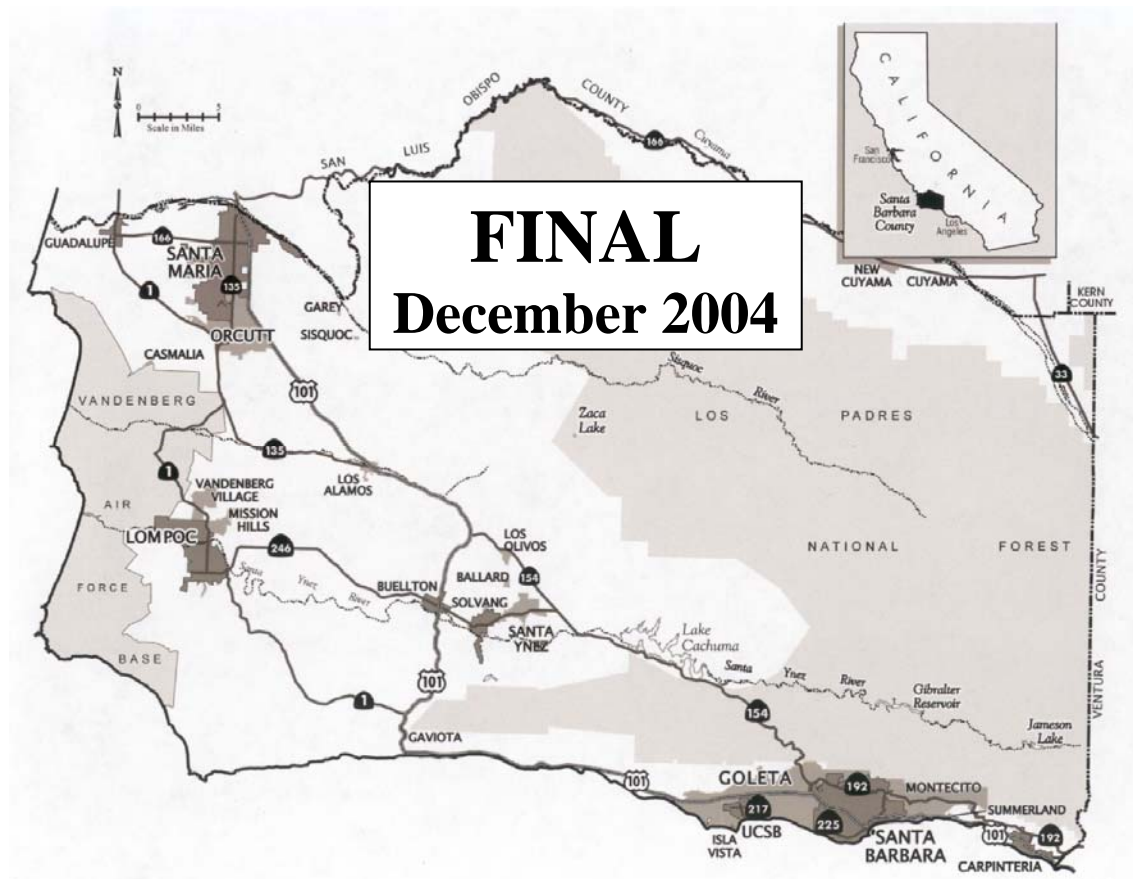


# 2004 Clean Air Plan

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*Santa Barbara County's plan to  
attain the state 1-hour ozone standard*



# 2004

# Clean Air Plan

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*Santa Barbara County's plan to  
attain the state 1-hour ozone standard*

**Three Year Update to the 2001 Clean Air Plan – State 1-hour Ozone Standard**

**FINAL**

**December 2004**



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**TERRY DRESSLER**



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**JIM KEMP**

# **2004**

# **Clean Air Plan**

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**FINAL**

**December 2004**

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RESOLUTION OF THE BOARD OF DIRECTORS OF  
THE SANTA BARBARA COUNTY  
AIR POLLUTION CONTROL DISTRICT

IN THE MATTER OF CERTIFYING THE	)	RESOLUTION NO. <u>04 – 14</u>
SUPPLEMENTAL ENVIRONMENTAL	)	
IMPACT REPORT AND ADOPTING THE	)	
2004 CLEAN AIR PLAN	)	
_____	)	

