77.35 tons per day in 2020. Mobile sources on the OCS, predominately marine shipping, account for all of the anticipated growth in OCS ROC and NO_x emissions. ROC emissions from OCS mobile sources are expected to increase from 2.71 tons per day in 2002 to 3.40 tons per day in 2020, while OCS mobile source NO_x emissions are forecasted to increase from 38.42 tons per day in 2002 to 76.52 tons per day in 2020.

It is anticipated that mobile sources (on-road and other mobile sources) will account for 43 percent of total onshore ROC emissions and 77 percent of the onshore NO_x emissions by 2010. By 2020, mobile sources are predicted to account for 35 percent of the onshore ROC emissions and 66 percent of the onshore NO_x emissions.

The relative contribution of ROC and NO_x from onshore stationary and area sources to overall onshore emissions increases considerably over the planning horizon due to significant reductions of these pollutants from onshore mobile sources during this time period. The relative percentage of total ROC emissions from onshore stationary sources increases from 23 percent in 2002 to 32 percent of the onshore inventory in 2020, while NO_x emissions from onshore stationary sources increases from 16 percent in 2002 to 29 percent of the overall onshore inventory in 2020. Area-wide ROC emissions are forecasted to increase from 24 percent of total onshore emissions in 2002 to 33 percent of the total onshore inventory by 2020. The projected contribution from area-wide NO_x emissions increases from about 2 percent in 2002 to 5 percent of the total onshore NO_x inventory by 2020.

6.4 IMPACTS OF MARINE SHIPPING EMISSIONS

As discussed in the previous section, Santa Barbara County onshore emissions of ROC and NO_x are expected to decrease significantly by 2020, primarily from reductions in on-road mobile emissions and through the implementation of the California Clean Air Act's every feasible measure requirements. While Santa Barbara County onshore emissions are forecasted to substantially decrease during the planning horizon, OCS NO_x emissions are expected to dramatically increase from base year levels. The increase in OCS NO_x emissions is the result of projected growth in

marine shipping activities, which are estimated to more than double from 2002 levels by 2020. Note that in the 2001 and 2004 Plans, marine shipping emission forecasts were based on the projection of the number of vessel transits through the Santa Barbara Channel. It has become clear since then that transit projections are not a good indicator of forecasted emissions since transits can actually decrease while emissions increase. This is due to the fact that marine vessels are becoming larger in order to accommodate significant growth in cargo entering California ports. The trend toward larger ships is associated with larger engines that consume more power. As a result, forecasted emissions for this 2007 Plan are based on projections of ship power consumption rather than forecasted marine vessel transits.

Figure 6-3 presents combined OCS and onshore NO_x forecasts out to 2020. This figure clearly illustrates that increases in NO_x emissions from marine vessels will overwhelm stationary source NO_x reductions that will be achieved by implementing the every feasible measure strategy and by significant decreases in NO_x from onshore mobile sources. Combined NO_x emissions from onshore and OCS sources are anticipated to grow from 80.47 tons per day in 2002 to 90.09 tons per day by 2010. By 2020, combined NO_x emissions are anticipated to increase to 100.47 tons per day, about 25 percent higher than base year estimates.

NO_x emissions from marine shipping alone (excluding commercial and recreational boats) are expected to grow to 53.58 tons per day by 2010 from base year estimates of 37.37 tons per day, a 43 percent increase. By 2020, marine vessel NO_x emissions are forecasted to reach 75.37 tons per day, representing a more than two-fold increase from base year levels. At these growth rates, marine vessel NO_x emissions will account for about 59 percent of the overall (onshore and OCS) NO_x inventory by 2010, increasing to approximately 75 percent of the total NO_x inventory by 2020.

Figure 6-4 presents total onshore and OCS NO_x emissions but excludes the marine shipping contribution. This figure shows that existing and proposed emission reduction strategies on all sources other than marine shipping are anticipated to be successful at reducing future NO_x emissions below baseline levels. Excluding marine shipping emissions, total onshore and OCS NO_x emissions are predicted to be reduced from 43 tons per day in 2002 to 25 tons per day by 2020, which represents about a 42 percent decrease in NO_x emissions over the planning horizon. These data are presented because while onshore control strategies provide significant reductions in NO_x emissions through the planning period, marine shipping emissions will negate any gains realized through these strategies. With increased difficulty in obtaining added reductions from onshore sources, further reductions will need to come from controlling marine shipping activities in order to meet air quality goals. This clearly indicates that additional action from the federal government, USEPA and ARB is required to reduce emissions from both American and foreign-flagged marine vessels traversing our coastline. Otherwise, the burden of attaining or maintaining air quality improvement goals may fall disproportionately on onshore sources.

Figure 6-5 displays combined onshore and OCS ROC forecasts. This figure shows that total ROC emissions are projected to decline through the forecast period. Combined ROC emissions from onshore and OCS sources are projected to decrease from base year levels by approximately 5.7 tons per day by 2020. Any increases in ROC emissions from marine shipping are negated by significant reductions in ROC emissions that occur from onshore sources, particularly on-road mobile sources.

Figure 6-6 provide a graphical representation of ROC emissions from each source category for both onshore and OCS sources, but excludes marine shipping. As stated above, combined ROC

emissions from onshore and OCS sources are expected to remain below baseline levels even with significant growth in marine shipping. **Figure 6-6**, however, emphasizes that proposed control strategies for onshore and non-marine shipping OCS sources will be effective in reducing ROC emissions to below baseline levels.

It is important to note that increases in NO_x emissions from marine shipping activities may not directly correlate to increases in ozone levels in Santa Barbara County since potential impacts are highly dependent on meteorological conditions. In fact, air quality has been improving in Santa Barbara County while marine vessel transits and emissions have been increasing over the last several years. To fully understand the impacts of marine vessel emissions on county-wide ozone levels, however, would require the use of photochemical modeling techniques. This would allow for an evaluation of potential impacts from all sources of ozone precursors (ROC and NO_x), both onshore and offshore, and would also provide an assessment of the relative contribution of impacts from marine vessel emissions on ozone concentrations. Since the resources and expertise required to perform photochemical modeling are beyond our capabilities, we must defer the need for such an exercise to the discretion of USEPA and ARB.

6.4.1 PROPOSED REVISIONS TO MARPOL ANNEX VI

On May 12, 2005, the Marine Environment Protection Committee (MEPC) of the International Marine Organization (IMO) requested that its Sub-Committee on Bulk Liquids and Gases (BLG) consider future emission limits for marine diesel engines and their fuels as amendments to MARPOL Annex VI. The BLG was asked to examine available and developing methods for reducing NO_x emissions from large marine vessels and to recommend future NO_x emission limits. Recently, the United States membership of the BLG drafted a NO_x control proposal for large marine vessels engaged in international commerce. The key elements of the United States proposal are:

For pre-2000 engines, a 20% NO_x reduction would be required except for those engines where reduction is impractical. These reductions would need to be met by the year 2012.
All engines on board any vessel constructed on or after January 1, 2011 would need to meet a NO_x limit 15-25% below the current limits. These are known as Tier 2 NO_x limits.
Beginning in 2016, all engines on board any new vessel constructed on or after January 1, 2016 must meet a NO_x limit 80% below the Tier 2 limits discussed above. These are known as Tier 3 limits.

While these limits are only recommendations based on current and developing technologies, future emissions have been calculated to determine emission benefits should the proposed emission standards be adopted. As shown in Figure 6-7, NO_x emissions based on proposed limits would be significantly lower than current estimates for the years 2012 through 2020. The NO_x emissions based on the proposed limits reflect the assumption that the marine shipping fleet turnover would be 2% per year. Additionally, Tier 2 reductions are assumed to be 20% below the current limits, which is the mid-point of the range proposed by the United States. In the year 2012, one year after the proposed Tier 2 limits would be initiated, NO_x emissions are calculated to be 44.11 tons per year if the proposed NO_x limits were adopted. This is about 3 tons per day less than current NO_x emission forecasts for 2012. By 2020, the proposed NO_x limits would provide a NOx reduction of about 28 tons per day less than the current forecast. These potential NO_x reductions are substantial and reflect proposed Tier 3 standards, which are 80% lower than Tier 2 standards.

The NO_x reduction proposal submitted by the United States, along with proposals submitted by other member nations was scheduled to for further discussion with the MEPC in July 2007. These discussions, however, have been postponed until March 2008, which is the earliest time any amendments to Annex VI will be adopted. The APCD will closely follow the development of the United States' proposal and other proposed revisions to MARPOL Annex VI. With the current IMO schedule, any revisions to MARPOL Annex VI will not be adopted in time to be reflected in this Plan. Any amendments to MARPOL Annex VI leading to NO_x reductions, however, will be incorporated into future planning cycles.

6.5 CONCLUSION

This chapter presents the 2010, 2015 and 2020 Planning Emission Inventory Forecasts. The 2000 Planning Emission Inventory is used as the basis to calculate the 2010, 2015 and 2020 forecasts.

ROC emissions from onshore stationary and area-wide sources are forecasted to increase over base year levels by about 1.77 and 1.53 tons per day, respectively, by 2020. NO_x emissions from onshore stationary sources are anticipated to increase from base year levels by about 0.02 tons per day by 2020, while NO_x increases over base year estimates are expected to be about 0.51 tons per day by 2020 for onshore area-wide sources.

Any increases in ROC and NO_x emissions from onshore stationary and area-wide sources are significantly offset by emission reductions from onshore mobile sources. Baseline ROC emissions from onshore mobile sources are predicted to decrease by nearly 9 tons per day by 2020, while baseline NO_x emissions are anticipated to decrease by nearly 12 tons per day by 2020. Mobile sources account for the highest percentage of overall onshore ROC emissions until 2010, when area-wide sources comprise the largest percentage contribution to the overall ROC onshore inventory. Although there are substantial reductions of NO_x emissions from mobile sources through 2020, mobile sources are anticipated to comprise the largest portion of the total onshore NO_x inventory for each of the planning years.

While reductions of onshore ROC and NO_x emissions are forecasted to occur through the planning period due to existing and proposed emission reduction strategies, emissions from OCS sources are predicted to increase dramatically over the same time horizon. These increases in NO_x and ROC emissions in the OCS are exclusively from significant growth that is forecasted for marine shipping. Marine shipping NO_x emissions are expected to more than double from 2002 to 2020. The increases in marine vessel NO_x emissions that are expected to occur will eliminate anticipated NO_x emission reductions from onshore sources. While monitoring data show that air quality in Santa Barbara County has improved significantly over the past several years, the expected growth in emissions from marine shipping could potentially jeopardize our ability to meet or maintain state or federal ozone standards. It should be noted that the ARB is currently in the process of finalizing a control measure to reduce particulate matter and NO_x emissions from marine vessel auxiliary engines. The proposed rule requires that marine vessel operators use cleaner marine distillate fuels when operating auxiliary engines within 24 miles of the California coastline. While significant reductions in particulate matter are expected from this proposed statewide rule, we anticipate that NO_x reductions will be less than 0.1 tons per day for Santa Barbara County. Further emission reductions from marine shipping will require additional action from ARB and USEPA.

	TABLE 6 – 3 SANTA BARBARA COUNTY EMISSION INVENTORY	2002 ROC *(tons per day)*	2002 NO_x *(tons per day)*	2010 ROC *(tons per day)*	2010 NO_x *(tons per day)*	2015 ROC *(tons per day)*	2015 NO_x *(tons per day)*	2020 ROC *(tons per day)*	2020 NO_x *(tons per day)*
STATIONARY SOURCES									
Fuel Combustion									
010	ELECTRIC UTILITIES	0.0050	0.0244	0.0050	0.0244	0.0050	0.0244	0.0050	0.0244
020	COGENERATION	0.0358	0.1183	0.0249	0.0830	0.0202	0.0681	0.0166	0.0564
030	OIL AND GAS PRODUCTION (COMBUSTION)	0.2374	1.5376	0.2320	0.9674	0.1888	0.7880	0.1548	0.6474
040	PETROLEUM REFINING (COMBUSTION)	0.0023	0.0497	0.0016	0.0344	0.0013	0.0273	0.0010	0.0218
050	MANUFACTURING AND INDUSTRIAL	0.0853	1.1559	0.1054	1.4269	0.1172	1.5861	0.1290	1.7457
052	FOOD AND AGRICULTURAL PROCESSING	0.1226	3.0207	0.1233	3.0295	0.1178	2.9594	0.1141	2.9164
060	SERVICE AND COMMERCIAL	0.0295	0.4787	0.0317	0.5042	0.0332	0.5179	0.0346	0.5411
099	OTHER (FUEL COMBUSTION)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Fuel Combustion Total	**0.5179**	**6.3853**	**0.5239**	**6.0697**	**0.4835**	**5.9711**	**0.4553**	**5.9532**
Waste Disposal									
110	SEWAGE TREATMENT	0.0003	0.0088	0.0003	0.0094	0.0003	0.0097	0.0003	0.0100
120	LANDFILLS	0.3372	0.0034	0.4229	0.0043	0.4745	0.0048	0.5128	0.0052
130	INCINERATORS	0.0009	0.0086	0.0010	0.0091	0.0010	0.0093	0.0010	0.0095
140	SOIL REMEDIATION	0.0864	0.0000	0.8064	0.0000	0.8064	0.0000	0.8064	0.0000
199	OTHER (WASTE DISPOSAL)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Waste Disposal Total	**1.1448**	**0.0208**	**1.2306**	**0.0228**	**1.2822**	**0.0238**	**1.3205**	**0.0246**
Cleaning and Surface Coatings									
210	LAUNDERING	0.0055	0.0000	0.0063	0.0000	0.0066	0.0000	0.0068	0.0000
220	DEGREASING	1.5860	0.0000	1.8514	0.0000	1.9728	0.0000	2.0793	0.0000
230	COATINGS AND RELATED PROCESS SOLVENTS	1.9794	0.0000	2.3824	0.0000	2.7487	0.0000	3.0188	0.0000
240	PRINTING	0.4523	0.0000	0.5142	0.0000	0.4844	0.0000	0.5013	0.0000
250	ADHESIVES AND SEALANTS	0.8591	0.0000	0.8096	0.0000	0.7764	0.0000	0.7489	0.0000
299	OTHER (CLEANING AND SURFACE COATINGS)	0.0963	0.0000	0.1190	0.0000	0.1324	0.0000	0.1458	0.0000
	Cleaning and Surface Coatings Total	**4.9786**	**0.0000**	**5.6828**	**0.0000**	**6.1213**	**0.0000**	**6.5008**	**0.0000**
Petroleum Production and Marketing									
310	OIL AND GAS PRODUCTION	1.8019	0.0740	1.5989	0.0651	1.5026	0.0609	1.4081	0.0569
320	PETROLEUM REFINING	0.0441	0.0001	0.0305	0.0001	0.0248	0.0001	0.0203	0.0001
330	PETROLEUM MARKETING	0.5971	0.0000	0.6628	0.0000	0.6964	0.0000	0.7300	0.0000
	Petroleum Production and Marketing Total	**2.4431**	**0.0741**	**2.2922**	**0.0652**	**2.2238**	**0.0610**	**2.1584**	**0.0569**

	TABLE 6 – 3 SANTA BARBARA COUNTY EMISSION INVENTORY	2002 ROC *(tons per day)*	2002 NO_x *(tons per day)*	2010 ROC *(tons per day)*	2010 NO_x *(tons per day)*	2015 ROC *(tons per day)*	2015 NO_x *(tons per day)*	2020 ROC *(tons per day)*	2020 NO_x *(tons per day)*
Industrial Processes									
410	CHEMICAL	0.0260	0.0000	0.0318	0.0000	0.0353	0.0000	0.0389	0.0000
420	FOOD AND AGRICULTURE	0.1329	0.0000	0.1479	0.0000	0.1572	0.0000	0.1666	0.0000
430	MINERAL PROCESSES	0.0110	0.0475	0.0136	0.0587	0.0151	0.0653	0.0166	0.0719
440	METAL PROCESSES	NA	NA	NA	NA	NA	NA	NA	NA
450	WOOD AND PAPER	NA	NA	NA	NA	NA	NA	NA	NA
470	ELECTRONICS	0.0006	0.0000	0.0008	0.0000	0.0009	0.0000	0.0000	0.0000
499	OTHER (INDUSTRIAL PROCESSES)	0.0523	0.0839	0.0523	0.0839	0.0523	0.0839	0.0523	0.0839
	Industrial Processes Total	**0.2228**	**0.1314**	**0.2463**	**0.1426**	**0.2608**	**0.1492**	**0.2754**	**0.1558**
	STATIONARY SOURCES TOTAL	**9.3072**	**6.6116**	**9.9758**	**6.3002**	**10.3715**	**6.2050**	**10.7104**	**6.1906**
AREA-WIDE SOURCES									
Solvent Evaporation									
510	CONSUMER PRODUCTS	3.0527	0.0000	2.7620	0.0000	2.8304	0.0000	2.8987	0.0000
520	ARCHITECTURAL COATINGS AND SOLVENTS	1.6885	0.0000	1.4751	0.0000	1.5216	0.0000	1.5758	0.0000
530	PESTICIDES/FERTILIZERS	3.1186	0.0000	2.8335	0.0000	3.1172	0.0000	3.4295	0.0000
540	ASPHALT PAVING/ROOFING	0.2755	0.0000	0.3353	0.0000	0.3702	0.0000	0.4043	0.0000
	Solvent Evaporation Total	**8.1353**	**0.0000**	**7.4059**	**0.0000**	**7.8394**	**0.0000**	**8.3083**	**0.0000**
Miscellaneous									
610	RESIDENTIAL FUEL COMBUSTION	0.1273	0.4875	0.1319	0.4493	0.1350	0.4632	0.1385	0.4476
620	FARMING OPERATIONS	1.2442	0.0000	1.2442	0.0000	1.2442	0.0000	1.2442	0.0000
630	CONSTRUCTION AND DEMOLITION	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
640	PAVED ROAD DUST	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
645	UNPAVED ROAD DUST	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
650	FUGITIVE WINDBLOWN DUST	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
660	FIRES	0.0035	0.0011	0.0038	0.0011	0.0038	0.0012	0.0039	0.0012
670	MANAGED BURNING AND DISPOSAL	0.3828	0.1440	1.7218	0.6897	1.7218	0.6897	1.7221	0.6897
690	COOKING	0.0287	0.0000	0.0319	0.0000	0.0339	0.0000	0.0359	0.0000
699	OTHER (MISCELLANEOUS PROCESSES)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Miscellaneous Total	**2.7275**	**0.6326**	**3.1338**	**1.1401**	**3.1388**	**1.1541**	**3.1448**	**1.1385**
	AREA-WIDE SOURCES TOTAL	**9.9218**	**0.6326**	**10.5397**	**1.1401**	**10.9782**	**1.1541**	**11.4529**	**1.1385**

TABLE 6 – 3 SANTA BARBARA COUNTY EMISSION INVENTORY	2002 ROC *(tons per day)*	2002 NO_x *(tons per day)*	2010 ROC *(tons per day)*	2010 NO_x *(tons per day)*	2015 ROC *(tons per day)*	2015 NO_x *(tons per day)*	2020 ROC *(tons per day)*	2020 NO_x *(tons per day)*

MOBILE SOURCES

On-Road Motor Vehicles

710	LIGHT DUTY PASSENGER	6.1110	5.0790	2.9220	2.5770	1.7910	1.5610	1.2370	0.9910
722	LIGHT DUTY TRUCKS – 1	2.7330	3.0280	1.7960	1.8300	1.3800	1.3230	0.9790	0.8660
723	LIGHT DUTY TRUCKS – 2	1.9110	2.9100	1.4480	2.0750	1.1560	1.4950	0.9420	1.0560
724	MEDIUM DUTY TRUCKS	0.4220	0.8510	0.4070	0.7820	0.3660	0.6010	0.3170	0.4330
732	LIGHT HEAVY DUTY GAS TRUCKS – 1	0.2940	0.2170	0.1880	0.3090	0.1320	0.3090	0.1400	0.2920
733	LIGHT HEAVY DUTY GAS TRUCKS – 2	0.3410	0.3000	0.2260	0.2270	0.1310	0.1900	0.1030	0.1480
734	MEDIUM HEAVY DUTY GAS TRUCKS	0.3910	0.3260	0.1920	0.2470	0.1060	0.1750	0.0690	0.1160
736	HEAVY HEAVY DUTY GAS TRUCKS	0.3070	0.8690	0.1720	0.4260	0.0880	0.2480	0.0540	0.1290
742	LIGHT HEAVY DUTY DIESEL TRUCKS – 1	0.0020	0.0320	0.0140	0.3030	0.0080	0.2280	0.0110	0.1640
743	LIGHT HEAVY DUTY DIESEL TRUCKS – 2	0.0100	0.2350	0.0160	0.3030	0.0090	0.2360	0.0120	0.1660
744	MEDIUM HEAVY DUTY DIESEL TRUCKS	0.0370	1.8350	0.0430	1.6300	0.0300	1.0860	0.0330	0.7000
746	HEAVY HEAVY DUTY DIESEL TRUCKS	0.1510	2.1650	0.1620	2.2870	0.0980	1.4540	0.0870	1.0200
750	MOTORCYCLES	0.4040	0.0930	0.5390	0.1790	0.4990	0.1790	0.5110	0.1880
760	HEAVY DUTY DIESEL URBAN BUSES	0.0030	0.3570	0.0120	0.3170	0.0110	0.2820	0.0100	0.2640
762	HEAVY DUTY GAS URBAN BUSES	0.0340	0.0230	0.0270	0.0280	0.0270	0.0300	0.0310	0.0320
770	SCHOOL BUSES	0.0170	0.2160	0.0160	0.3010	0.0110	0.3140	0.0170	0.2790
776	OTHER BUSES	0.0280	0.1020	0.0230	0.1200	0.0150	0.0900	0.0120	0.0610
780	MOTOR HOMES	0.0810	0.2030	0.0440	0.1470	0.0170	0.1140	0.0110	0.0720
	On-Road Motor Vehicles Total	**13.2770**	**18.8410**	**8.2470**	**14.0880**	**5.8750**	**9.9150**	**4.5760**	**6.9770**

TABLE 6 – 3 SANTA BARBARA COUNTY EMISSION INVENTORY		2002 ROC *(tons per day)*	2002 NO_x *(tons per day)*	2010 ROC *(tons per day)*	2010 NO_x *(tons per day)*	2015 ROC *(tons per day)*	2015 NO_x *(tons per day)*	2020 ROC *(tons per day)*	2020 NO_x *(tons per day)*
Other Mobile Sources									
810	AIRCRAFT	0.7744	0.0865	0.9106	0.1021	0.9722	0.1077	1.0337	0.1133
820	TRAINS	0.1399	2.6075	0.2331	2.3467	0.2416	2.2518	0.2501	2.1910
830	SHIPS AND COMMERCIAL BOATS	0.0406	0.4931	0.0445	0.5385	0.0470	0.5668	0.0494	0.5951
840	RECREATIONAL BOATS	1.3761	0.0981	1.1197	0.1655	1.0122	0.1782	0.9618	0.1958
850	OFF-ROAD RECREATIONAL VEHICLES	1.6637	0.0774	2.2768	0.1253	2.6419	0.1363	3.1343	0.1585
860	OFF-ROAD EQUIPMENT	2.9900	8.1365	2.2217	6.2875	1.7435	4.7869	1.4736	3.5093
870	FARM EQUIPMENT	0.7249	3.6212	0.5139	2.6557	0.3457	1.9054	0.2242	1.2542
890	FUEL STORAGE AND HANDLING	0.6276	0.0000	0.3417	0.0000	0.2477	0.0000	0.1994	0.0000
	Other Mobile Sources Total	**8.3372**	**15.1203**	**7.6620**	**12.2213**	**7.2518**	**9.9331**	**7.3265**	**8.0172**
	MOBILE SOURCES TOTAL	**21.6142**	**33.9613**	**15.9090**	**26.3093**	**13.1268**	**19.8481**	**11.9025**	**14.9942**
	SOURCE REGISTER EMISSION REDUCTION CREDITS	**NA**	**NA**	**0.3740**	**0.4377**	**0.3740**	**0.4377**	**0.3740**	**0.4377**
	VANDENBERG AIR FORCE AIRBORNE LASER MISSION	**NA**	**NA**	**0.0656**	**0.3602**	**0.0656**	**0.3602**	**0.0656**	**0.3602**
	SANTA BARBARA COUNTY TOTAL	**40.8432**	**41.2055**	**36.8641**	**34.5475**	**34.9161**	**28.0051**	**34.5054**	**23.1212**

TABLE 6 – 4 OUTER CONTINENTAL SHELF EMISSION INVENTORY	2002 ROC *(tons per day)*	2002 NO_x *(tons per day)*	2010 ROC *(tons per day)*	2010 NO_x *(tons per day)*	2015 ROC *(tons per day)*	2015 NO_x *(tons per day)*	2020 ROC *(tons per day)*	2020 NO_x *(tons per day)*
STATIONARY SOURCES								
Fuel Combustion								
030 OIL AND GAS PRODUCTION (COMBUSTION)	0.0685	0.8090	0.0693	0.8070	0.0693	0.8069	0.0693	0.8069
Fuel Combustion Total	**0.0685**	**0.8090**	**0.0693**	**0.8070**	**0.0693**	**0.8069**	**0.0693**	**0.8069**
Cleaning and Surface Coatings								
230 COATINGS AND RELATED PROCESS SOLVENTS	0.0542	0.0000	0.0197	0.0000	0.0197	0.0000	0.0197	0.0000
Cleaning and Surface Coatings Total	**0.0542**	**0.0000**	**0.0197**	**0.0000**	**0.0197**	**0.0000**	**0.0197**	**0.0000**
Petroleum Production and Marketing								
310 OIL AND GAS PRODUCTION	1.0440	0.0271	1.0440	0.0271	1.0440	0.0271	1.0440	0.0271
Petroleum Production and Marketing Total	**1.0440**	**0.0271**	**1.0440**	**0.0271**	**1.0440**	**0.0271**	**1.0440**	**0.0271**
STATIONARY SOURCES TOTAL	**1.1668**	**0.8361**	**1.1330**	**0.8341**	**1.1330**	**0.8340**	**1.1330**	**0.8340**
MOBILE SOURCES								
Other Mobile Sources								
810 AIRCRAFT	0.0214	0.0156	0.0214	0.0156	0.0214	0.0156	0.0214	0.0156
830 SHIPS AND COMMERCIAL BOATS	1.3119	38.3060	1.7400	54.5200	2.0815	65.4960	2.4180	76.3090
840 RECREATIONAL BOATS	1.3761	0.0981	1.1197	0.1655	1.0122	0.1782	0.9618	0.1958
Other Mobile Sources Total	**2.7094**	**38.4197**	**2.8811**	**54.7011**	**3.1151**	**65.6898**	**3.4012**	**76.5204**
MOBILE SOURCES TOTAL	**2.7094**	**38.4197**	**2.8811**	**54.7011**	**3.1151**	**65.6898**	**3.4012**	**76.5204**
OUTER CONTINENTAL SHELF TOTAL	**3.8762**	**39.2558**	**4.0141**	**55.5352**	**4.2481**	**66.5238**	**4.5342**	**77.3544**

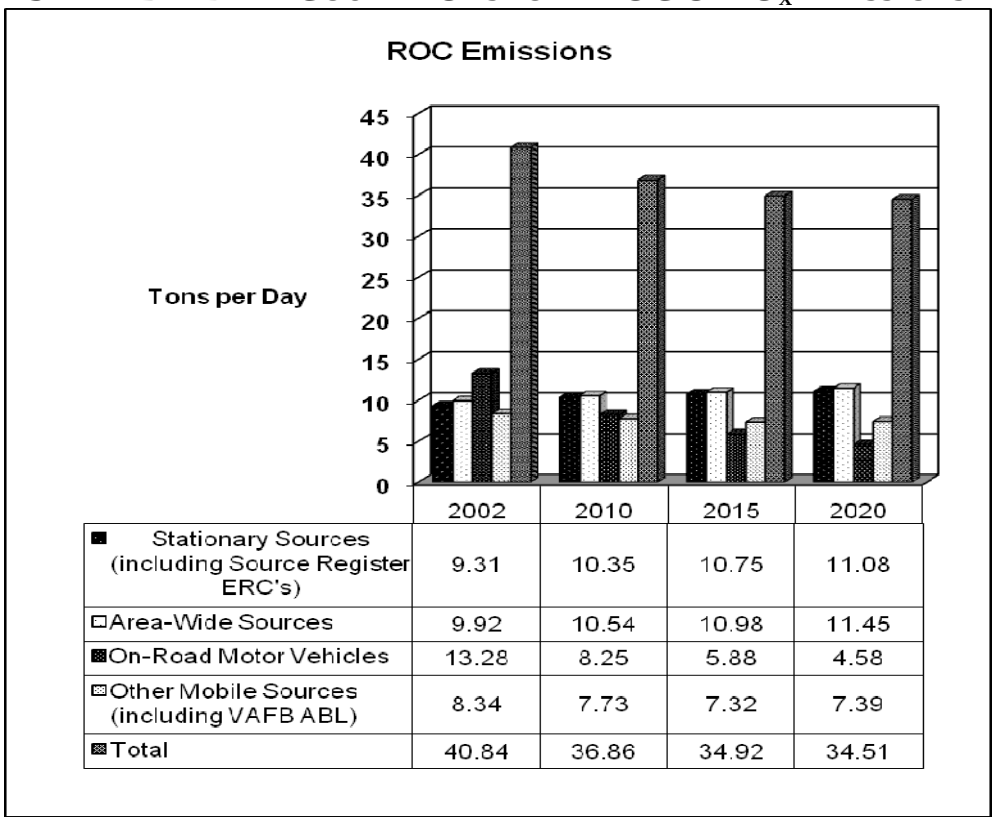
TABLE 6-5
2007 CLEAN AIR PLAN ACTIVITY INDICATORS AND FACTORS FOR 2010, 2015 AND 2020

ACTIVITY INDICATOR	UNITS	VALUE				FACTOR			INFORMATION SOURCE
		2002	2010	2015	2020	2010	2015	2020	
Agricultural Acres	Acres	120,653	121,527	114,596	110,350	1.007	0.950	0.915	(7)
Aircraft Operations	Operations	304,464	385,300	414,200	443,100	1.266	1.360	1.455	(1) / (10)
Daily Vehicle Miles	1,000 Miles Traveled	9,952	12,064	13,108	14,151	1.212	1.317	1.422	(12)
EMP. - Commercial	Employees	92,300	102,700	109,200	115,700	1.113	1.183	1.254	(11)
EMP. - Industrial	Employees	28,900	35,820	39,840	43,860	1.239	1.379	1.518	(11)
EMP. - Public Services	Employees	39,480	42,000	43,200	44,400	1.064	1.094	1.125	(11)
Housing	Households	140,638	154,053	160,724	164,641	1.095	1.143	1.171	(11)
Landfills	1,000 Tons in Place	16,729	20,983	23,545	25,443	1.254	1.407	1.521	(13)
Locomotives	Annual Train Passages	6,023	10,038	10,403	10,768	1.667	1.727	1.788	(2) / (4) / (13)
No Growth	No Units	1	1	1	1	1.000	1.000	1.000	(8)
OCS Production	No Units	1	1	1	1	1.000	1.000	1.000	(9)
Petroleum Production	1,000 Barrels Oil	3,635	2,517	2,044	1,672	0.692	0.562	0.460	(3)
Petroleum Wells	Producing & Inactive Wells	2,202	1,979	1,871	1,762	0.899	0.850	0.800	(3)
Population	Residents	399,300	462,000	488,000	505,000	1.157	1.222	1.265	(11)
Prescribed Fires	Acres	1,275	6,250	6,250	6,250	4.902	4.902	4.902	(15)
Ship Activity	1,000 Kilowatts	165,081	249,509	300,610	350,966	1.511	1.821	2.126	(5) / (6)

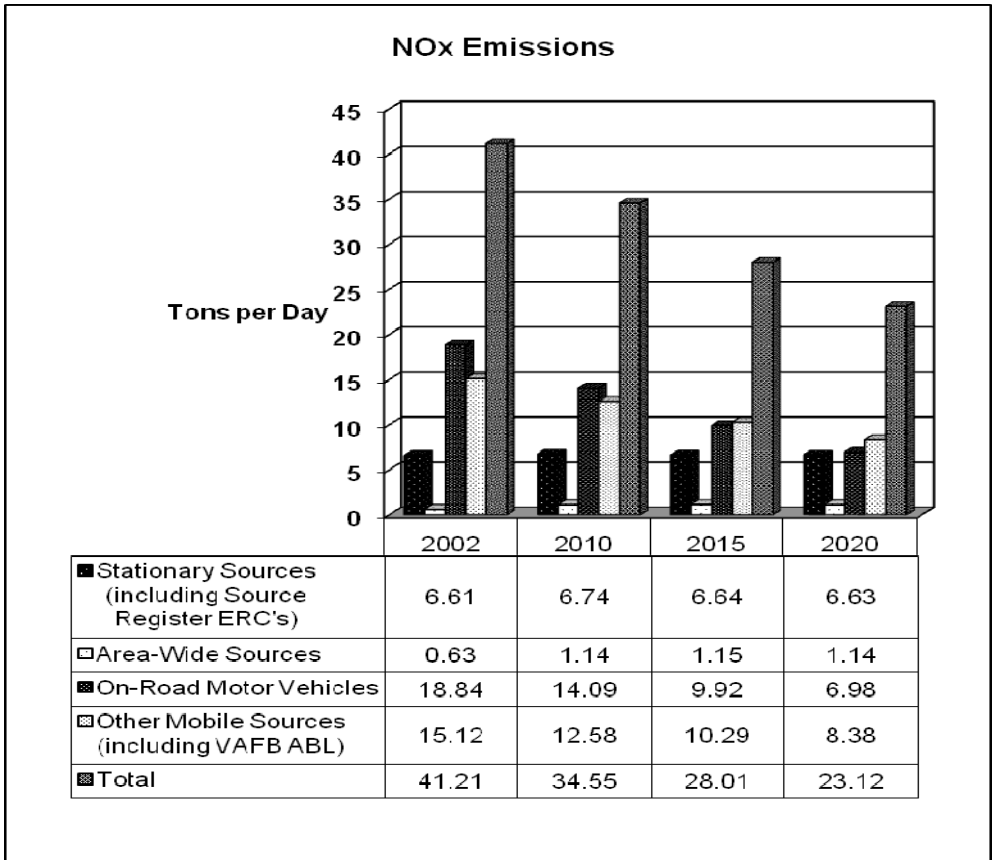
INFORMATION SOURCES

(1) Airport Master Plans within Santa Barbara County
(2) AMTRAK
(3) California Department of Conservation - Divisions of Oil & Gas
(4) California Department of Transportation
(5) Lloyds Maritime Database
(6) Marine Exchange of Southern California
(7) Santa Barbara County Agriculture Commissioner: Agricultural Crop Reports
(8) Santa Barbara County Air Pollution Control District
(9) Santa Barbara County Air Pollution Control District Community Advisory Council
(10) Santa Barbara County Association of Governments
(11) Santa Barbara County Association of Governments 2004 Regional Growth Forecast
(12) Santa Barbara County Association of Governments Travel Model
(13) Solid Waste Agencies within Santa Barbara County
(14) Union Pacific
(15) United States Forest Service

FIGURE 6-1
SANTA BARBARA COUNTY ONSHORE ROC & NO_X EMISSIONS

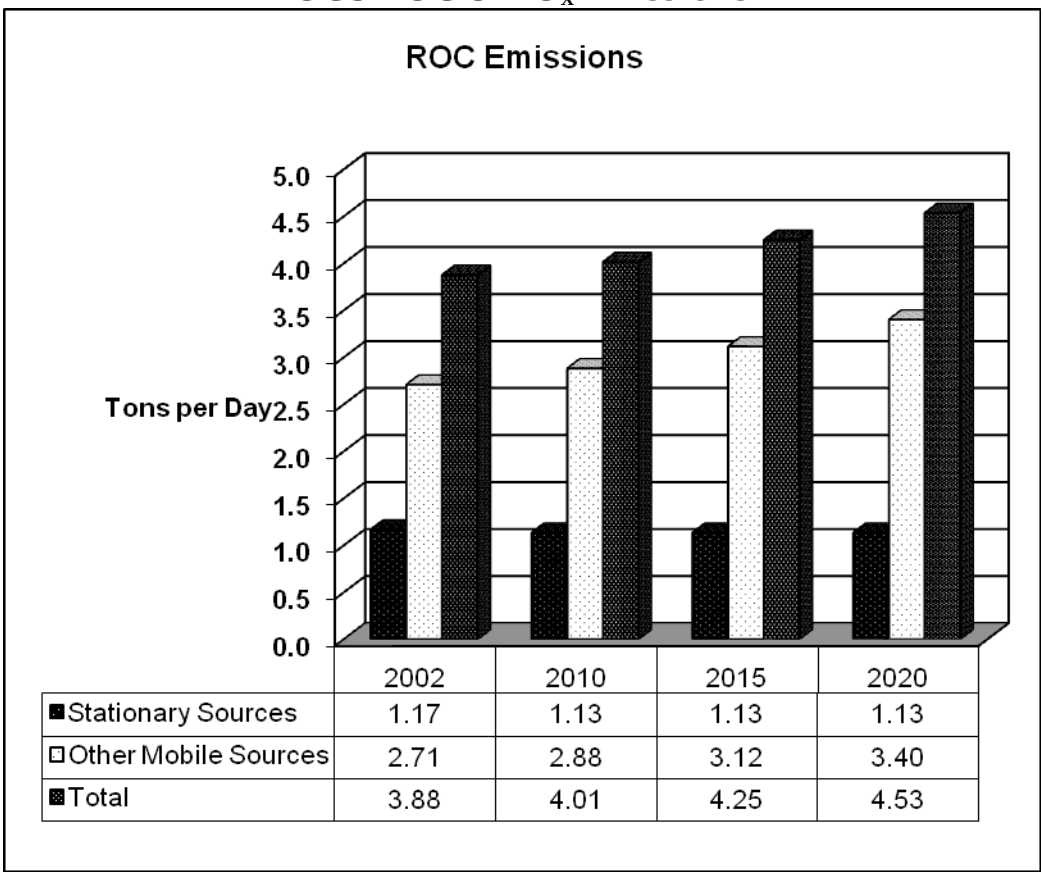


	2002	2010	2015	2020
Stationary Sources (including Source Register ERC's)	9.31	10.35	10.75	11.08
Area-Wide Sources	9.92	10.54	10.98	11.45
On-Road Motor Vehicles	13.28	8.25	5.88	4.58
Other Mobile Sources (including VAFB ABL)	8.34	7.73	7.32	7.39
Total	40.84	36.86	34.92	34.51

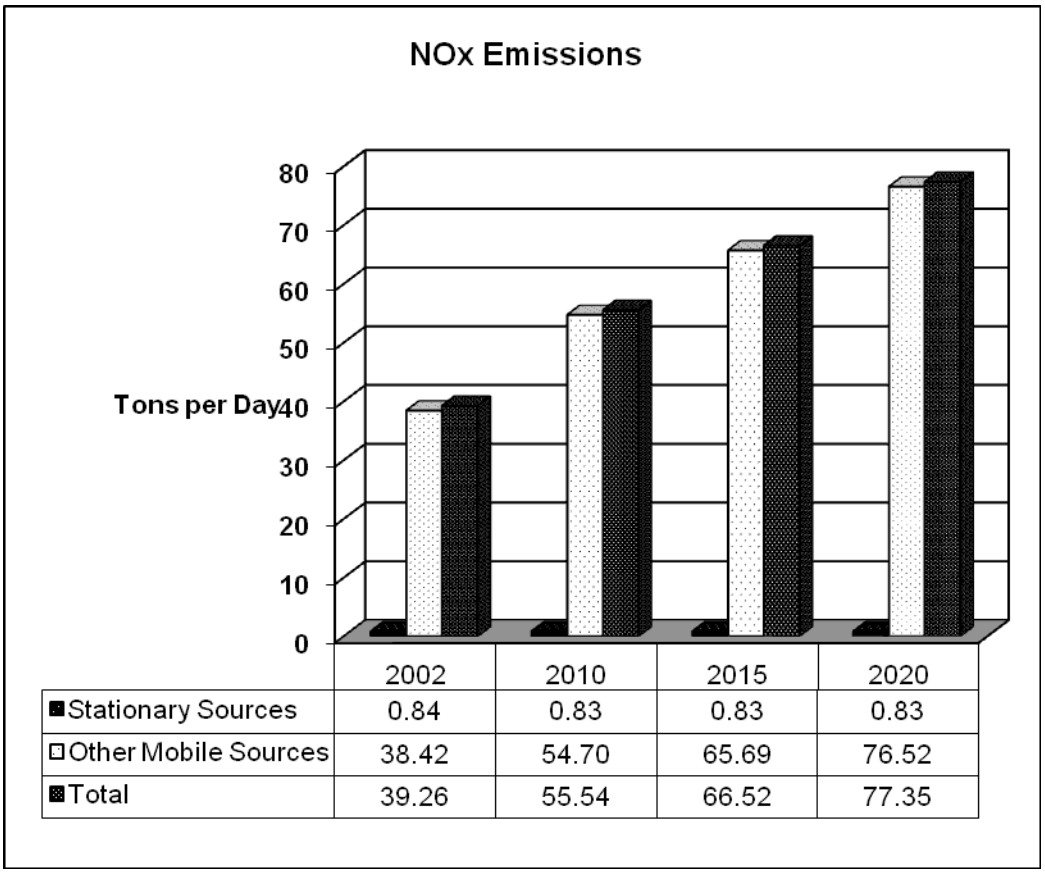


	2002	2010	2015	2020
Stationary Sources (including Source Register ERC's)	6.61	6.74	6.64	6.63
Area-Wide Sources	0.63	1.14	1.15	1.14
On-Road Motor Vehicles	18.84	14.09	9.92	6.98
Other Mobile Sources (including VAFB ABL)	15.12	12.58	10.29	8.38
Total	41.21	34.55	28.01	23.12