**RECITALS**

**WHEREAS:**

1. The Santa Barbara County Air Pollution Control District ("District") is currently classified as a nonattainment area for the state one-hour ozone standard;
2. Pursuant to the California Clean Air Act of 1988, the District is required to update the 1991 Air Quality Attainment Plan, the 1994 Clean Air Plan, the 1998 Clean Air Plan and the 2001 Clean Air Plan to attain the state one-hour ozone standard by the earliest practicable date;
3. The District has prepared a 2004 Clean Air Plan to comply with the California Clean Air Act update requirements;
4. The 2004 Clean Air Plan contains commitments by the Board for adoption of specified regulations to control air pollution, and also includes commitments by the State of California and the United States Environmental Protection Agency, and encourages certain actions by other jurisdictions within Santa Barbara County;
5. Pursuant to the California Environmental Quality Act ("CEQA"), a Supplemental Environmental Impact Report was prepared and circulated to address any potential

environmental impacts associated with the 2004 Clean Air Plan;

6. The Santa Barbara County Association of Governments (“SBCAG”), in a noticed public hearing, considered and approved the Transportation Control Measures for the 2004 Clean Air Plan pursuant to the existing Memorandum of Understanding between the District and SBCAG;

7. At their November 10, 2004 meeting, the Community Advisory Council recommended that the Board adopt the 2004 Clean Air Plan;

8. The Community Advisory Council and the District have reviewed the emission inventories developed for the 2004 Clean Air Plan and are alarmed by the magnitude of and the growth in the emissions related to marine shipping;

9. The Community Advisory Council and the District recognize the relationship between land use decisions and local air quality impacts.

**THEREFORE, IT IS HEREBY RESOLVED THAT:**

1. The Board hereby certifies that the Supplemental Environmental Impact Report (Attachment 2) circulated for this 2004 Clean Air Plan has been completed in compliance with CEQA and was presented to this Board and reviewed and considered prior to approving the 2004 Clean Air Plan, and that the final Supplemental Environmental Impact Report reflects the Board’s independent judgment and analysis.

2. The Board hereby adopts the CEQA findings set forth in Attachment 3 and the Mitigation Monitoring Plan contained in Attachment 2.

3. The Board hereby adopts the 2004 Clean Air Plan as provided to this Board on October 21, 2004 and modified as set forth in Attachments 4 and 6 as the 2004 Clean Air Plan of the District and finds that this Plan shall be the plan for purposes of compliance with the plan

update requirements of the California Clean Air Act.

4. The Board has reviewed the responses to comments received from the public and interested agencies set forth in Chapter 8 (Attachment 6) and adopts those responses to comments as findings of this Board. Additionally, the Board has reviewed the responses to written comments received after the close of the public comment period set forth in Attachment 7 and adopts those responses as findings of this Board.

5. The Board commits to adopt the proposed regulations to control air pollution required in the 2004 Clean Air Plan and the Board relies on the State of California and the United States Environmental Protection Agency to fulfill the commitments referred to in the Plan.

6. The Board recognizes the magnitude of and the projected growth in marine shipping emissions and directs staff to continue all necessary and proper actions to influence the United States Environmental Protection Agency to reduce the air quality impacts of emissions from this significant federal source.

7. The Board encourages local governments to plan and design communities to minimize motor vehicle miles traveled and trips.

8. The Board directs District staff to work with the Community Advisory Council to evaluate tools to quantify emissions from indirect sources and return to the Board with recommended options to mitigate emissions from such sources.

9. The Board authorizes the Chair to sign the letter (Attachment 8) transmitting the 2004 Clean Air Plan to the California Air Resources Board. Additionally, the Board authorizes the Control Officer to do all other acts necessary and proper to obtain approval of the 2004 Clean Air Plan by the California Air Resources Board.

PASSED AND ADOPTED by the Santa Barbara County Air Pollution Control  
District Board of Directors, County of Santa Barbara, State of California, this 16th day of  
December 2004, by the following vote:

AYES: Schwartz, Marshall, Centeno, Secord, Smyser, Holmdahl,  
Mariscal, Brock


NOES: None

ABSTAIN: None

ABSENT: Gray, Rose, Aguilera, Hicks, City of Carpinteria

Santa Barbara County Air Pollution Control  
District, State of California

By

  
Chairperson

ATTEST:

TERENCE E. DRESSLER  
Clerk of the Board

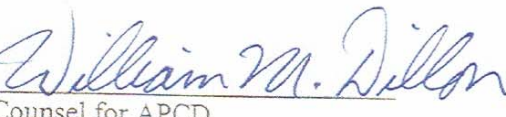
By

  
Deputy

APPROVED AS TO FORM:

STEPHEN SHANE STARK  
County Counsel

By

  
Counsel for APCD

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## **EXECUTIVE SUMMARY**

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**Why is this 2004 Plan being prepared?**

**What is new in this 2004 Plan revision?**

**How was this 2004 Plan revision prepared?**

**What are the health effects of ozone?**

**Is air quality improving?**

**How is attainment of the state 1-hour ozone standard determined?**

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**Has the overall control strategy changed?**

**Does the 2004 Plan show that we will attain the state 1-hour ozone standard?**

**How does the adoption of this 2004 Plan impact rulemaking at APCD?**

## **EXECUTIVE SUMMARY**

### **INTRODUCTION**

Air quality in Santa Barbara County continues to improve and 2004 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 an attainment area for the federal 1-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. Therefore, this 2004 Clean Air Plan (2004 Plan) will focus solely on the state 1-hour ozone standard and the associated planning requirements mandated by the 1988 California Clean Air Act.

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 2004 Plan represents a partnership among the 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 2004 despite substantial increases in population and vehicle miles traveled. The community should be proud of these accomplishments in reducing air pollution. This 2004 Plan reflects a commitment to continue this progress and bring clean air to all of the residents of Santa Barbara County.

## **WHY IS THIS 2004 PLAN BEING PREPARED?**

This 2004 Plan is being prepared to address California Clean Air Act mandates under Health and Safety Code sections 40924 and 40925 that require that every three years areas update their clean air plans to attain the state 1-hour ozone standard. More specifically, this 2004 Plan provides a three-year update to the APCD's 2001 Clean Air Plan. Previous plans developed to comply with the state ozone standard include the 1991 Air Quality Attainment Plan, the 1994 Clean Air Plan, and the 1998 Clean Air Plan.

## **WHAT IS NEW IN THIS 2004 PLAN REVISION?**

Each clean air plan revision represents a snapshot in time, based on the most current information available. This 2004 Plan is similar to the 2001 Clean Air Plan but includes significant new information. Some key new elements are:

- Updated local air quality information (through 2004)
- An updated emission inventory (year 2000)
- An updated emission estimate of marine shipping emissions (year 2000)
- Updated future year emission estimates through 2020
- Identification of every feasible emission control measure as part of the overall emission control strategy

## **HOW WAS THIS 2004 PLAN REVISION PREPARED?**

APCD prepared this 2004 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.

To help provide important local policy and technical input on APCD clean air plans and rules, the APCD Board of Directors established the Community Advisory Council. Starting in January of 2004, the CAC considered various components of this 2004 Plan at their monthly meetings. The input provided by the Community Advisory Council was, on many occasions, directly incorporated into this 2004 Plan. APCD staff also conducted public workshops to obtain direct public input on the 2004 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 presents the number of state ozone exceedances in Santa Barbara County during the period of 1988 to 2004. The most striking feature of Figure EX-1 is the dramatic decrease in the number of state ozone exceedances since 1988, when the state standard was exceeded on 42 days. In contrast, the state ozone standard was exceeded on only 2 days during 2004. A clear declining trend in the number of state ozone exceedances is evident from 1988 through 1999. Since 1999 however, with a relatively low number of exceedances experienced in the county, the trend is less discernable.

## **HOW IS ATTAINMENT OF THE STATE 1-HOUR OZONE STANDARD DETERMINED?**

Attainment of the state 1-hour 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 ozone standard if all monitoring stations have ozone concentrations less than 0.09 ppm, after excluding those days with concentrations identified as extreme events.

## **DOES THIS 2004 PLAN ADDRESS ANY FEDERAL REQUIREMENTS?**

This 2004 Plan does not address any specific federal planning requirements, as Santa Barbara County was designated as an attainment area for the federal 1-hour ozone standard in 2003. All of Santa Barbara County's federal requirements are documented in the 2001 Clean Air Plan. The USPEA has also designated the county as an attainment area for the federal 8-hour ozone standard, although we only meet the attainment test by a very slim margin. A Clean Air Plan to implement the new federal 8-hour standard is due by June 15, 2007, under USEPA's Final Implementation Rule (69 FR 23951).