FIGURE 6-2
OCS ROC & NO_x EMISSIONS

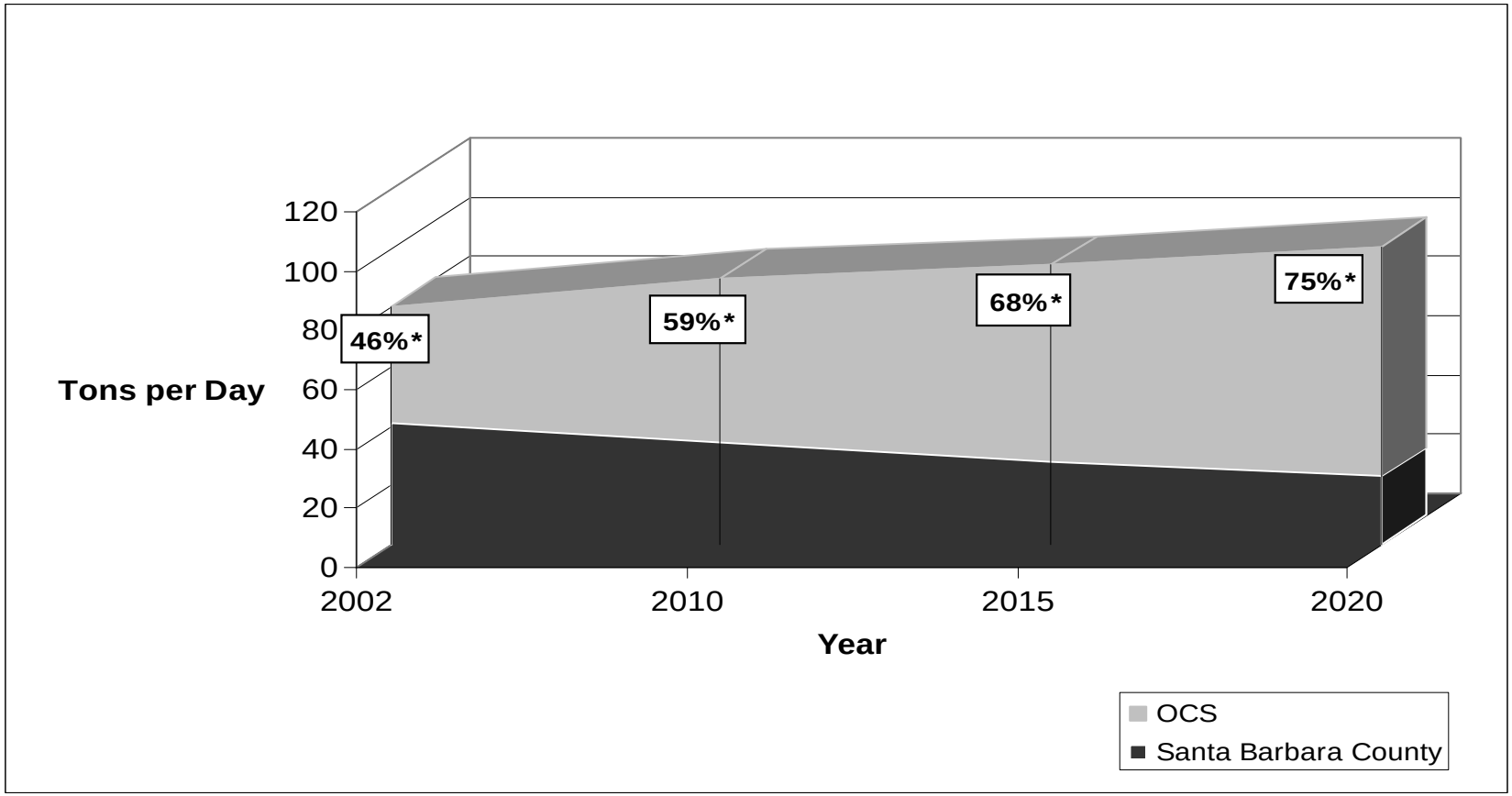


	2002	2010	2015	2020
Stationary Sources	1.17	1.13	1.13	1.13
Other Mobile Sources	2.71	2.88	3.12	3.40
Total	3.88	4.01	4.25	4.53



	2002	2010	2015	2020
Stationary Sources	0.84	0.83	0.83	0.83
Other Mobile Sources	38.42	54.70	65.69	76.52
Total	39.26	55.54	66.52	77.35

FIGURE 6-3
SANTA BARBARA COUNTY AND OCS NO_X EMISSIONS FORECAST INCLUDING MARINE VESSELS



*** Percentage of total NO_x emissions from Other Mobile Sources – Foreign and US Ships-in-Transit.**

FIGURE 6-4
SANTA BARBARA COUNTY AND OCS NO_X EMISSIONS FORECAST MARINE VESSELS EXCLUDED

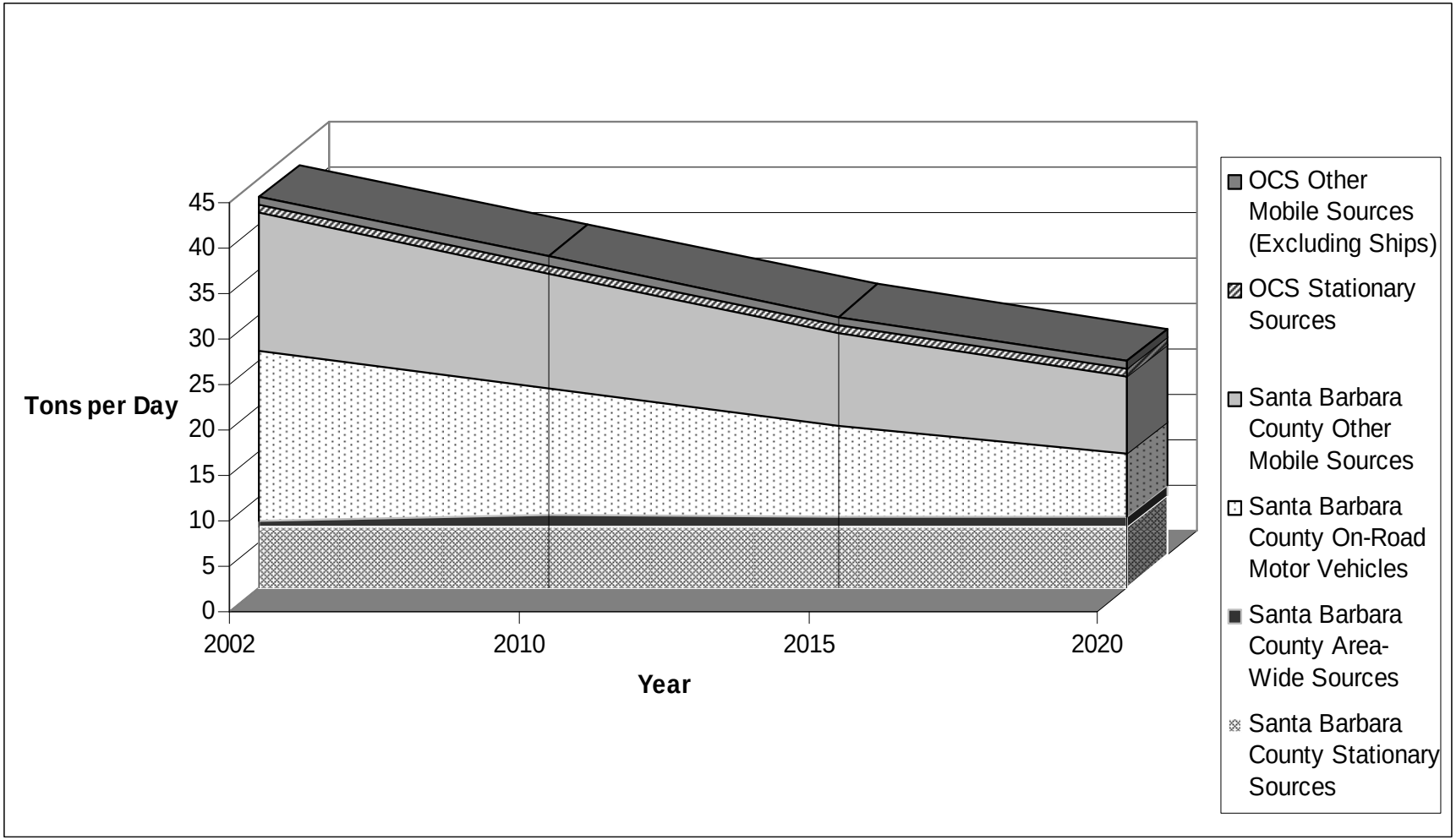
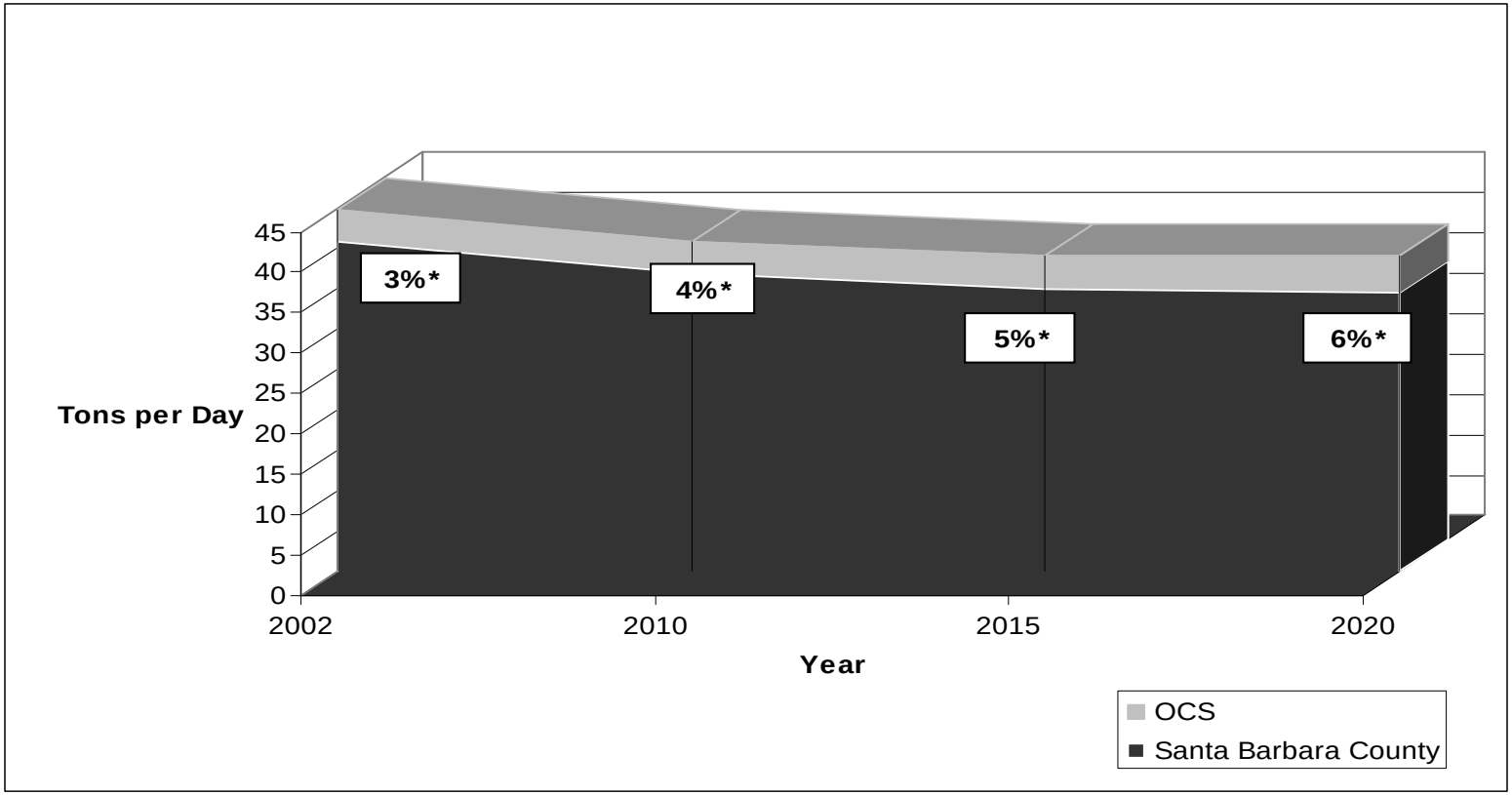


FIGURE 6-5
SANTA BARBARA COUNTY AND OCS ROC EMISSIONS FORECAST INCLUDING MARINE VESSELS



*** Percentage of total ROC emissions from Other Mobile Sources – Foreign and US Ships-in-Transit.**

FIGURE 6-6
SANTA BARBARA COUNTY AND OCS ROC EMISSIONS FORECAST MARINE VESSELS EXCLUDED

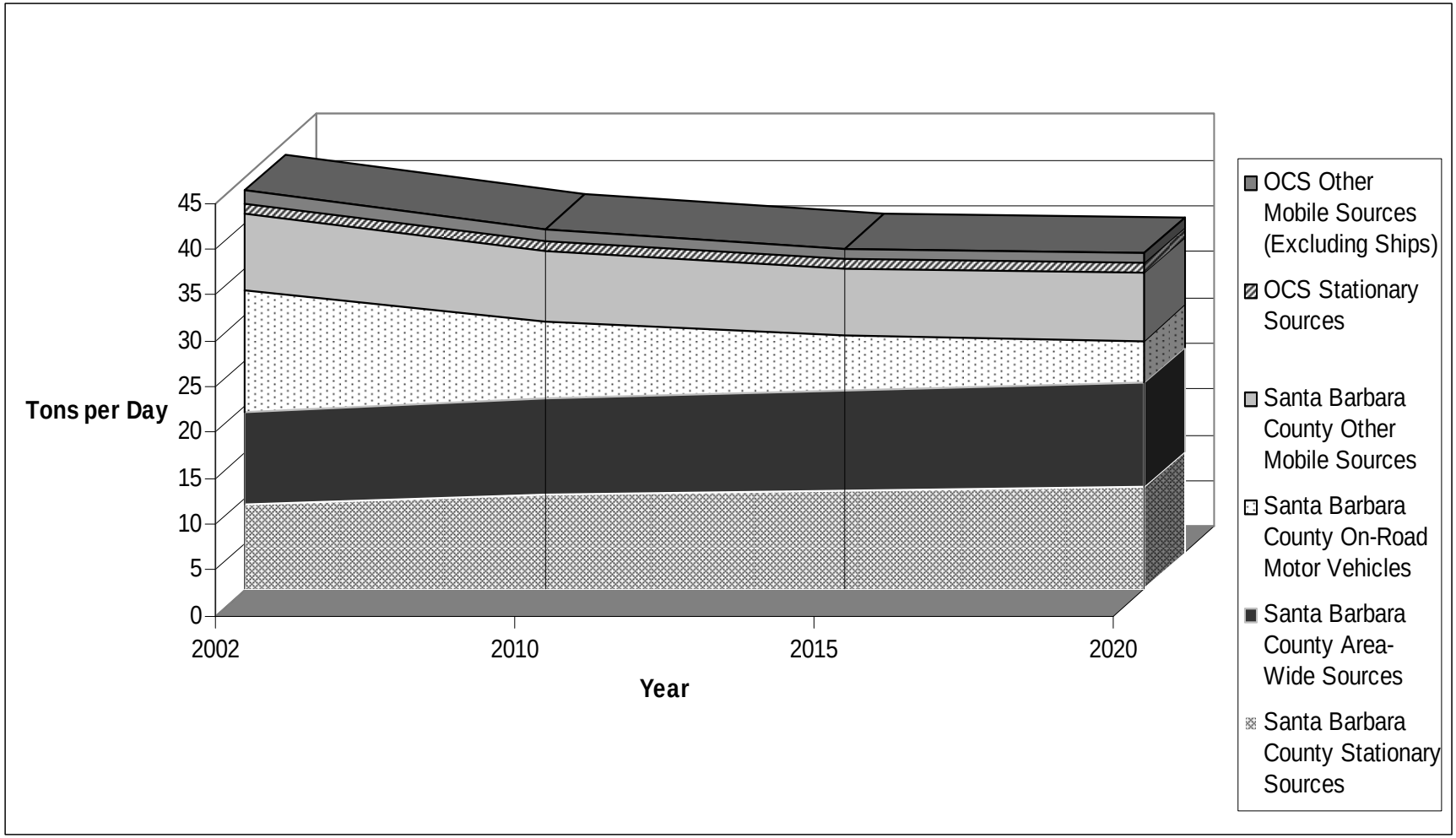
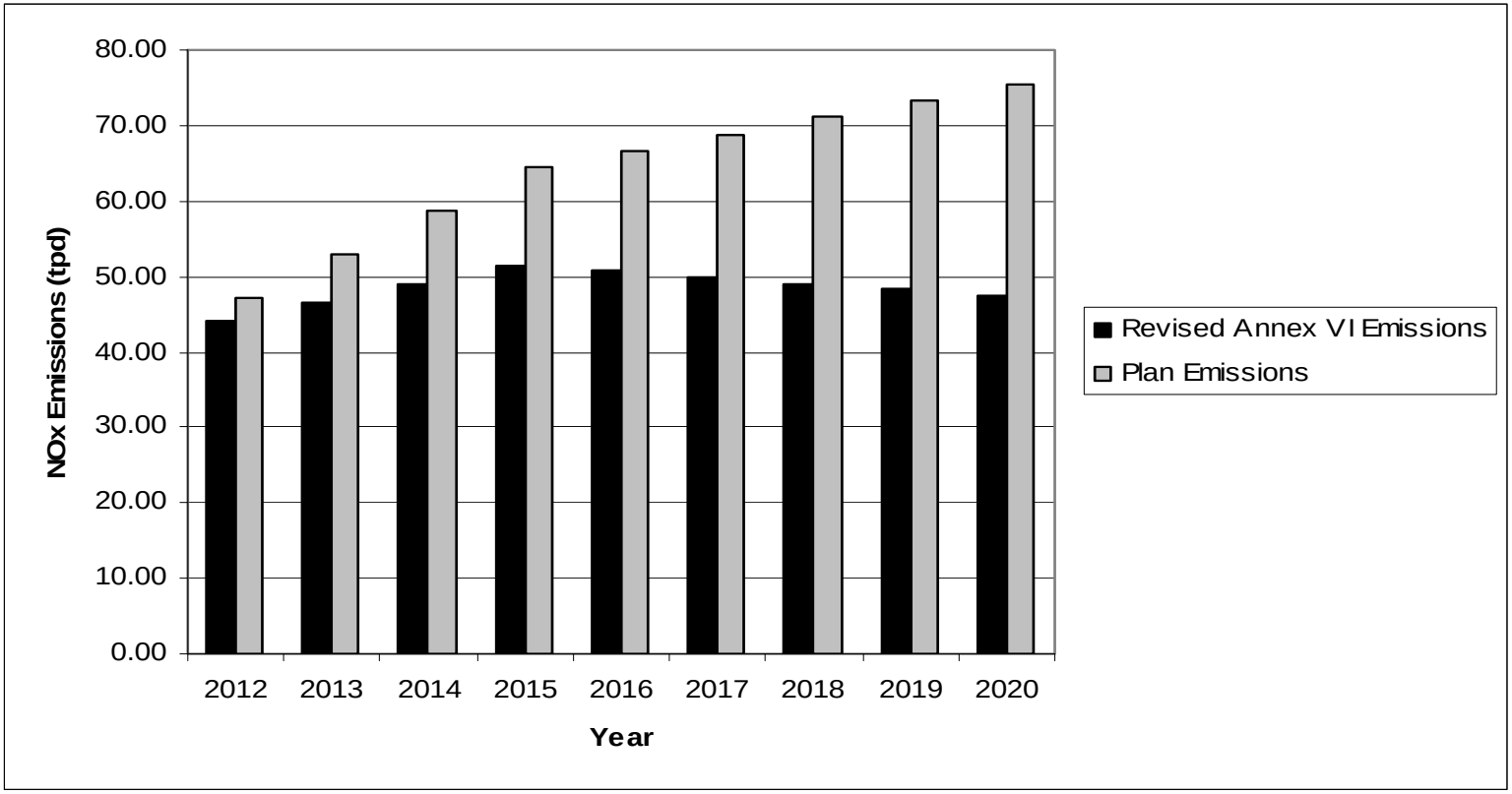


FIGURE 6-7
POTENTIAL MARINE SHIPPING NO_x EMISSIONS BASED ON PROPOSED MARPOL ANNEX VI REVISIONS COMPARISON TO CURRENT MARINE SHIPPING NO_x EMISSION FORECASTS



CHAPTER 7

FEDERAL MAINTENANCE PLAN

- INTRODUCTION
- ATTAINMENT INVENTORY
- MAINTENANCE DEMONSTRATION
- AMBIENT AIR QUALITY MONITORING
- CONTINGENCY PLAN
- VERIFICATION OF CONTINUED ATTAINMENT
- CONFORMITY
- CONCLUSIONS
- IMPLICATIONS OF SOUTH COAST AQMD V EPA COURT DECISION

7. FEDERAL MAINTENANCE PLAN

7.1 INTRODUCTION

This 2007 Clean Air Plan (2007 Plan) is being prepared by the Santa Barbara County Air Pollution Control District (APCD) to satisfy the provisions of the Federal Act that apply to our current classification as a maintenance area for the federal 8-hour ozone standard.

On April 30, 2004, the federal Environmental Protection Agency (USEPA) designated and classified areas for the federal 8-hour ozone standard. Santa Barbara County was designated as an attainment/unclassifiable area for this standard with the designation becoming effective on June 15, 2004[1]. The USEPA also promulgated regulations implementing the federal 8-hour ozone standard. Areas such as Santa Barbara County – i.e., those which are designated attainment/unclassifiable for the federal 8-hour standard *and* which are also subject to an approved maintenance plan for the federal 1-hour ozone standard under Section 175A of the Federal Act - are required to submit a 10-year maintenance plan under Section 110(a)(1) of the Federal Act. This 10-year maintenance plan must demonstrate maintenance of the federal 8-hour ozone standard until 2014 and is to be submitted to USEPA as a State Implementation Plan revision no later than three years after the effective date of an area's 8-hour ozone designation. Consequently Santa Barbara County must submit its Section 110(a)(1) maintenance plan no later than June 15, 2007.

The USEPA in 2005 issued guidance for states in preparing maintenance plans required under section 110(a) (1) [2], The five required plan components and how this 2007 Plan addresses those components are discussed in sections 7.2 to 7.6 (in those sections, the text in *italics* describe the required plan components).

7.2 ATTAINMENT INVENTORY

The attainment inventory should be based on actual "typical summer day' emissions of volatile organic compounds and nitrogen oxides with the base year being either 2001, 2002 or 2003.

As documented in *Chapter 3*, the 2002 planning inventory for ROC and NO_x fulfills this requirement.

[1] USEPA revoked the 1-hour federal ozone standard one year after the effective date of the designation for the federal 8-hour ozone standard. Thus for Santa Barbara County, the 1-hour federal ozone standard was revoked on June 15, 2005.

[2] Memorandum from Lydia N. Wegman, Director, Air Quality Strategies and Standards Division, USEPA to Air Division Directors, Regions I-IX, May 20, 2005.

7.3 MAINTENANCE DEMONSTRATION

The maintenance plan must demonstrate how the area will remain in compliance with the 8-hour standard for a ten year period following the effective date of designation as unclassifiable/attainment. At a minimum the plan must project attainment for 2014. One method of showing attainment is to demonstrate that the future levels of ozone precursor emissions will not exceed the level of ozone precursor emissions sufficient to attain the 8-hour standard.

Chapters 3 presents NO_x and ROC planning emission inventories for the base year 2002 and *Chapter 6* shows these inventories for the future years 2010, 2015 and 2020. The inventories are divided into two geographic 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 Tidelands boundary offshore Santa Barbara County.

As illustrated in **Figure 7-1**, NO_x emissions in Santa Barbara County decline in a continuous fashion from 41.21 tons/day in 2002 to 28.01 tons/day in 2015 and to 23.12 in 2020. Similarly, ROC emissions decrease from 40.84 tons/day (2002) to 36.86 tons/day (2015) and to 34.51 tons/day by 2020. This trend results from reductions in on-road mobile sources and implementation of the State Act's every feasible measure requirement. NO_x and ROC emissions from OCS sources shown in **Figure 7-2** however, increase from 2002 through 2020. ROC emissions grow from 3.88 tons/day (2002) to 4.25 tons/day (2015) to 4.53 tons/day in 2020. NO_x emissions more than double from 2002 to 2020 (39.26 to 77.35 tons/day) and 2015 emissions are at 66.52 tons/day.

Figure 7-3 illustrates the combined Santa Barbara County and OCS emissions. While total ROC emissions decline from 44.72 tons/day in 2002 to 39.16 tons/ day in 2015 and even further to 39.04 tons/day in 2020, increases in NO_x emissions from marine vessels will overwhelm stationary source and on-road motor vehicle NO_x reductions and show a dramatic increase due to the impact of growth in marine shipping emissions. Total NO_x emissions increase by about 25% from 2002 to 2020 (80.46 to 100.48 tons/day).

When we examine the milestone year 2014 (see **Figure 7-3**), total ROC emissions are 39.51 tons/day or 5.21 ton/day less than in 2002 (44.72 tons/day), our baseline year. Total NO_x emissions are at 93.64 tons/day or 13.18 tons/day greater than in 2002 (80.46 tons/day). As NO_x emissions from onshore and State Tidelands sources are projected to decline linearly from 2002 through 2020 (**Figure 7-1**), this would suggest that 2014 marine vessel NO_x emissions need to be reduced by approximately 17% in order for Santa Barbara to demonstrate continued maintenance of the 8-hour standard in 2014. Finally, even we were to implement all our contingency measures (see **Section 7-4** and **Table 4-3**) were to be implemented, the NO_x reductions would be less than 0.1 tons/day.

The impact of marine vessel NO_x emission is shown even more dramatically in **Figure 7-4**. When marine vessel emissions are not included, NOx emissions will decline steady from 2002 (42.99 tons/day) to 2020 (24.91 tons/day). With increasing difficulty in obtaining added

reductions from onshore sources, further reductions will clearly need to come from controlling marine shipping activities in order to meet air quality goals. This clearly indicates that additional action from the USEPA and ARB is required.

As discussed in *Chapter 6*, the International Maritime Organization has been examining available and developing methods for reducing NOx emissions from large marine vessels and future Annex VI NOx emission limits. While these limits are only recommendations based on current and developing technologies, future emissions have been calculated to determine emission benefits should the proposed emission standards be adopted. As shown in **Figure 7-5**, NOx emissions based on proposed limits would be significantly lower than current estimates for the years 2012 through 2020. In the year 2012, one year after the proposed limits would be initiated, NOx emissions are calculated to be 44.11 tons per year if the proposed NOx limits were adopted. This is about 3 tons per day less than current NOx emission forecasts for 2012. By 2020, the proposed NOx limits would provide a NOx reduction of about 28 tons per day less than the current forecast.

It is important to note that increases in NO_x emissions from marine shipping activities may not directly correlate to increases in ozone levels in Santa Barbara County since potential impacts are highly dependent on meteorological conditions. In fact, air quality has been improving in Santa Barbara County while marine vessel transits and emissions have been increasing over the last several years. To fully understand the impacts of marine vessel emissions on county-wide ozone levels, however, would require the use of photochemical modeling techniques. This would allow for an evaluation of potential impacts from all sources of ozone precursors (ROC and NO_X), both onshore and offshore, and would also provide an assessment of the relative contribution of impacts from marine vessel emissions on ozone concentrations. Since the resources and expertise required to perform photochemical modeling are beyond our capabilities, we must defer the need for such an exercise to the discretion of USEPA and ARB.

7.4 AMBIENT AIR QUALITY MONITORING

The State should continue to operate air quality monitors in accordance with 40 CFR 58 to verify maintenance of the 8-hour standard. Any modifications to the ambient monitoring network should be accomplished through close consultation with the EPA Regional office.

Santa Barbara County's ambient monitoring network is discussed in Chapter 2. Monitoring is conducted by the ARB, APCD and industry sources. Monitors operated by the ARB and APCD are part of the State and Local Air Monitoring System while monitors operated by industry, at the direction of the APCD, are called Prevention of Significant Deterioration stations. Methods and procedures used in monitoring follow guidelines prescribed by the ARB and the USEPA.

7.5 CONTINGENCY PLAN

The State must develop a contingency plan that at a minimum will ensure that any violation of the 8-hour standard is promptly corrected. The contingency plan should ensure that the contingency measures are adopted expeditiously once they are triggered. The trigger for

implementing contingency measures should, at a minimum, be upon a monitored violation of the 8-hour ozone standard.

Chapter 4 addresses the emission control measures proposed by the APCD as contingency measures. As discussed in *Chapter 4*, the *proposed* 2007 Plan control measures (**Table 4-3**) will serve as contingency measures to satisfy this federal requirement. While **Table 4-3** also provides an adoption schedule, should a violation of the federal 8-hour ozone standard occur earlier than the adoption dates shown, the APCD will commence adoption of these contingency measures within 24 months of the recorded violation.

7.6 VERIFICATION OF CONTINUED ATTAINMENT

The maintenance plan should indicate how the State will track the progress of the maintenance plan. States should develop interim emission projections to show a trend analysis for maintenance of the standard.

Every three years we are required by the State Act (Health and Safety Code sections 40924 and 40925) to update our clean air plan to attain the state 1-hour ozone standard. Each of the following elements is updated from the previous update:

- Local air quality information
- Emission inventory and future emission estimates
- Every feasible control measure

We will use these triennial updates to track the progress of the maintenance plan.

7.7 CONFORMITY

Conformity for the federal 1-hour ozone standard and 8-hour ozone standard no longer applies to Santa Barbara County. Areas such as Santa Barbara County, which were never designated nonattainment for the 8-hour ozone standard and which are not obligated to develop a maintenance plan under Section 175(A) of the Federal Act, are not subject to conformity for the 8-hour standard. Additionally, since the 1-hour ozone standard has been revoked, conformity for that standard no longer applies.

7.8 CONCLUSION

This chapter addresses USEPA's requirements for maintenance plans prepared pursuant to Section 110(a)(1) of the Federal Act. As discussed, emissions of both NO_x and ROC from onshore sources and those in the State Tidelands in 2014 are predicted to be lower than the base year 2002. However when NO_x emissions from marine vessels in the Outer Continental Shelf are added to those from onshore and State Tideland sources, NO_x emissions in 2014 will be over 15 tons/day greater than those in 2002. With increasing difficulty in obtaining added reductions

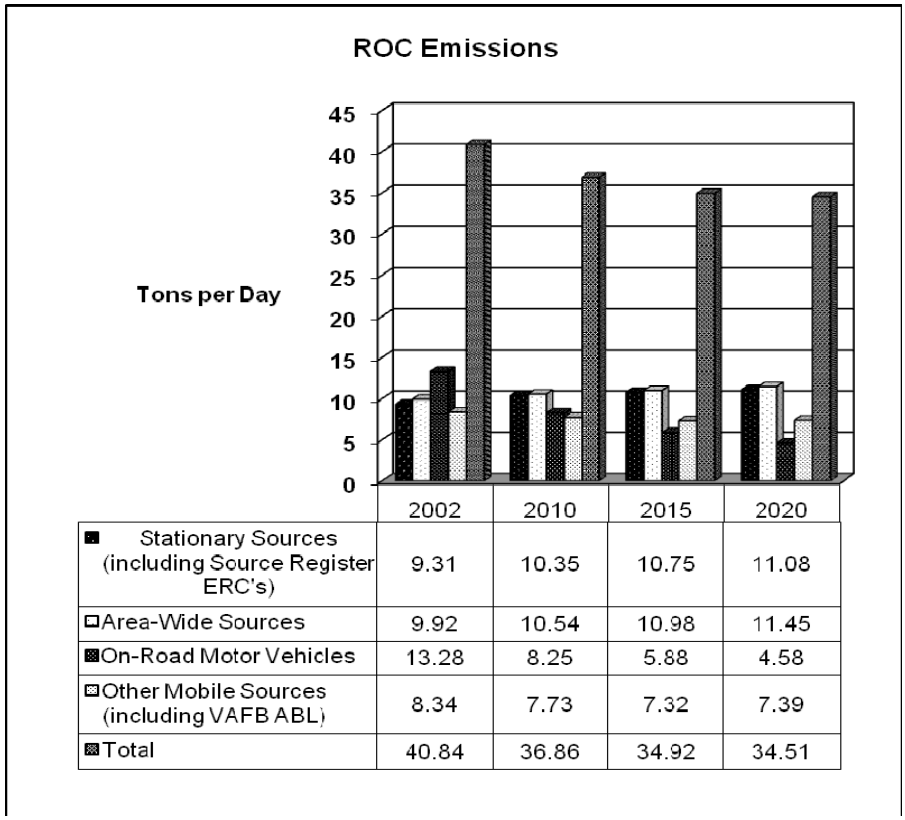
from onshore sources, further reductions will clearly need to come from controlling marine shipping activities in order to meet air quality goals. This clearly indicates that additional action from the USEPA and ARB is required.

7.9 IMPLICATION OF SOUTH COAST AQMD V. EPA COURT DECISION

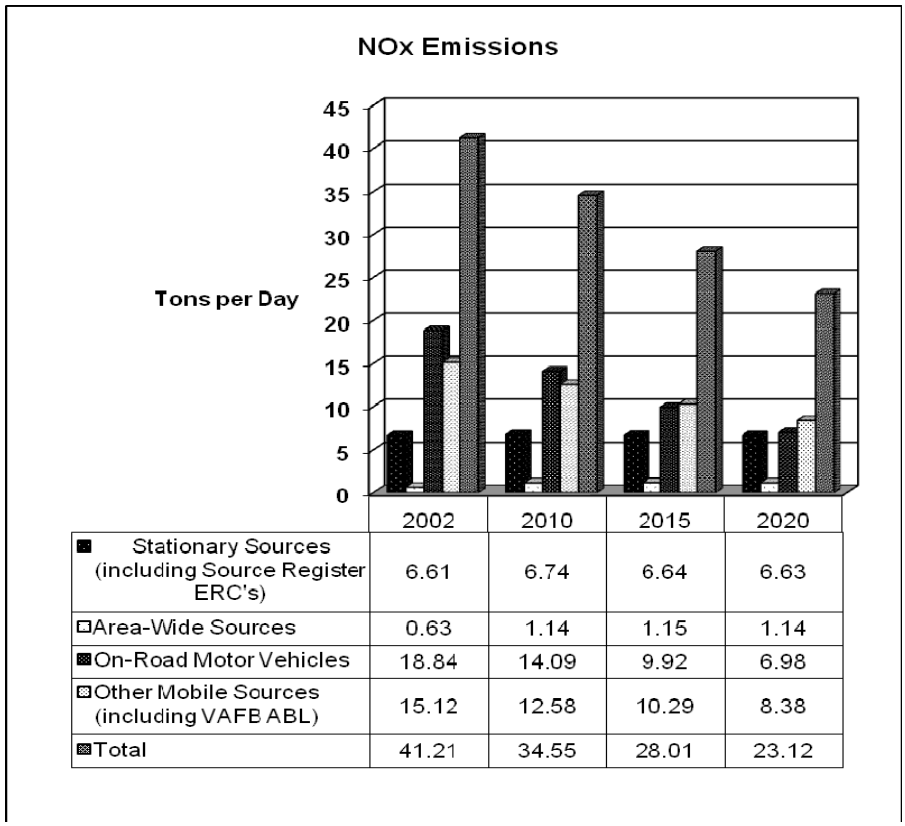
On December 22, 2006, the United States Circuit Court of Appeals for the District of Columbia ("Court") handed down its decision on the case *South Coast Air Quality Management District v. EPA* (No.04-1200). The Court struck down portions of USEPA's regulation implementing the federal 8-hour ozone standard. USEPA petitioned the Court on March 22, 2007 for a rehearing and clarification of the decision but has yet to issue any further guidance except to "strongly encourage the (USEPA) Regional Offices to work with the States to continue to develop 8-hour ozone SIPs"[3] . Consequently, this 2007 Plan will still follow the aforementioned 2005 guidance with one cautionary note concerning conformity. As discussed in Section 7.7, the 2005 USEPA guidance stated that areas such as Santa Barbara County are not subject to conformity for the 8-hour standard. However, USEPA is uncertain whether this is still valid in light of the decision.

[3] Memorandum from William Wehrum, Acting Assistant Administrator, to EPA Regional Administrators, Regions I-IX, March 19, 2007.