## **WHAT ARE THE KEY STATE REQUIREMENTS THAT THIS 2004 PLAN ADDRESSES?**

The key requirements of the California Clean Air Act addressed in this 2004 Plan are the Triennial Progress Report (H&SC Section 40924(b)) and the Triennial Plan Revision (H&SC Section 40925(a)). Additionally, this 2004 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 2004 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 2000 for both onshore and Outer Continental Shelf (OCS) sources for this 2004 Plan. This inventory serves as our base year emission inventory, and is used to forecast emissions for 2005, 2010, 2015, and 2020. The 2000 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 2001 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 Planning emission inventory for 2000. 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), which contribute 40 percent of the reactive organic compounds and 55 percent of the emissions of oxides of nitrogen. Other mobile sources (planes, trains, boats), the evaporation of solvents, combustion of fossil fuels, surface cleaning and coating, 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 (61 percent) and oxides of nitrogen (98 percent) emissions comes from mobile sources (predominantly international marine shipping activities).

## **HAS THE OVERALL CONTROL STRATEGY CHANGED?**

The overall strategy for control of both reactive organic compounds and oxides of nitrogen adopted in the 2001 Clean Air Plan continues in this 2004 Plan, with the addition of eight new or revised

stationary source control measures, and updated transportation control measures. The 2001 Clean Air Plan contained: (1) the control measures needed to maintain the federal 1-hour ozone standard, (2) additional control measures needed to address state requirements and attain the state 1-hour ozone standard, and (3) measures that merit further study, referred to here as further study measures. This 2004 Plan evaluates each of the further study measures identified in the 2001 Clean Air Plan and sets a schedule for adoption of those measures that were determined to be feasible. This 2004 Plan also identifies further study measures that will be reviewed and evaluated in the next plan revision and update process.

### **DOES THE 2004 PLAN SHOW THAT WE WILL ATTAIN THE STATE 1-HOUR OZONE STANDARD?**

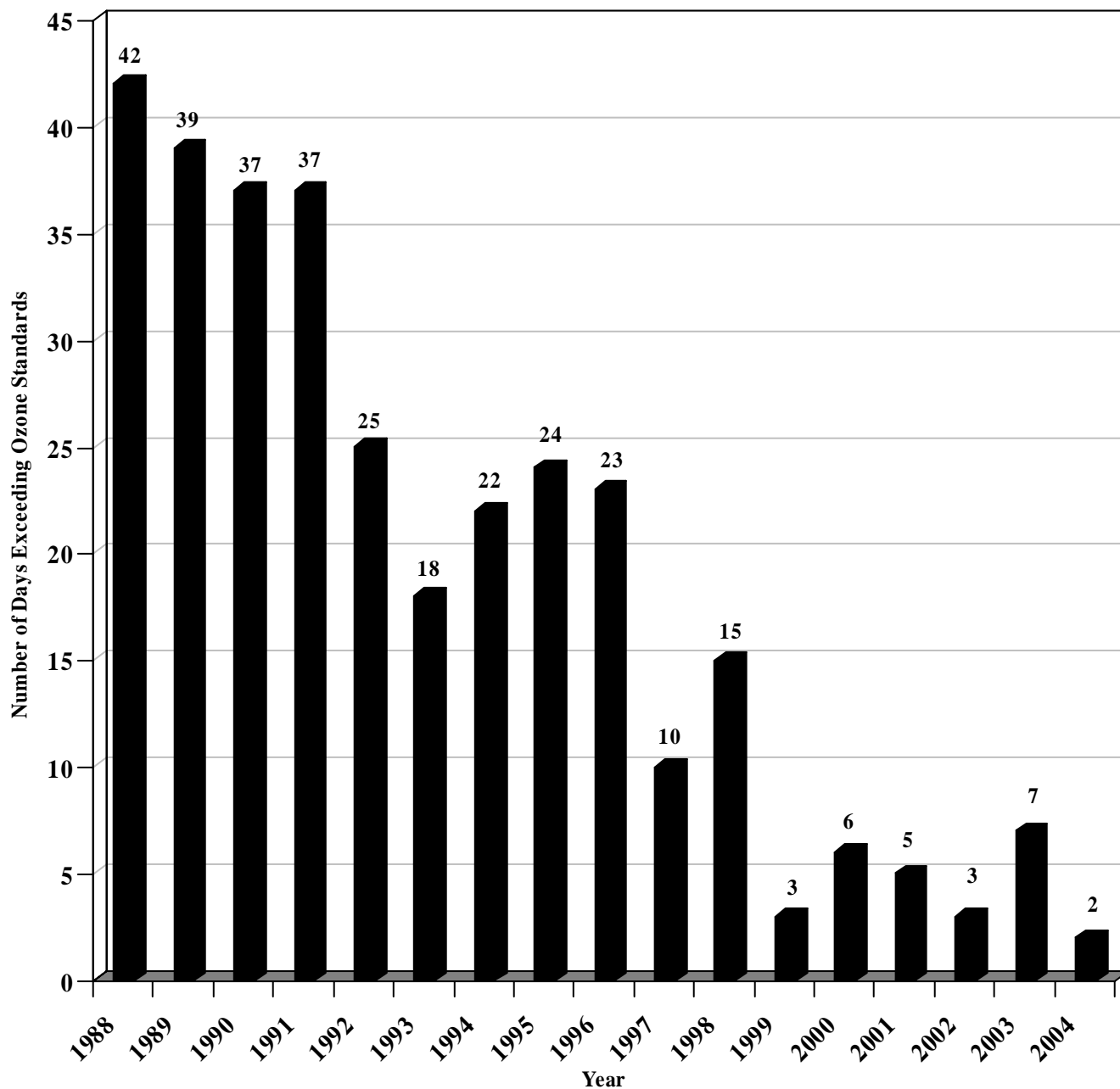
This 2004 Plan shows that onshore emissions of reactive organic compounds and oxides of nitrogen will continue to decrease through 2020, due primarily to on-road mobile source emission reduction measures. However, the large emission increases expected to occur in the OCS due to marine shipping activities 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 attain the state 1-hour ozone standard. This 2004 Plan does not contain detailed photochemical modeling that would be required to demonstrate attainment for the state 1-hour ozone standard.