Figure 7-1
Santa Barbara County Onshore ROC & NO_x Emissions

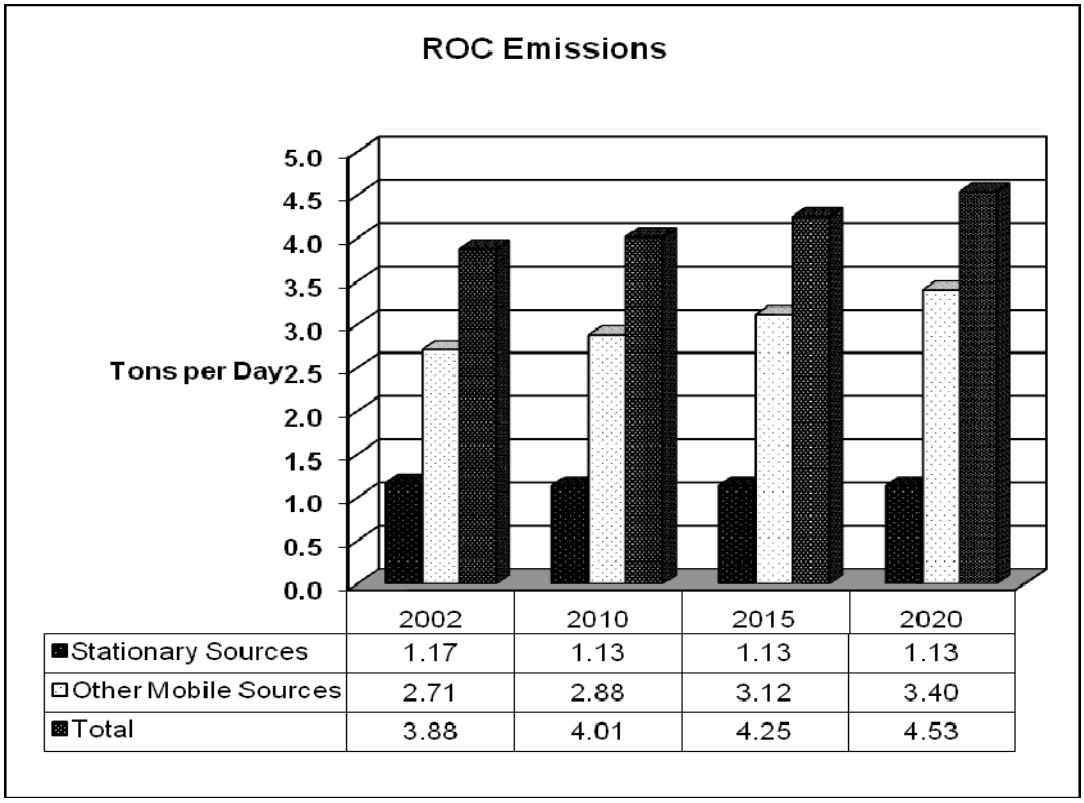


	2002	2010	2015	2020
Stationary Sources (including Source Register ERC's)	9.31	10.35	10.75	11.08
Area-Wide Sources	9.92	10.54	10.98	11.45
On-Road Motor Vehicles	13.28	8.25	5.88	4.58
Other Mobile Sources (including VAFB ABL)	8.34	7.73	7.32	7.39
Total	40.84	36.86	34.92	34.51

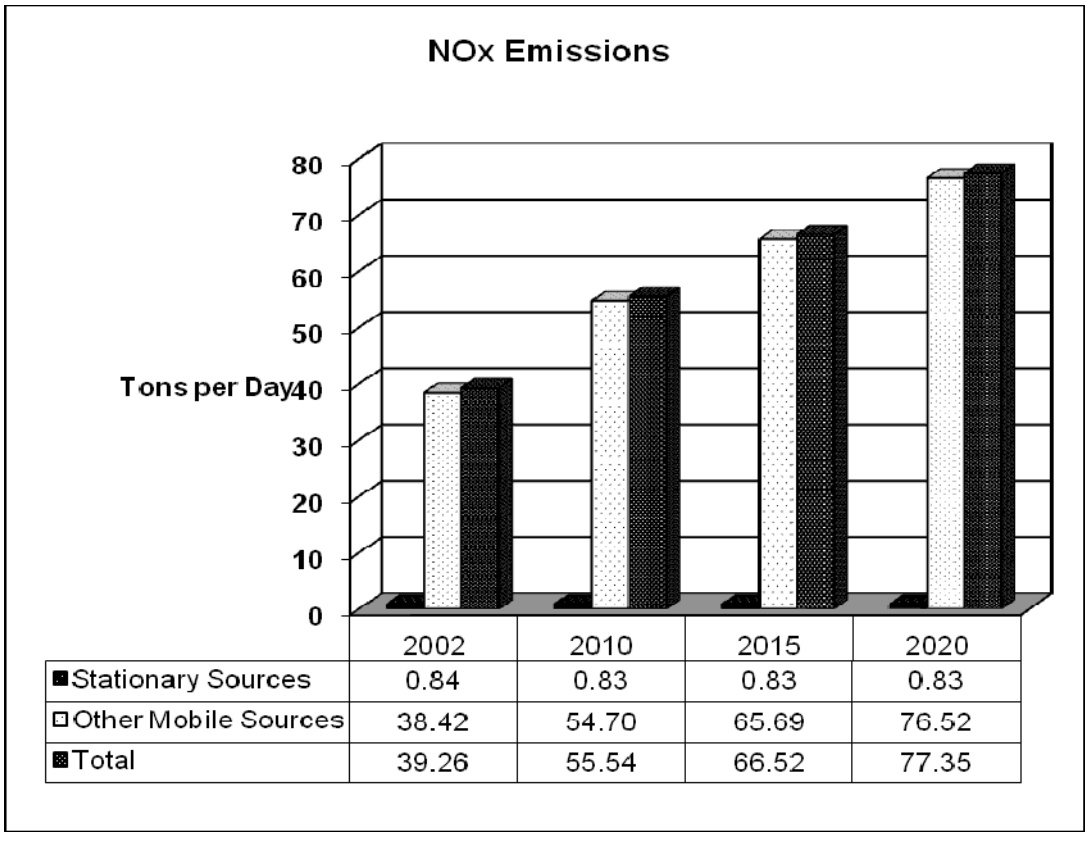


	2002	2010	2015	2020
Stationary Sources (including Source Register ERC's)	6.61	6.74	6.64	6.63
Area-Wide Sources	0.63	1.14	1.15	1.14
On-Road Motor Vehicles	18.84	14.09	9.92	6.98
Other Mobile Sources (including VAFB ABL)	15.12	12.58	10.29	8.38
Total	41.21	34.55	28.01	23.12

Figure 7-2
OCS ROC & NO_x Emissions

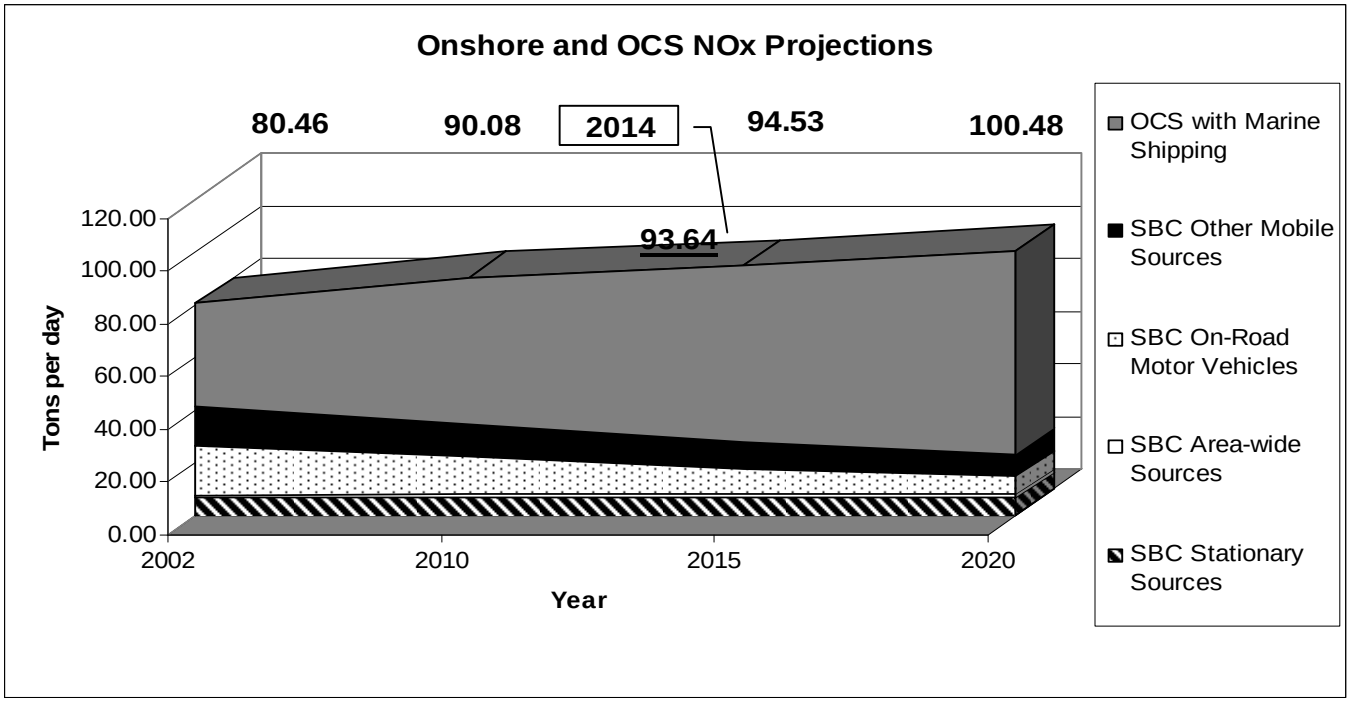


	2002	2010	2015	2020
Stationary Sources	1.17	1.13	1.13	1.13
Other Mobile Sources	2.71	2.88	3.12	3.40
Total	3.88	4.01	4.25	4.53



	2002	2010	2015	2020
Stationary Sources	0.84	0.83	0.83	0.83
Other Mobile Sources	38.42	54.70	65.69	76.52
Total	39.26	55.54	66.52	77.35

Figure 7-3
Santa Barbara County and OCS NO_x and ROC Emissions Forecast



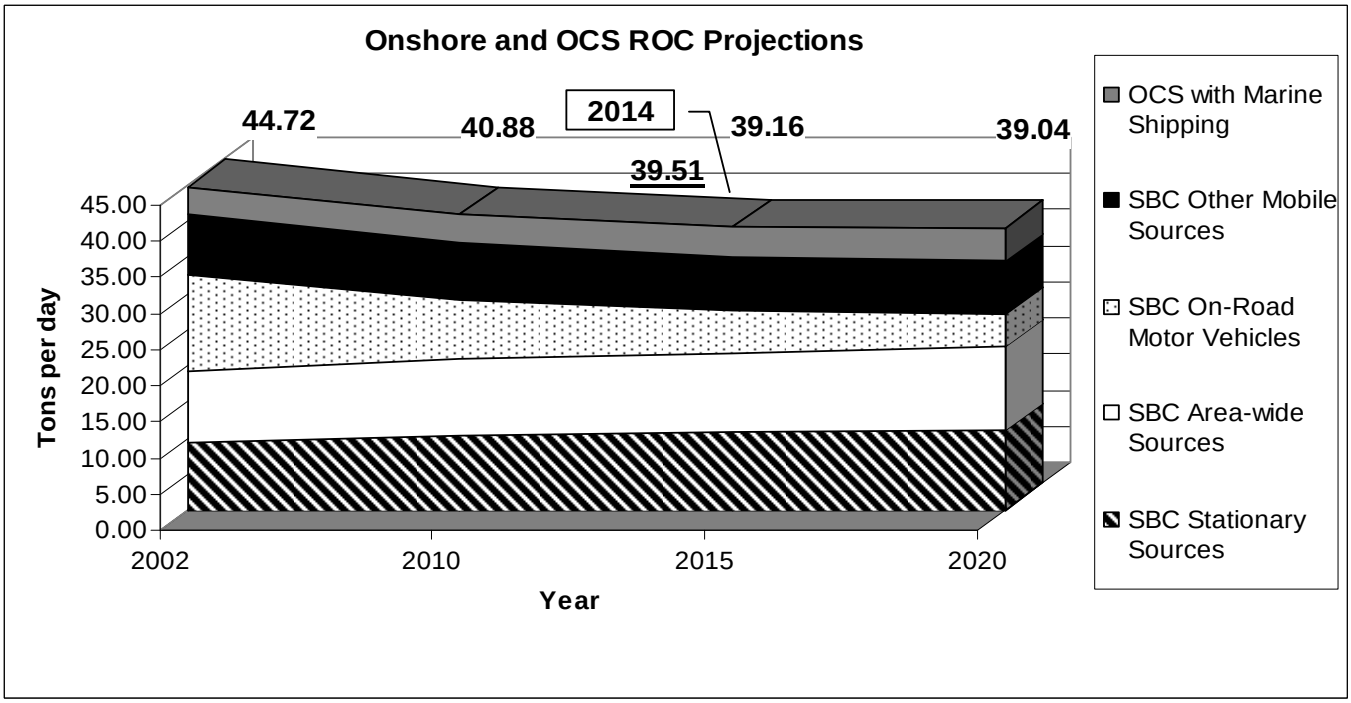


Figure 7-4
Santa Barbara County and OCS NO_x Emissions Forecast
Marine Vessels Excluded

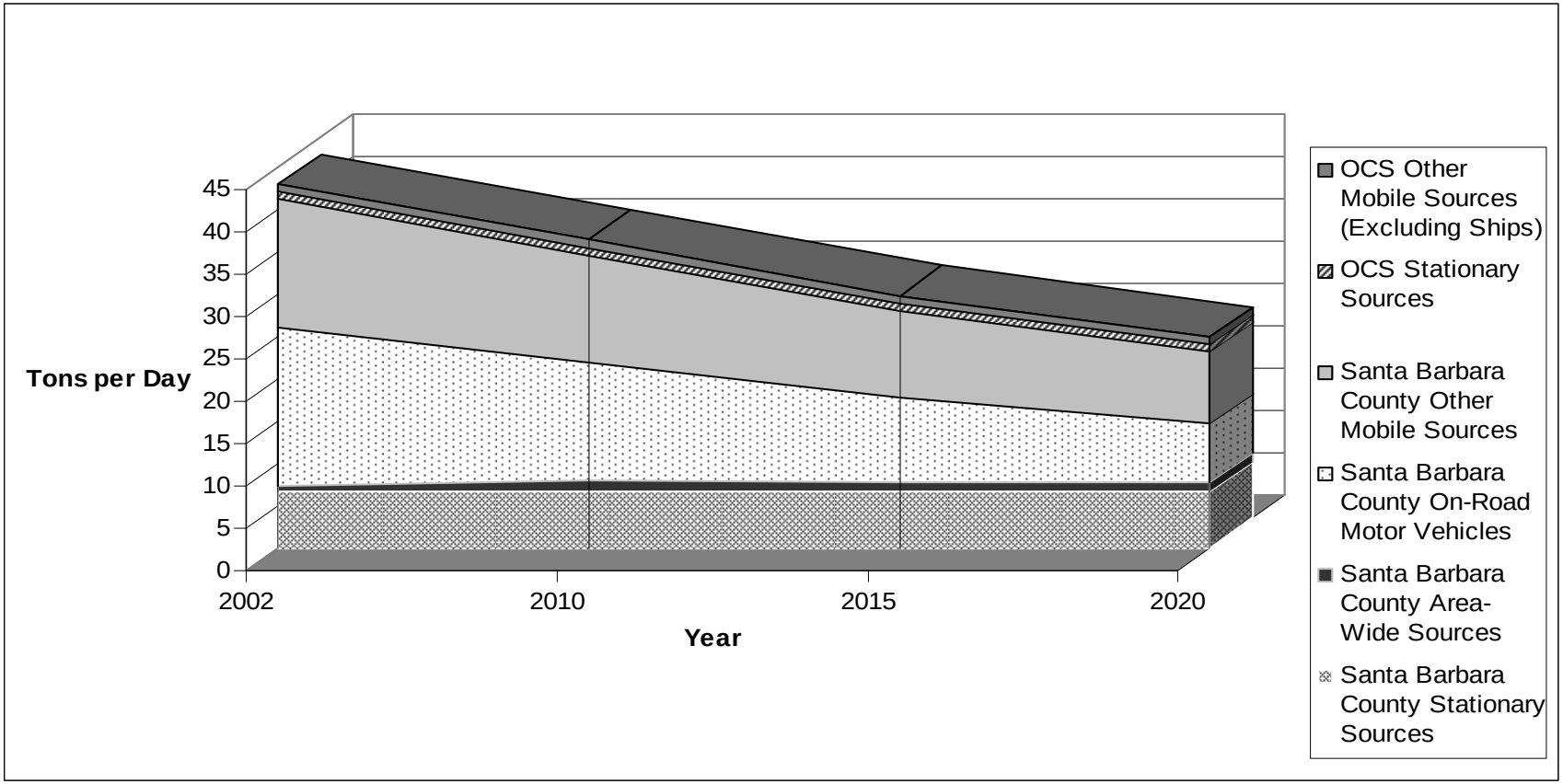
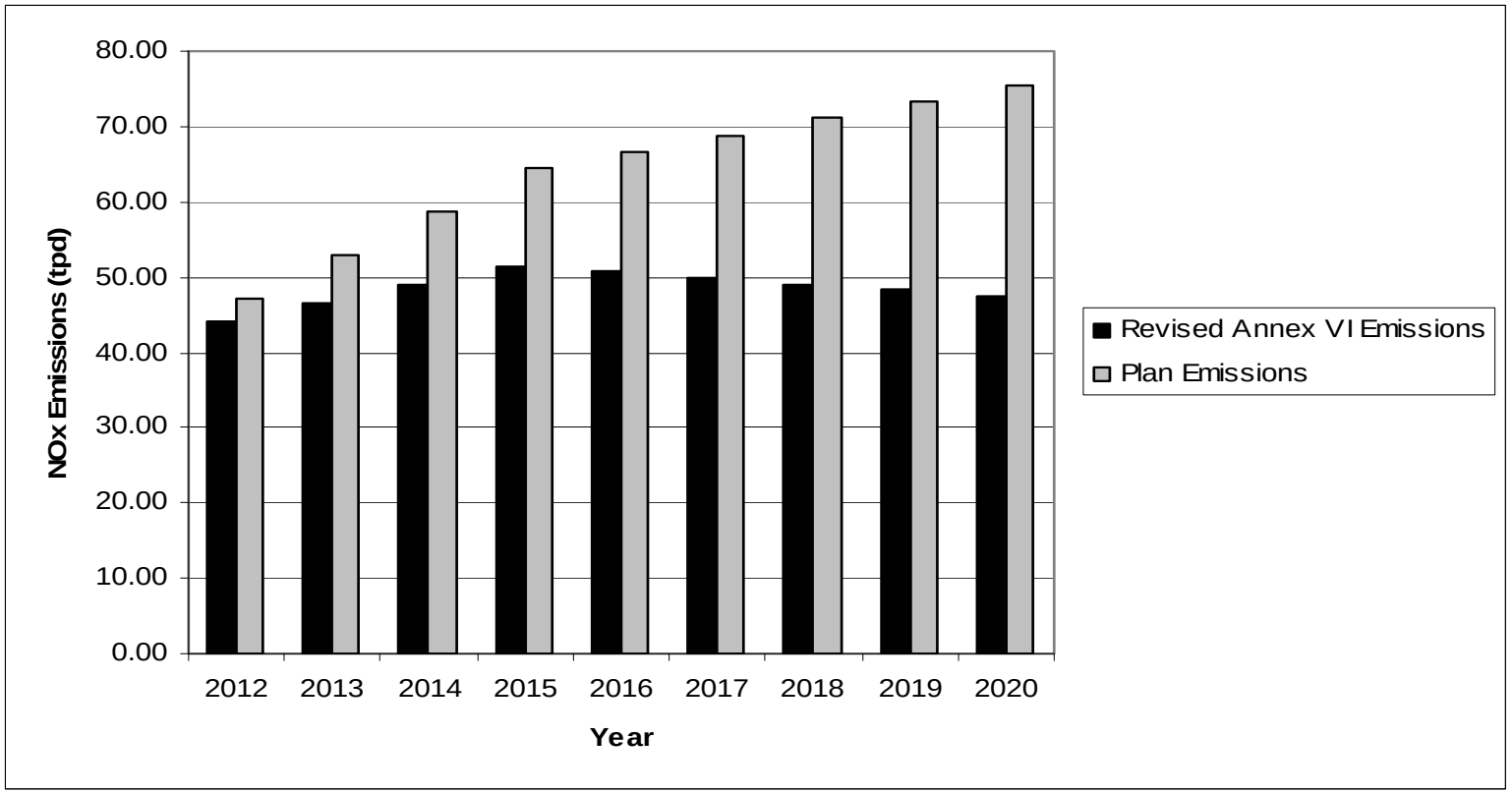


FIGURE 7-5
POTENTIAL MARINE SHIPPING NO_X EMISSIONS BASED ON POTENTIAL IMO ANNEX VI REVISIONS COMPARISON TO CURRENT MARINE SHIPPING NO_X EMISSION FORECASTS



CHAPTER 8

STATE AND FEDERAL CLEAN AIR ACT REQUIREMENTS

- **Introduction**
- **Federal Clean Air Act Mandates**
- **California Clean Air Act Mandates**
- **Conclusion**

8. STATE AND FEDERAL CLEAN AIR ACT REQUIREMENTS

8.1 INTRODUCTION

This 2007 Clean Air Plan (2007 Plan) 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 (Federal Act) and the California Clean Air Act of 1988 (State Act). This chapter presents an overview of all state and federal clean air act requirements and discusses how the work completed in conjunction with this 2007 Plan complies with all applicable requirements.

8.2 FEDERAL CLEAN AIR ACT MANDATES

The USEPA issued guidance for states in preparing maintenance plans required under section 110(a)(1) of the federal Clean Air Act. The five required plan components and how this 2007 Plan addresses those components are summarized below and discussed in greater detail in *Chapter 7*, sections 7.2 to 7.6. Federal mandates required when we were classified as a "serious" ozone nonattainment area are discussed in the 2001 Plan.

Attainment Inventory: *The attainment inventory should be based on actual "typical summer day' emissions of volatile organic compounds and nitrogen oxides with the base year being either 2001, 2002 or 2003.*

The NO_x and ROC Planning Inventory for 2002 presented in *Chapter 3* satisfies this requirement.

Maintenance Demonstration: *The maintenance plan must demonstrate how the area will remain in compliance with the 8-hour ozone standard for a ten year period following the effective date of designation as unclassifiable/attainment. At a minimum the plan must project attainment for 2014.*

Absent Outer Continental Shelf marine vessel emissions, our NO_x and ROC emissions are projected to decline from 2002 through 2014. However when NO_x emissions from these vessels are included in the inventory, our 2014 NO_x emissions are anticipated to be over 15 tons/day greater than in 2002. With increasing difficulty in obtaining added reductions from onshore sources, further reductions will clearly need to come from controlling marine shipping activities in order to meet air quality goals. This clearly indicates that additional action from the USEPA and ARB is required.

Ambient Air Quality Monitoring: *The State should continue to operate air quality monitors in accordance with 40 CFR 58 to verify maintenance of the 8-hour standard. Any modifications to the ambient monitoring network should be accomplished through close consultation with the EPA Regional office.*

As described in *Chapter 2*, our monitoring network fulfills this requirement.

Contingency Plan: *The State must develop a contingency plan that at a minimum will ensure that any violation of the 8-hour ozone standard is promptly corrected. The contingency plan should ensure that the contingency measures are adopted expeditiously once they are triggered. The trigger for implementing contingency measures should, at a minimum, be upon a monitored violation of the 8-hour ozone standard.*

Chapter 4 addresses the emission control measures proposed by the APCD as contingency measures.

Verification of Continued Attainment: *The maintenance plan should indicate how the State will track the progress of the maintenance plan. States should develop interim emission projections to show a trend analysis for maintenance of the standard.*

Progress will be track via the triennial updates (mandated by Health and Safety Code sections 40924 and 40925) to our State air plan to attain the state 1-hour ozone standard.

Conformity: Conformity for the federal 1-hour ozone standard and federal 8-hour ozone standard no longer applies to Santa Barbara County.

8.3 CALIFORNIA CLEAN AIR ACT MANDATES

As indicated previously, an integral objective of this 2007 Plan is to satisfy the requirements of the California Clean Air Act (State 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 State Act. Recognizing that many of the required submittals duplicate those mandated by the Federal Act, the APCD has developed this 2007 Plan to address all state and federal planning requirements.

8.3.1 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, modeling techniques and air quality indicators.

The emission control measures are presented in *Chapters 4* and *Chapter 5*. In addition, **Table 8-1** summarizes APCD rule activity from 1998 to 2006. A summary of ambient air quality data and the air quality indicators for Santa Barbara County is presented in *Chapter 2*.

8.3.2 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 *Chapter 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 *Chapter 4*, *Chapter 5,* and *Chapter 6*.

8.3.3 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 State Act requirements. The requirements applicable to Santa Barbara County are discussed below.

Transport Mitigation (H&SC Section 40912): Prior to 2004 Santa Barbara County was identified as a transport contributor (as part of the South Central Coast Air Basin) to the South Coast Air Basin. The APCD satisfied the transport mitigation requirements through the application of Best Available Retrofit Control Technology (BARCT) requirements by January 1, 1994. In 2004, ARB re-assessed transport impacts of Santa Barbara County to the South Coast and found our contribution to 2000 through 2003 South Coast exceedances to be inconsequential."

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 the 2001 Plan.

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 five percent annual emission reduction requirement. The 1998 Clean Air Plan was conditionally approved by the ARB (Resolution 99-2b) with the requirement that APCD provide a schedule to review the further study measures identified in the plan, complete this review, and make any appropriate rulemaking commitments based on this review. This 2007 Plan includes the results of this review and identifies every feasible measure in *Chapter 4* and *Chapter 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 *Chapter 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 requirements are fulfilled with the APCD public education, area-wide and indirect source, and other programs, which are described in *Chapter 8* of the 2001 Plan.

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 the 2001 Plan.

8.4 CONCLUSION

This 2007 Plan was prepared by the Santa Barbara County APCD to address all applicable state and federal mandates. Specifically, this 2007 Plan provides a maintenance demonstration for the federal 8-hour ozone standard and provides for expeditious attainment of the state 1-hour ozone standard. Moreover, this 2007 Plan complies with all applicable sections of the 1990 Federal Clean Air Act Amendments and the California Health and Safety Code.

TABLE 8-1

SANTA BARBARA COUNTY APCD RULE ACTIVITY FROM 2001-2006 SUMMARY OF MEASURES (RULES ADOPTED OR IMPLEMENTED)					
Rule #	**CAP ID#**	**Description**	**Adoption Date**	**Implementation Date**	**Comments**
323	R-SL-1	Architectural Coatings	November 2001	January 2003	Rule 323 was amended on November 15. The revised rule included three effective dates for coating-ROC content limits: July 19, 1996, November 15, 2001, and January 1, 2003.
325	R-PT-2	Crude Oil Production and Separation	July 2001	April 2002	The January 2001 and July 2001 revisions to the rule affected sources producing heavy oil. Such sources complying by installing emission control equipment had a deadline of April 18, 2001 to submit an Authority to Construct application. Or, if complying by replacing a tank, submit an Authority to Construct application by May 18, 2001. There were additional deadlines for obtaining an APCD-approved exemption.
326	R-PT-2	Storage of Reactive Organic Compound Liquids	January 2001	April 2002	This revision to the rule affected sources storing heavy oil. Any source storing heavy oil needed to perform a test of the true vapor pressure and submit it to the APCD by April 18, 2001. Further, if the true vapor pressure test results indicated that the tank is not eligible for an exemption, the source needed to submit an Authority to Construct application no later than April 18, 2001. The deadline for submitting the Permit to Operate application for such a heavy oil storage tank was April 2002.
346	R-PP-9	Loading of Organic Liquid Cargo Vessels	January 2001	April 2002	The January 2001 revision to the rule affected sources with loading facilities for heavy oil. This rule has compliance schedule provisions similar to those in Rule 326.
360	N-XC-2	Emissions of Oxides of Nitrogen From Large Water Heaters and Small Boilers	October 2002	2003	Rule 360 is a point-of-sale rule that applies to only new and replaced units.

CHAPTER 9

STATE MANDATED TRIENNIAL PROGRESS REPORT AND TRIENNIAL PLAN REVISION

- INTRODUCTION
- TRIENNIAL PROGRESS REPORT
- AIR QUALITY INDICATORS
- TRANSPORTATION PERFORMANCE STANDARDS
- TRIENNIAL PLAN REVISION
- STATE 8-HOUR OZONE STANDARD

9. STATE MANDATED TRIENNIAL PROGRESS REPORT AND TRIENNIAL PLAN REVISION

9.1 INTRODUCTION

The California Clean Air Act (State Act) 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 Amendments (Federal Act) requirements detailed in this 2007 Clean Air Plan (2007 Plan). The APCD has been working with the California Air Resources Board (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 this 2007 Plan satisfies the triennial update requirements of the State Act. Our 1994 CAP, ~~and~~ 1998 CAP and 2001 CAP addressed both state and federal requirements by identifying how the work performed for our specific federal mandates also satisfied our state mandates.

While this 2007 Plan contains “contingency measures” for federal purposes, these same measures represent "every feasible measure" pursuant to state requirements. Therefore, the planning process documented in this 2007 Plan 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.

9-2 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 2007 Plan examines the emission reductions achieved from existing regulations. It also examines the change in emissions related to changes in population, industrial activity, vehicle use, and provides updated emission inventories out to 2020.

The control strategy presented in the 1991 AQAP failed to produce the state mandated five percent per year emission reductions, so the plan was approved under the "every feasible measure" 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. *Chapter 4* and *Chapter 5* of this 2007 Plan document that “every feasible measure” is being adopted as expeditiously as practicable. In addition, *Chapter 4* discusses our rule-making activity from 2001 to 2006.

The State Act 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 a maintenance demonstration of the federal 8-hour ozone standard using an attainment emission inventory approach that covers the second measure of air quality improvement. Air quality indicators provided by the ARB are presented and discussed in *Chapter 2*.

9-3 TRANSPORTATION PERFORMANCE STANDARDS

The State Act requires areas classified as having a "moderate" air quality classification for the state 1-hour ozone standard, such as Santa Barbara County, meet the following transportation performance standard: a substantial reduction in the rate of increase in passenger vehicle trips and miles traveled.[1] ARB has defined substantial reduction as holding growth in Vehicle Miles Traveled (VMT) and trips to the same growth rate as population. This would equate to reducing VMT growth rates by more than one half the growth rates experienced during the 1980's. The annual VMT and population growth rates from 1987 to 2004 are shown in **Figure 5-5** and discussed in *Chapter 5*.

9.4 TRIENNIAL PLAN REVISION

The Triennial Plan Revision must correct for deficiencies in meeting the interim measures of progress and incorporate new data or projections into the plan. To satisfy these state Triennial Plan Revision requirements, **Table 9-1** identifies what is required and how this 2007 Plan 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 State Act performance standard monitoring

9.5 STATE 8-HOUR OZONE STANDARD

CARB has yet to classify areas with respect to the new state 8-hour ozone standard. While our air quality data show that the number of exceedances of this standard has declined significantly from a high of 98 days in 1988 to a low of 13 days in 2005 (see section 2.8), we clearly do not meet the standard. Although CARB has yet to issue any guidance with respect to developing 8-hour ozone standard attainment plans, we believe that the control strategies in this 2007 Plan will expedite progress toward attaining the state 8-hour ozone standard.

As discussed in *Chapter 7*, both NO_x and ROC emissions from onshore and State Tidelands sources are predicted to decrease from 2002 through 2020. However, when NO_x emissions from marine vessels in the Outer Continental Shelf are added to those from onshore and State Tideland sources, NO_x emissions in 2014 will be over 15 tons/day greater than those in 2002. With increasing difficulty in obtaining added reductions from onshore sources, further reductions will clearly need to come from controlling marine shipping activities in order to meet the state 8-hour ozone standard as well as to remain in attainment of the state 1-hour ozone standard.

TABLE 9-1
TRIENNIAL PLAN REVISION REQUIREMENTS

CCAA MANDATE	APCD SUBMITTAL
Emission Inventory	The updated 2002 attainment emission inventory is presented in *Chapter 3*.
Air Quality Analysis	Discussed in *Chapter 2*.
Control Measures	The control measure strategy is fully described in *Chapter 4* and *Chapter 5*.
Transportation Performance Standards	Discussed in *Chapter 5*
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 *Chapter 5*.
Transport	Discussed in *Chapter 8*, Section 8.3.3.
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 the 2001 Plan.
Population Exposure	Discussed in *Chapter 2*
Contingency Measures	The schedule of adoption of the control measures is included in *Chapters 4* and *Chapter 5*.
Public Education	APCD public education efforts are outlined in *Chapter 8* of the 2001 Plan.

CHAPTER 10

PUBLIC PARTICIPATION

- INTRODUCTION
- COMMUNITY ADVISORY COUNCIL COMMENTS
- 2007 PLAN PUBLIC WORKSHOP
- JUNE 21, 2007 APCD BOARD HEARING COMMENTS
- WRITTEN COMMENTS AND RESPONSES ON THE 2007 PLAN
- PUBLIC NOTICE

10. PUBLIC PARTICIPATION

10.1 INTRODUCTION

The public participation process used in the development of this 2007 Clean Air Plan (2007 Plan) was implemented to assure 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. This chapter describes the process used to obtain public input, itemizes the comments received on the draft plan and responses to public comments.

On May 24, 1994, the Air Pollution Control District Board of Directors (Board) formed the Community Advisory Council (CAC). 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 Santa Barbara County 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 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 10-1 lists all thirteen Board members and each of their appointed CAC representatives.

TABLE 10-1

SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT BOARD
BOARD APPOINTED COMMUNITY ADVISORY COUNCIL (CAC) APPOINTEE(S), 2007

BOARD MEMBER	TITLE	CAC APPOINTEE(S)
Salud Carbajal	Supervisor, First District	Bill Peitzke & John Robinson
Janet Wolf	Supervisor, Second District	Marc Chytilo& Fran Farina
Brooks Firestone	Supervisor, Third District	Norvell Nelson & Glenn Oliver
Joni Gray	Supervisor, Fourth District	George Croll & Patrice Surmeier
Joe Centeno	Supervisor, Fifth District	John Deacon & Kevin Wright
Russ Hicks	Mayor Pro Tem, City of Buellton	John Gilliland & Jayne Brechwald
Al Clark	Councilmember, City of Carpinteria	Tom Banigan
Lupe Alvarez	Mayor, City of Guadalupe	Bob Kober
Will Schuyler	Mayor Pro Tem, City of Lompoc	Bea Kephart & Ramzi Chaabane
Marty Blum	Mayor, City of Santa Barbara	Lee Moldaver
Larry Lavagnino	Mayor, City of Santa Maria	Tahir Masood & Gary Winters
Jim Richardson	Mayor Pro Tem, City of Solvang	Jim Hickling
Eric Onnen	Councilmember, City of Goleta	Bill Shelor & Roy Zbinden

The APCD has specifically sought out input from the CAC on each element of the 2007 Plan as it was being developed over the past year. Starting in March of 2006, APCD staff presented specific portions of the 2007 Plan 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 highlights of these CAC meetings and the recommendations that occurred are listed in Section 10.2.

The public notice announced that the 2007 Plan was available for public review. The public comment period was from February 12, 2007 to March 28, 2007. 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. A copy of all written comments on the 2007 Plan that have been submitted by the public, along with the written responses to these comments, is provided in Section 10.3.

As part of the APCD's continuing commitment to solicit public participation and input into plan development, public workshops were also conducted to present the draft 2007 Plan and

accompanying environmental analysis. The focus of the public workshops was to allow public commentary on the plan while allowing APCD and Santa Barbara County Association of Governments (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 10.4.

Public presentations of the 2007 Plan were conducted at 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 10-2**.

TABLE 10-2

SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT
CLEAN AIR PLAN PUBLIC PRESENTATIONS

PRESENTATION	LOCATION	DATE
Public Workshop	Days Inn, Buellton	March, 14, 2007
APCD Monthly Board Meeting	Board of Supervisors Hearing Room Santa Barbara	June 21, 2007
APCD Monthly Board Meeting	Board of Supervisors Hearing Room Santa Barbara	August 16, 2007

10.2 COMMUNITY ADVISORY COUNCIL COMMENTS

This section summarizes the highlights of the CAC meetings pertaining to the 2007 Plan. The date of each CAC meeting and the Chapter or Plan element that were presented and discussed is listed in the following table. In addition, primary questions, comments, suggestions, and policy direction that staff received from the CAC members are included.

COMMUNITY ADVISORY COUNCIL MEETINGS TO DISCUSS 2007 CLEAN AIR PLAN

MEETING DATE	ITEM(S) PRESENTED
March 8, 2006	Chapter 1 (Introduction)
May 10, 2006	Chapter 2 (Local Air Quality)
July 12, 2006	Chapter 4 (Emission Control Measures) & Activity Indicators for Future Year Inventories
August 9, 2006	Chapter 3 (Emission Inventory) & Chapter 5 (Transportation Control Measures)
September 13, 2006	Chapter 6 (Emission Forecasting) & Chapter 7 (Federal Maintenance Plan)
December 13, 2006	Chapter 8 (State and Federal Clean Air Act Requirements) & Chapter 9 (State Mandated Triennial Progress Report and Triennial Plan Revision)
March 14, 2007	Plan Overview/Public Workshop
June 13, 2007	Chapter 10 (Public Participation)/Plan Revisions and CAC Recommendation for Board Approval

March 8, 2006 ***Chapter 1: Introduction***

- The APCD presented Chapter 1 (Introduction) to the CAC. The CAC recommended that any additions or deletions made to the 2007 Plan that are different from the 2004 Plan be highlighted by using underscore and strikeout

May 10, 2006 ***Chapter 2: Local Air Quality***

The APCD presented Chapter 2 (Local Air Quality) to the CAC. The CAC recommended the following:

- That a description of the data precision for State 8-hour standard be added to the Chapter.
- A per capita vehicle miles traveled in Santa Barbara County be compared to other counties in the state. These data have been incorporated into Chapter 5 and are presented in Figure 5-2.

July 12, 2006 ***Chapter 4: Emission Control Measures***
Activity Indicators

The APCD provided an overview of both emission control measures and the activity indicators and growth factors used to forecast future year emission inventories. Activity data used in emission forecasts were presented to the CAC so that they growth factors could be discussed and refined prior to the development of Chapter 6 (Emission Forecasting).

The CAC asked staff to address the following items:

- Rules 342 and 361: Make these rule point of sale rules and leave the exemption at 5 MMBtu or less. The APCD responded by explaining the concept of "all feasible measures" and the difficulties of regulating point of sale rules. After some discussion it was decided that Rule 202 would be modified to require permits for all new and existing units greater than 2 million Btu per hour heat input. Also proposed Rule 361 would apply to all new burners and existing burners when they are replaced. Further, there would be a sunset clause at which time existing burners would be subject to Rule 361 requirements. For Rule 342, it was decided that the rule will remain a further study measure with a footnote that if the District is still non-attainment for the state ozone standard at the time of the next triennial update (2010), then the rule will be moved to a near-term control measure.
- The CAC suggested that a definition of "all feasible" be included in Chapter 4. A definition of "all feasible" has been added to the Chapter 4.
- The CAC recommended that APCD staff obtain historical well application data from the California Department of Conservation -Division of Oil and Gas (DOG) to determine whether the projection for a decline in the number of oil and gas wells is consistent with the current economics of the oil and gas industry. After APCD staff reviewed DOG oil and gas well application trends, it was concluded that the DOG data did not provide sufficient evidence to warrant revising the oil and gas well growth factors at this time. The APCD will revisit the oil and gas growth factors in the next planning cycle to determine whether current economics in the oil and gas industry have influenced trends toward growth in the industry.

August 9, 2006 ***Chapter 3: Emission Inventory***
Chapter 5: Transportation Control Measures

Chapter 3, Emission Inventory, and Chapter 5, Transportation Control Measures were presented to the CAC. The CAC did not recommend and revisions to Chapter 3. For Chapter 5, the CAC suggested the following minor revision:

- Replace "may be" with "is" so that the text on page 5-10 reads as: "The resulting jobs-housing imbalance that these housing costs have fostered is a contributing factor to VMT growth rates into the future."

September 13, 2006 ***Chapter 6: Emission Forecasting***
Chapter 7: Federal Maintenance Plan

For Chapter 6, the CAC comments resulted in the following changes to the draft Plan:

- Marine shipping base year and forecasted emissions were revised after the CAC suggested that the APCD follow the methodology used by the California Air Resources Board (ARB) to estimate these emissions. For the 2002 base year, consistent with ARB methods, the NOx emission factor was changed from 17.09 grams/kilowatt-hour to 18.1 grams/kilowatt-hour and the engine load factor was changed from 70% to 80%. For the future years (2010, 2015 and 2020), the 80% load factor was retained; however, it was assumed that ships traversing the Santa Barbara Channel will meet the International Maritime Organization NOx standard of 17.09 grams/kilowatt-hour by 2010.

December 13, 2006 ***Chapter 8: State and Federal Clean Air Act Requirements***
Chapter 9: State Mandated Triennial Progress Report and Triennial Plan Revision

There were no comments from the CAC that required revisions to either Chapter 8 or Chapter 9.

June 13, 2007 ***Plan Revisions and CAC Recommendation for Board Approval***

After a brief overview of the draft Plan and a discussion of a potential land use strategy chapter, the CAC made the following recommendations:

- To recommend to the Board of Directors to add a land use strategy chapter to the plan.
- Rename the chapter from "Land Use Strategies" to "Voluntary Land Use Strategies."
- Add an additional concept bullet to page 5 of the chapter stating: "Create a comprehensive county-wide public transportation system."
- Revise page 4-9 to clarify that Rule 333 revisions are also being done to incorporate California Air Resources Board Reasonable Available Control Technology (RACT) guidance.

10.3 2007 PLAN PUBLIC WORKSHOP

This section summarizes all public comments and staff responses from the public workshop. The public workshop was held on March 14, 2007 in Buellton in conjunction with the normally scheduled CAC meeting. While members of the public were present at the workshop, all comments came from CAC members. Comments from the workshop and the responses to these comments are provided below.

Comments Received During March 14, 2007 Community Advisory Council Meeting

Tom Banigan:

1) How might the court remand of EPA's Implementation Guidance impact our rules and the 2007 Plan itself?

- Staff believes that the federal appellate court decision will have no effect on our rules and it is uncertain how it may impact the 2007 Plan.

Ramzi Chaabane:

2) What are Ventura and San Luis Obispo are doing about reducing ship emissions off the coast of their counties?

- Ventura and San Luis Obispo APCDs, working through auspices of the California Air Pollution Control Officers Association, are supporting stricter federal and state emission standards for marine shipping and are participating in an ongoing marine shipping retrofit project.

Marc Chytillo:

3) We should encourage the Board to fund a modeling attainment demonstration so that the impacts of marine shipping on air quality can be quantified.

- Modeling efforts to demonstrate attainment require a significant level of staff time and funding. We believe the most cost-effective manner to produce this 2007 Plan is the emission inventory approach.

John Gilliland:

4) How do the marine shipping NOx emissions impact the approvability of the Plan?

- Staff believes that both ARB and USEPA are aware that the APCD cannot mandate reductions in marine shipping NOx emissions and will consider that factor in approving the 2007 Plan.

5) If the marine shipping emissions get reduced sufficiently to fall below base year levels,

can those emissions be put in a community bank?

- To be banked, emission reductions would have to meet the provisions of APCD Regulation VIII.

6) *What is the possibility of capturing seep emissions and obtaining credit for any reductions?*

- The existing seep containment structures demonstrate that it is feasible to capture additional seep emissions. Any emission reduction credits would have to meet applicable APCD rules and regulations.

Glenn Oliver:

7) *Commented that rules requiring NO_x reductions may be leading to ROC increases, particularly from the technologies used to comply with Rule 333.*

- This concern will be addressed as new NO_x rules are developed.

8) *Has concerns that there are no small replacement burners available to comply with Rule 361.*

- South Coast AQMD's Rule 11.46.1, last amended in 1994 has the same emission limit (30 ppmv NO_x) and boiler heat input range (2 – 5 million British thermal units) as proposed Rule 361. If small replacement burners have not been available in the past 17 years, we believe that the South Coast AQMD would have modified Rule 1146.1 to account for this concern.

Bill Pietzke:

9) *Suggested that speed controls for marine vessels traversing the Santa Barbara Channel would be an effective control strategy as asked how it would be possible to get the authority to require speed reductions for Santa Barbara Channel marine traffic.*

- While this is a good suggestion, there is argument among ship owners and operators about which speed is optimal for emission reductions. Additionally, the shipping industry is faced with a demanding schedule that involves precise coordination of several other industry types including port services, rail and trucking. Finally, it would be difficult to enforce mandatory reductions and non-compliant marine vessels would have an unfair economic advantage over those that would comply with such a rule.

Kevin Wright:

10) *Is concerned that rule listed as "all feasible" come from districts that are classified as severe or serious nonattainment areas. In addition, he asked whether Santa Barbara County has ever met the 5% per year reduction of precursor emissions since the*

original determination in the 1991 Plan.

- ARB guidance on developing "all feasible" requires us to consider regulations that have been successfully implemented elsewhere and not only districts with the same air quality classification as Santa Barbara County. We have never met the 5% reduction requirement.

11) *Suggested that language on Rule 333 should be expanded to account for state ATCM's.*

- The text in Chapter 4 has been revised to include the internal combustion Air Toxic Control Measure as another reason for revising Rule 333.

12) *Has concern that Rule 331 is in further study list and asked why we have rules that come from San Joaquin and South Coast.*

- As discussed in an earlier response, ARB's all feasible measures guidance directs us to look at regulations that have been successfully implemented elsewhere, including rules from South Coast and San Joachin. Rule 331 is on the Further Study list because South Coast and San Joachin have fugitive emission inspection and maintenance rules which are stricter than Rule 331.

13) *Why has indirect source review not moved forward?*

- The APCD Board of Directors rejected inclusion of a Land Use Strategies chapter during the 2004 Clean Air Plan adoption hearing, and directed staff to pursue Land Use Strategies with local planning departments. APCD staff has met with planning staff through SBCAG's Technical Planning Advisory Committee and have requested input from the planning directors on including a Land Use Strategies chapter in the 2007 Plan. We will be bringing a draft land use chapter the CAC and to the Board for their consideration.

Roy Zbinden:

14) *Are emissions from pleasure craft and other harbor craft a significant part of the overall inventory?*

- Emissions from pleasure craft and other harbor craft make up a small fraction of the overall inventory. Base year (2002) ROG emissions from pleasure craft and commercial boats are about 1.9 tons per day, or about 4.5% of the total inventory (Santa Barbara County and OCS combined). Base year NOx emissions from pleasure craft and commercial boats are about 1.2 tons per day, which is approximately 1.5% of the overall emission inventory.

10.4 JUNE 21. 2007 APCD BOARD HEARING COMMENTS

This section provides comments received on the 2007 Plan during the June 21, 2007 Board Hearing along with accompanying APCD staff responses to these comments.

Supervisor Carbajal:

1) When does the APCD expect that Santa Barbara County will attain the state 8-hour ozone standard?

- Based on state 8-hour exceedance trends (see Figure 2-7), it is conceivable that Santa Barbara County could comply with the state 8-hour ozone standard within the next five to seven years as long as current and future control measures are implemented successfully. It should be noted, however, that natural year-to-year variability in weather does have an impact on the county's air quality and could influence when the county attains the state 8-hour standard.

Chairman Schuyler:

2) Is the 2007 Plan basically a continuation of the 2004 Plan?

- The control measures in the 2007 Plan are basically the same as those in the 2004 Plan although the implementation schedule of the measures is different between the two plans.

Supervisor Wolf:

3) Are on-road NOx emissions larger than marine shipping NOx emissions?

- On-road vehicles are the largest source of onshore NOx emissions, while marine shipping is the largest source of offshore NOx emissions. Marine shipping emissions, however, comprise a much larger percentage of the overall countywide total and are expected to increase significantly over time while on-road emissions are predicted to decrease over time.

10.5 WRITTEN COMMENTS AND RESPONSES ON THE 2007 PLAN

This section provides all written comments received on the 2007 Plan and accompanying APCD staff responses to these comments.

MARCH 26, 2007

E-MAIL

FROM **PAT MICKELSON (CALTRANS)**
ASSOCIATE TRANSPORTATION PLANNER
PAT_MICKELSON@DOT.CA.GOV

TO **RON TAN (SBCAPCD)**
PLANNING & TECHNOLOGY SUPERVISOR
RLT@SBCAPCD.ORG

Hi Ron! I've looked through the draft 2007 Clean Air Plan for SB County and have only a few comments with regard to Table 5-8 on page 5-18.

1. The Route 101 SM Way to SLO County line is under construction;
2. The 101 (Evans-Sheffield NB) auxiliary lane and bikeway were completed in February. Ribbon cutting was 2/21.
3. The Route 101/Stoke (Improve I/C with 2 LT, 1 RT and one auxiliary lane) - I believe SBCAG did that project with Measure D funds and it was completed in May 1997.

Other than that - the Plan looks good to me and it reads easily despite the technicalities. I liked the historical perspective especially Table 1-1.

Thanks for letting me take a look.

Pat

MARCH 28, 2007

MEMORANDUM

FROM: VANDENBERG AIR FORCE BASE

TO: RON TAN (SBCAPCD)

DEPARTMENT OF THE AIR FORCE

30TH SPACE WING (AFSPC)

28 March 2007

MEMORANDUM FOR SANTA BARBARA COUNTY
AIR POLLUTION CONTROL DISTRICT
ATTN: RON TAN

FROM: 30 CES/CEVC
806 13th Street, Suite 116
Vandenberg AFB, CA 93437-5242

SUBJECT: Vandenberg Air Force Base Comments to Draft 2007 Clean Air Plan (CAP)

1. Vandenberg Air Force Base (VAFB) would like to thank the District for the opportunity to comment on the Draft 2007 CAP. We believe the Plan clearly lays out the actions required to maintain compliance with the Federal eight-hour ozone standard.

2. In the 2001 and 2004 CAPs, the District included a conformity growth allowance for the Airborne Laser (ABL) mission at VAFB. The current Draft CAP does not include a specific growth allowance for the ABL mission at VAFB. While the ABL mission has not yet arrived at VAFB, we anticipate ABL related activities would start in late 2008 or early 2009. With the uncertainty generated from the vacating and remanding of the 2004 Rule implementing the eight-hour federal ozone standard, VAFB requests the previously approved growth allowance for the ABL mission be included in the 2007 plan. We request an allowance of 0.0656 tons per day of reactive organic compounds and 0.4867 tons per day of nitrogen oxides.

3. Should you have any questions regarding this comment please contact me at (805) 606-2068.

David Savinsky

DAVID SAVINSKY, GS-12
Air Quality Program Manager
Environmental Flight

cc:
APCD (Phil Sheehan)
M&E (Tricia Drake)
File

GUARDIANS OF THE HIGH FRONTIER

MARCH 28, 2007

COMMENTS

FROM: THE LAW FIRM OF WESTON, BENSHOOF, ROCHEFORT, RUBALCAVA & MACCUISH

TO: RON TAN (SBCAPCD)

Dear Dr. Tan:

We respectfully submit the attached comments on the SBCAPCD's Draft 2007 Clean Air Plan.

Anthonie M. Fang
Assistant to Jocelyn D. Thompson, Esq.
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March 28, 2007

VIA E-MAIL AND U.S. MAIL

Dr. Ron Tan
APCD Planning and Technology Supervisor
Santa Barbara County APCD
260 N. San Antonio Road, Suite A
Santa Barbara, CA 93110

Re: Comments on Draft 2007 Clean Air Action Plan

Dear Dr. Tan:

We represent a potential project in Santa Barbara County which is being considered for a large sustainable mixed use development. While no formal application for the project has been filed and the design of the project is still in its conceptual phase, we have taken this opportunity to review the Santa Barbara County APCD's draft 2007 Clean Air Action Plan ("Draft Plan"), and we respectfully submit the following comments.

Our comments are focused on the Plan's reliance upon 2002 Regional Growth Forecast (RGF) data provided by the Santa Barbara County Association of Governments (SBCAG). We are concerned about the District's reliance upon growth forecasts that already are five years old. Given the importance of this data to the District's air quality planning, the Final Plan should incorporate data from a 2007 RGF that SBCAG plans to release shortly for public review. We anticipate that our client's project will be included in the scope of the RGF.

In its Public Notice of February 12, 2007, the District states that more recent SBCAG growth forecast data may become available during the public review period for the Draft Plan. We urge the District to ensure that SBCAG's 2007 data is incorporated into the Final Clean Air Plan.

Very truly yours,

Jocelyn Thompson
WESTON, BENSHOOF,
ROCHEFORT, RUBALCAVA & MacCUISH LLP

JNT/lkl
cc: Vijaya Jammalamadaka (Via Email and U.S. Mail)

APCD RESPONSE TO PUBLIC COMMENTS

Comments from Pat Mickelson, CalTrans

Comment: Update Table 5-8

Response: The project list will be updated. The following projects have been completed and will be deleted:

- Route 101 (Evans-Sheffield NB) – add auxiliary lane and construct Class 1 bikeway
- Route 101/Storke – improve interchange with two left-turn and one right-turn lane and one auxiliary lane
- Calle Real (Patterson to Kellogg) – widen to four lanes
- Hollister/Storke – widen intersection, dual left-turn lanes on all approaches excluding right-turn and third thru lane.
- Calle Real (Fairview to Valdez) – update link from two to four lanes to reflect existing network
- College Drive extension between Battles and Betteravia
- Betteravia/Bradley – add dual left turn lanes.

However, Route 101 (Santa Maria Way to SLO County line widening to six lanes) will be retained as it is not yet completed.

Comments from Vandenberg Air Force Base

Comment: Retain Vandenberg AFB Airborne Laser Mission Conformity Growth Allowance

Response: Although General Conformity is not applicable to this 2007 Plan, conformity growth allowance emissions have been added to Chapter 6 and are presented in Table 6-2. Note that the request for a NOx allowance of 0.4867 tons per day does not take into account the requirement that VAFB offset ABL emissions by withdrawing Emission Reduction Credits (ERC's) from the VAFB Source Register. The NOx ERC used to offset ABL emissions is 0.1265 tons per day; therefore, the conformity growth allowance NOx emissions shown in Table 6-2 are 0.3602 tons per day for each of the future years.

Comments from Weston, Benshoof

Comment: Use of Latest Regional Growth Forecast

Response: The Regional Growth Forecast (RGF), prepared by the Santa Barbara County Association of Governments (SBCAG), is utilized in the 2007 Plan to forecast future emissions for on-road motor vehicles and certain stationary source categories (e.g., residential fuel combustion). With respect to on-road vehicle emissions, RGF data are used in SBCAG's

Travel Model which, together with another model (EMFAC), generate the emission estimates. The RGF is currently being updated and the 2007 draft has been released by SBCAG for public comment. SBCAG staff anticipate that the 2007 RGF will be adopted by their Board sometime in early fall of this year.

Inasmuch as the APCD strives to use the most current data available in the 2007 Plan, the time frame for having a final 2007 RGF unfortunately does not mesh with the 2007 Plan schedule which calls for it's completion by June 2007. Now scheduled for APCD Board approval in August 2007, two months later than required by EPA (this delay was due to uncertainty caused by a recent federal appellate court decision; please refer to Chapter 7), the 2007 Plan would be delayed even further due to the time needed to input new RGF data and rerun the Travel Model to generate the on-road emission estimates. This process would require an additional four to six months after the 2007 RGF is finalized.

It should be noted, however, that the draft 2007 RGF forecasts less growth than the current 2004 RGF forecasts used in the 2007 Plan. Finally, the RGF is a policy-constrained forecast, based primarily on local land-use plans and as such generally does not account for potential individual development projects.

10.6 PUBLIC NOTICE

Santa Barbara County
Air Pollution Control District

PUBLIC NOTICE
Draft 2007 Clean Air Plan And
Supplemental Environmental Impact Report
Public Comment Period Starts February 12, 2007

Summary:
The Santa Barbara County Air Pollution Control District (APCD) has prepared a Draft 2007 Clean Air Plan and associated Supplemental Environmental Impact Report. The Clean Air Plan is required by federal and state law to show how the county will reduce ozone air pollution to meet health standards. The 2007 Clean Air Plan will be submitted to the California Air Resources Board and, as part of the State Implementation Plan, to the U.S. Environmental Protection Agency. The Clean Air Plan addresses several specific mandates of the federal Clean Air Act Amendments, including the following:

Clean air plan component federal clean air act reference
Implementation Plan Requirements §110(a)(1) and §110(a)(2)

The 2007 Clean Air Plan also provides a three-year update to the 2004 Clean Air Plan, 2001 Clean Air Plan, 1998 Clean Air Plan, 1994 Clean Air Plan, and the 1991 Air Quality Attainment Plan, as required by the California Clean Air Act. The 2007 Clean Air Plan includes previously adopted air pollution control measures and newly proposed/contingency emission control measures. During the public review period for the Draft 2007 Clean Air Plan, additional on-road emissions data and growth forecast data may become available from the Santa Barbara County Association of Governments. These data will be incorporated into the Final 2007 Clean Air Plan if they are adopted by the Santa Barbara County Association of Governments prior to adoption of the 2007 Clean Air Plan.

Pursuant to the **California Environmental Quality Act** (CEQA), the APCD has prepared a Supplemental Environmental Impact Report for the 2007 Clean Air Plan.

Public Review:
The Draft 2007 Clean Air Plan and the Supplemental Environmental Impact Report will be available for review and comment for 45 days beginning on February 12, 2007. Both documents will be available at public libraries in Santa Maria, Buellton, Lompoc, Goleta, Santa Barbara, UCSB, on the APCD website at www.sbcapcd.org, and at the following two locations:

Air Pollution Control District 260 N. San Antonio Road, Suite A Santa Barbara	Air Pollution Control District 301 E. Cook Street, Suite L Santa Maria

Public Workshop:
A public workshop has been scheduled to present the Draft 2007 Clean Air Plan and Supplemental Environmental Impact Report in order to receive public comments at the following time and location:

Wednesday, March 14th, 2007: 6:30 PM
Days Inn, Windmill Room
114 East Highway 246 - Buellton

Following the public workshop, there will also be a meeting of the APCD Community Advisory Council at the same location. The public is invited to attend.

Written Comments:
All written comments on the Draft 2007 Clean Air Plan and Supplemental Environmental Impact Report must be received, preferably by email, by 5:00 PM, Wednesday March 28th, 2007. Submit comments on the 2007 Clean Air Plan to Dr. Ron Tan, APCD Planning and Technology Supervisor, 260 N. San Antonio Road, Suite A, Santa Barbara, CA 93110 or rlt@sbcapcd.org. Submit comments on the Supplemental Environmental Impact Report to Ms. Vijaya Jammalamadaka, APCD Community Programs Section, 260 N. San Antonio Road, Suite A, Santa Barbara, CA 93110, or vlj@sbcapcd.org. Please contact Dr. Tan at (805) 961-8812 or Ms. Jammalamadaka at (805) 961-8893 for more information.

(Published February 12, 2007)

GLOSSARY OF TERMS

A

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

Adverse Health Effect: A health effect from exposure to air contaminants that may range from relatively mild temporary conditions, such as eye or throat irritation, shortness of breath, or headaches to permanent and serious conditions, such as birth defects, cancer or damage to lungs, nerves, liver, heart, or other organs.

Aerosol: Particles of solid or liquid matter that can remain suspended in air from a few minutes to many months depending on the particle size and weight.

Agricultural Burning: The intentional use of fire for vegetation management in areas such as agricultural fields, orchards, rangelands, and forests. The regulation of agricultural burning is described in the Agricultural Burning Guidelines, Title 17, California Code of Regulations.

Air: So called "pure" air is a mixture of gases containing about 78 percent nitrogen, 21 percent oxygen, and less than one percent carbon dioxide, argon, and other inert gases, with varying amounts of water vapor. See also ambient air.

Air Basin: A land area with generally similar meteorological and geographic conditions throughout. To the extent possible, air basin boundaries are defined along political boundary lines and include both the source and receptor areas. California is currently divided into 15 air basins. Santa Barbara County is located in the South Central Coast Air Basin, along with San Luis Obispo and Ventura Counties.

Air District: A political body responsible for managing air quality on a regional or county basis. California is currently divided into 35 air districts. (See also air pollution control district).

Air Monitoring: Sampling for and measuring of pollutants present in the atmosphere.

Air Pollutant: Any foreign and/or natural substance that is discharged, released, or 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: Degradation of air quality resulting from unwanted chemicals or other materials occurring in the air.

Air Pollution Control District (APCD): This is the local agency that has authority to regulate stationary, indirect, and area sources of air pollution and governing air quality issues. The APCD 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. An air pollution control board composed of elected officials governs the APCD.

Air Quality Attainment Plan (AQAP): A 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 Index (AQI): The USEPA recently revised its method of reporting air quality and the associated health effects. The Air Quality Index replaces the Pollutant Standards Index (PSI) previously used to report air quality to the public. The AQI is a measure of air quality based on a percentage of the federal air quality standard: An AQI of 100 means the pollutant level is equal to the federal standard for that pollutant. An AQI below 100 means the air quality is better than the standard, and above 100 can be considered unhealthful. The higher the number, the more air pollution we are breathing. In Santa Barbara County, we report the AQI for ozone, based on the federal 8-hour standard. Ozone is the only pollutant for which we have recently violated a federal air quality standard.

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 non-vehicular 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 that is in the troposphere and is subjected to meteorological and climatic change. 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.

Ammonia (NH_3): A pungent colorless gaseous compound of nitrogen and hydrogen that is very soluble in water and can easily be condensed into a liquid by cold and pressure. Ammonia reacts with NOx to form ammonium nitrate -- a major PM2.5 component in the Western United States.

Anthropogenic Emissions: Emissions related to human activity or devices.

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.

Arterial Streets: Streets designed to serve longer vehicle trips to, from, and within urban areas.

Atmosphere: The gaseous mass or envelope surrounding the Earth. From ground level up, the atmosphere is further subdivided into the troposphere, stratosphere, mesosphere, and the thermosphere. 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 region, which is in compliance with the National and/or California Ambient Air Quality Standards for a criteria pollutant under the Federal Clean Air Act or California Clean Air Act.

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).

B

Best Available Control Measure (BACM): A term used to describe the "best" measures (according to U.S. EPA guidance) for controlling small or dispersed sources of particulate matter and other emissions from sources such as roadway dust, woodstoves, and open burning.

Best Available Control Technology (BACT): BACT is a term used to describe up-to-date methods, systems, techniques, and processes applied to new and modified sources of air pollution in order to achieve the most feasible air pollution emission control. BACT is a requirement stipulated in APCD Regulation VIII (New Source Review), in both Rule 802 (Nonattainment Review) and Rule 803 (Prevention of Significant Deterioration). Rule 802 governs the permitting of new and modified stationary sources of air pollution that emit pollutants for which the County has been designated as nonattainment for either the State or federal ambient air quality health standards. Rule 803 governs the permitting of new or modified stationary sources of attainment pollutants. Each of these two rules contains its own emission rate thresholds over which the BACT requirement is triggered. For sources permitted under Rule 802, BACT is the more stringent of:

a.) The most effective control device, emission unit, or technique that has been achieved in practice for the type of equipment comprising the stationary source; or
b.) The most stringent limitation contained in any State Implementation Plan; or
c.) Any other emission control device or technique determined after public hearing to technologically feasible and cost effective by the Control Officer.

For sources permitted under Rule 803, BACT is an emission limitation based on the maximum degree of reduction for each pollutant that would be emitted from any new or modified stationary source. This is done on a case-by-case basis, taking into account energy, environment, and economic impacts and other costs. It also needs to be achievable for such a 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 a pollutant.

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.

Bicycle Master Plan: A formal city or county document that describes existing bicycle use, and sets out goals and actions that the government plans to do to increase bicycling as a means of travel.

Biogenic Emissions: Biological sources such as plants and animals that emit air pollutants such as volatile organic compounds. Examples of biogenic sources include animal management operations, and oak and pine tree forests. (See also natural sources.).

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

C

California Air Resources Board (ARB or CARB): The State's lead air quality agency consisting of an eleven-member board appointed by the Governor and several hundred employees. CARB is responsible for attainment and maintenance of the state and federal air quality standards, and is fully responsible for motor vehicle pollution control. CARB oversees county and regional air pollution management programs.

California Ambient Air Quality Standards (CAAQS): A legal limit that specifies the maximum level and time of exposure in the outdoor air for a given air pollutant and which is protective of human health and public welfare (Health and Safety Code 39606b). CAAQSs are recommended by the California Office of Environmental Health Hazard Assessment and adopted into regulation by the CARB. CAAQSs are the standards, which must be met per the requirements of the California Clean Air Act (State Act).

California Clean Air Act of 1988 (State Act): 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 air districts in violation of the CAAQS 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 Protection Agency (Cal/EPA): A state government agency established in 1991 for unifying environmental activities related to public health protection in the State of California. There are six boards, departments, and offices under the organization of Cal/EPA including the California Air Resources Board (ARB), California Integrated Waste Management Board (IWMB), State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCB), Department of Pesticide Regulation (DPR), Department of Toxic Substances Control (DTSC), and Office of Environmental Health Hazard Assessment (OEHHA. The Cal/EPA boards, departments, and offices are directly responsible for implementing California environmental laws, or play a cooperative role with other regulatory agencies at regional, local, state, and federal levels.

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 eliminated or reduced, and that air quality mitigation measures are implemented.

Carbon Monoxide (CO): A colorless, odorless, poisonous 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. This is one of the six pollutants for which there is a national ambient standard. (See Criteria Pollutants).

Carl Moyer Fund: A multi-million dollar incentive grant program designed to encourage reduction of emissions from heavy-duty engines. The grants cover the additional cost of cleaner technologies for on-road, off-road, marine, locomotive and agricultural pump engines, as well as forklifts and airport ground support equipment.

Car Share: A program organized by a public or private entity for the purpose of sharing the use of a number of vehicles between a number of individuals. For a nominal fee, the individual is able to reserve use of a vehicle as needed (usually by the hour), without actually being responsible for the maintenance, storage, insurance, etc. of the vehicle.

Central Business District (CBD): The downtown business areas of cities, historically the central downtown area.

Chlorofluorocarbons (CFCs): 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).

Circulation Element: A plan adopted by a city or county to describe how people and goods should move.

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 is 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 Natural Gas (CNG): An alternative fuel currently being demonstrated in motor vehicles in Santa Barbara County and considered one of the cleanest alternative fuels because of low hydrocarbon emissions. However, it does emit a significant quantity of nitrogen oxides.

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: A demonstration of whether a federally supported activity is consistent with the State Implementation Plan (SIP) -- per Section 176 (c) of the Clean Air Act. Transportation conformity refers to plans, programs, and projects approved or funded by the Federal Highway Administration or the Federal Transit Administration. General conformity refers to projects approved or funded by other federal agencies.

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

Congestion Management Program (CMP): A state mandated program (Government Code Section 65089a) that requires each county to prepare a plan to relieve congestion and reduce air pollution. The CMP is a comprehensive program designed to reduce auto-related congestion through provision of roadway improvements, travel demand management and coordinated land use planning among all local jurisdictions. The program is required of every county in California with an urbanized area of at least 50,000 people. The CMP is updated biennially.

Congestion Mitigation and Air Quality Program (CMAQ): A program created by the Intermodal Surface Transportation and Efficiency Act (ISTEA) which provides funds for transportation plans and programs in areas that are currently not in attainment with the federal Clear Air Act for ozone or carbon monoxide. CMAQ-funded projects must contribute to the attainment of air quality standards by demonstrating a reduction in vehicular emissions.

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 or maintain 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-Effectiveness: 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: The Federal Clean Air Act required the Environmental Protection Agency to set air quality standards for common and widespread pollutants after preparing "criteria documents" summarizing scientific knowledge on their characteristics and potential health and welfare effects. Today there are standards for six "criteria pollutants" for which State or National Ambient Air Quality Standards exist. These criteria pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and suspended particulate matter (PM_{10} and $PM_{2.5}$). The USEPA and CARB periodically review new scientific data and may propose revisions to the standards as a result.

D

Design 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 (1-hour standard) is the fourth highest one-hour concentration experienced at an individual monitoring station during the past three years.

E

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.

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

Emission Factor: For stationary sources, the relationship between the amount of pollution produced and the amount of raw material processed or burned. For mobile sources, the relationship between the amount of pollution produced and the number of vehicle miles traveled. By using the emission factor of a pollutant and specific data regarding quantities of materials used by a given source, it is possible to compute emissions for the source. This approach is used in preparing an emissions inventory.

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, stationary, area-wide, and natural 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.

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

Evaporative Emissions: Emissions from evaporating gasoline, which can occur during vehicle refueling, vehicle operation, and even when the vehicle is parked. Evaporative emissions can account for two-thirds of the hydrocarbon emissions from gasoline-fueled vehicles on hot summer days.

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

Exhaust Gas Recirculation (EGR): An emission control method that involves recirculating exhaust gases from an engine back into the intake and combustion chambers. This lowers combustion temperatures and reduces NO_x.

Expected Peak Day Concentration (EPDC): A calculated value that represents the concentration expected to occur at a particular site once per year, on average. The calculation procedure uses measured data collected at the site during a three-year period. Measured concentrations that are higher than the EPDC are excluded from the state area designation process.

Express service: Bus Service designed to connect high volume destinations, using the freeway where possible.

F

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

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).

Federal Clean Air Act (Federal Act): 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.

Federal Implementation Plan (FIP): 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.

Feeder service: Bus Service designed to connect low-density areas, usually residential, with trunk or other lines. Feeder services are quite similar to local service.

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.

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.

G

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.

H

Hazardous Air Pollutant (HAP): An air pollutant listed under section 112 (b) of the federal Clean Air Act as particularly hazardous to health. Emission sources of hazardous air pollutants are identified by USEPA, and emission standards are set accordingly.

Haze (Hazy): A phenomenon that results in reduced visibility due to the scattering of light caused by aerosols. Haze is caused in a large part by man-made air pollutants.

Health-Based Standard (Primary Standard): A dosage of air pollution scientifically determined to protect against human health effects such as asthma, emphysema, and cancer.

High Occupancy Vehicle (HOV): A vehicle which is transporting more than one person. HOV lanes are segments of roadway which are restricted to HOV vehicles.

Highway Performance Monitoring System (HPMS): The Highway Performance Monitoring System (HPMS) is a federally mandated inventory system and planning study designed to assess the nation's highway system. It maintains its authority through the following Codes of Federal Regulations: 23 CFR 420.105(b), 23 CFR 500.807(b), 40 CFR 51.452 (b)(2), 40 CFR 93.130(b)(2), and Section 187 of the 1990 Clean Air Act Amendments (CAAA). It is used to provide data to the Environmental Protection Agency (EPA) to assist in monitoring air quality conformity and travel forecasts generated for federal air quality plans.

Hybrid Electric Vehicle (HEV): 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. (See also Electric Motor Vehicle.)

Hydrocarbons: Compounds containing various combinations of hydrogen and carbon atoms. They may be emitted into the air by natural sources (e.g., trees) and as a result of fossil and vegetative fuel combustion, fuel volatilization, and solvent use. Hydrocarbons are a major contributor to smog. (See also Reactive Organic Compounds).

Hydrogen Sulfide (H_2S): A colorless, flammable, poisonous compound having a characteristic rotten-egg odor. It is used in industrial processes and may be emitted into the air.

101 Def: Highway 101 Deficiency Plan adopted by SBCAG, June 2002.

101 I-M: Highway 101 In-Motion – $1.6 million study to identify long-term solutions to the congestion problems within the Highway 101 corridor in southern Santa Barbara County.

I

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.

Indirect Source Review: A major component of an indirect source control program, which applies to new and modified indirect sources. Strategies for indirect source review include permit programs, review and comment on new and modified indirect source projects through the California Environmental Quality Act (CEQA) process, and coordination of air quality, transportation and land use policies through local government general plans. Indirect source review reduces emissions from new and modified sources through best available mitigation measures and additional offsite mitigation such as offsets and mitigation fees.

Infill: Development that focuses on the rehabilitation or redevelopment of land within an existing urban or town boundary rather than the conversion of previously undeveloped open space.

Inspection and Maintenance Program: A motor vehicle inspection program implemented by the California Bureau of Automotive Repair. The purpose of I&M is to reduce emissions by assuring that cars are running properly. 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.)

Inversion: A layer of warm air in the atmosphere that prevents the rise of cooling air and traps pollutants beneath it.

Intelligent Transportation System (ITS): Advanced electronic and information systems that can improve the safety, operational efficiency and productivity of the transportation system.

L

Lead: A gray-white metal that is soft, malleable, ductile, and resistant to corrosion. Sources of lead resulting in concentrations in the air include industrial sources and crustal weathering of soils followed by fugitive dust emissions. Health effects from exposure to lead include brain and kidney damage and learning disabilities. Lead is the only substance, which is currently listed as both a criteria air pollutant and a toxic air contaminant.

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 speed and density of its traffic volume it carries. Increasing levels of congestion are designated along a scale from A to F.

Light-Duty Vehicle (LDV): Any motor vehicle with a gross vehicle weight of 6000 pounds or less.

Liquefied Petroleum Gas (LPG): A gaseous byproduct of petroleum refining that is compressed to a liquefied 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.

Local Service: Service connecting residential areas with central business districts.

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.

Lowest Achievable Emission Rate (LAER): Under the Federal Clean Air Act, the rate of emissions that reflects (1) the most stringent emission limitation in the State Implementation Plan of any state for a given source unless the owner or operator demonstrates such limitations are not achievable; or (2) the most stringent emissions limitation achieved in practice, whichever is more stringent.

M

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. Since 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 MOU. Within this MOU, SBCAG is charged with developing the transportation elements of the plan, especially the transportation control measures, which essentially 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").

Methyl Tertiary Butyl Ether (MTBE): An ether compound added to gasoline to provide oxygen and enhance complete combustion. MTBE is being fazed out of California's gasoline.

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 was replaced by the suggested control measure process. (See Suggested Control Measure).

Metropolitan Planning Organization (MPO): Under federal law, the organization designated by the governor as responsible for transportation planning and programming activities required under federal law in an urbanized area. It serves as the forum for cooperative decision making by a regional board made up of local elected officials. As the regions' designated MPO, SBCAG is responsible for development of the federal long range transportation plan and multi-year funding programs, and the selection and approval of transportation projects using federal funds.

N

National Ambient Air Quality Standards (NAAQS): Standards established by the United States EPA that apply for outdoor air throughout the country. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare

Natural Sources: Non-manmade emission sources, including biological and geological sources, wildfires, and windblown dust.

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.

New Source Review (NSR): 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 Offsets.

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 USEPA and/or ARB as not meeting either NAAQS or CAAQS standards for a given pollutant.

O

Opacity: The amount of light obscured by particle pollution in the atmosphere. Opacity is used as an indicator of changes in performance of particulate control systems.

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 reactive organic compounds 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.

P

Particulate Matter (PM): Any material, except pure water, that exists in the solid or liquid state in the atmosphere, such as soot, dust, smoke, fumes, and aerosols. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particle combustion products.

Particulate Matter less than 10 microns (PM_{10}): A criteria air pollutant consisting of small particles with an aerodynamic diameter less than or equal to a nominal 10 microns (about 1/7 the diameter of a single human hair). Their small size allows them to make their way to the air sacs deep within the lungs where they may be deposited and result in adverse health effects. PM10 also causes visibility reduction.

Particulate Matter less than 2.5 microns ($PM_{2.5}$): 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.

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.

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.

Prevention of Significant Deterioration (PSD): 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 a standard is projected to be exceeded, Emission Offsets.

Public Transportation: Transportation service by bus, rail, 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.

R

Reactive Organic Compound (ROC): A reactive chemical gas, composed of hydrocarbons, that reacts with nitrogen oxides and contributes 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.

Reactive Organic Gases (ROG): See reactive organic compound.

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 Measures (RACM): A broadly defined term referring to technologies and other measures that can be used to control pollution. They include Reasonably Available Control Technology and other measures. In the case of PM10, RACM refers to approaches for controlling small or dispersed source categories such as road dust, woodstoves, and open burning.

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: Also called Cleaner Burning Gasoline (CBG). Gasoline with a different composition from conventional gasoline (e.g., lower aromatics content) that results in the production of lower levels of air pollutants.

Regional Haze: The haze produced by a multitude of sources and activities, which emit fine particles and their precursors across a broad geographic area. National regulations require states to develop plans to

reduce the regional haze that impairs visibility in national parks and wilderness areas.

Residential Second Units (RSU): Residential Second Unit means one additional living unit on any one lot or parcel within a single-family residential zoning district containing a single family dwelling. Such residential second unit is further defined as a building, or portion thereof, that provides complete, independent living facilities for one or more persons and permanent provisions for living, sleeping, eating, cooking, and sanitation.

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, bus pools, 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 percent below the 1990 baseline inventory.

S

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 (e.g., 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 contributor to 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 Transit Plan (SCTP): A transit plan prepared by Santa Barbara MTD that describes extensive improvements to transit service throughout the South Coast.

Sprawl: Dispersed development outside of compact urban and village centers along highways and in rural countryside.

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.

Street Furniture: Items that add interest and convenience to the pedestrian street environment including benches, planters, newsstands, drinking fountains, lighting fixtures and bike racks.

Suggested Control Measure (SCM): A document upon which air pollution control rules and regulations can be based. The California Air Resources Board issues SCMs to provide guidance to districts in their consideration and development of rules and regulations. However, approval by the ARB of an SCM does not obligate the local districts to develop particular regulations for sources addressed by the SCM. Local districts have the latitude to develop regulations that are as stringent, more stringent, or less stringent than SCMs. The stringency of regulations that are developed by the local districts is usually based in part on the extent to which emissions reductions are needed to achieve compliance with the ambient air quality standards, in that district's area of jurisdiction, as well as other local considerations. The districts also consider the costs for achieving the emission reductions.

Sulfur Dioxide (SO_2): 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.

T

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.

Transfer of Development Rights (TDR): Transfer of development rights refers to a method for protecting land by transferring the "rights to develop" from one area and giving them to another. What is actually occurring is a consensus to place conservation easements on property in agricultural areas while allowing for an increase in development densities or "bonuses" in other areas that are being developed. The costs of purchasing the easements are recovered from the developers who receive the building bonus.

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.

U

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.

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

Urban Growth Boundary (UGB): Boundaries that delineate where development ends and open space begins.

V

Vapor Recovery Systems: Mechanical systems that collect and recover chemical vapors resulting from transfer of gasoline from operations such as tank-to-truck systems at refineries, tanker-to-pipeline systems at offshore oil operations, and pump-to-vehicle systems at gasoline stations.

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

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 compounds" 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.

Z

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

Zoning. The public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. Each district allows certain uses of land within that zone, such as residential, commercial, or industrial. Typical zoning regulations address building height, bulk, lot area, setbacks, parking, signage, and density.

GLOSSARY OF ACRONYMS

APCD	Air Pollution Control District
APCD	Santa Barbara County 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 (for Area-Wide Sources)
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
DMV	Department of Motor Vehicles
DOG	Department of Oil and Gas (California)
DPR	Department of Pesticide Regulation
DVMT	Daily Vehicle Miles of Travel
EDS	Statewide Emission Data System
EIR	Environmental Impact Report
EMFAC	Emission Factor Model for on-road vehicles (by ARB)
EPA	Environmental Protection Agency (United States)
EPDC	Expected Peak Day Concentration
ERC	Emissions Reduction Credit
ERF	Environmental Research Foundation
EtO	Ethylene Oxide
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Amendments
Federal Act	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
HDDT	Heavy Duty Diesel Truck
HDGT	Heavy Duty Gas Truck
HDT	Heavy Duty Truck
HDV	Heavy Duty Vehicle
HHDT	Heavy-Heavy Duty Trucks (33,001 – 60,000 lbs)
HOT	High Occupancy Toll (Lane)
HOV	High Occupancy Vehicle (Lane)
Hp	Horsepower
HPMS	Highway Performance Monitoring System
IC	Internal Combustion
IMPROVE	Interagency Monitoring of Protected Visual Environments Program
I&M	Inspection and Maintenance
IMO	International Maritime Organization
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
LDA	Light Duty Auto
LDT	Light Duty Truck (0 – 5,750 lbs)
LDT1	Light Duty Truck (0 - 3,750 lbs)
LDT2	Light Duty Truck (3,751 – 5,750 lbs)
LDV	Light Duty Vehicle (LDA, LDT1, LDT2)
LEV	Low Emission Vehicle
LHDT1	Light-Heavy Duty Trucks (8,501 – 10,000 lbs)
LHDT2	Light Heavy Duty Trucks (10,001 – 14,000 lbs)
LHV	Line Haul Vehicle (60,001 lbs +)
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
M	Thousand
MCY	Motorcycle
MH	Motor Homes
MM	Million
M85	85 percent Methanol/15 percent Gasoline Fuel
MDT	Medium Duty Truck
MDV	Medium Duty Vehicle
MHDT	Medium Heavy Duty Trucks (14,001 – 33,000 lbs)

MMBTU	Million British Thermal Units
MMSCFD	Million Standard Cubic Feet Per Day
MOU	Memorandum of Understanding
MSCF	Thousand Standard Cubic Feet
MTD	Metropolitan Transit District
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 Policy 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
PC	Passenger Cars (LDA)
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter Less Than 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter Less Than 2.5 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
RTIP	Regional Transportation Implementation Plan
RTP	Regional Transportation Plan
RVP	Reid Vapor Pressure
SAFETEA-LU	Reauthorization of the national transportation bill ISTEA Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

SBCAPCD	Santa Barbara County Air Pollution Control District
SBCAG	Santa Barbara County Association of Governments
SBMTD	Santa Barbara Metropolitan Transportation District
SBUS	School Bus
SCC	Source Classification Code (for Stationary Sources)
SCCAB	South Central Coast Air Basin
SCCCAMP	South Central Coast Cooperative Aerometric Monitoring Program
SCD	Speed Class Distributions
scf	Standard Cubic Feet
SCOS	Southern California Ozone Study
SCR	Selective Catalytic Reduction
SHOPP	State Highway Operations and Protection Program
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
State Act	California Clean Air Act of 1988
SUV	Sport Utility Vehicle
TAC	Toxic Air Contaminant
TCM	Transportation Control Measure
TDA	Transportation Development Act
TDM	Transportation Demand Management
TEA-21	Transportation Efficiency Act for the 21st Century
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
UB	Urban Bus
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 Traveled
VOC	Volatile Organic Compounds
VRS	Vapor Recovery System
ZEV	Zero Emission Vehicle