### **HOW DOES THE ADOPTION OF THIS 2004 PLAN IMPACT RULEMAKING AT THE APCD?**

The rules that are proposed in this 2004 Plan are directly included into the rulemaking priorities of the APCD. The measures that this Plan proposes on a near-, mid-, or long-term basis will be adopted by the APCD according to that schedule. The formal adoption of this 2004 Plan by the APCD Board of Directors establishes the commitments to adopt all proposed rules according to the schedule identified in the plan.

## Figure EX-1

### Number of Days Exceeding the State 1-Hour Ozone Standard Santa Barbara County 1988-2004\*

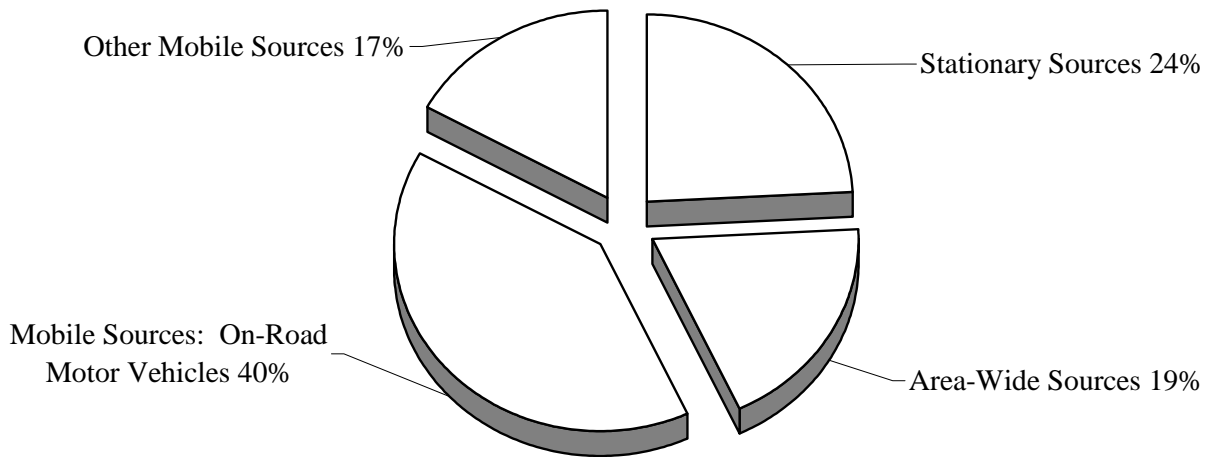


\*2004 Data are preliminary

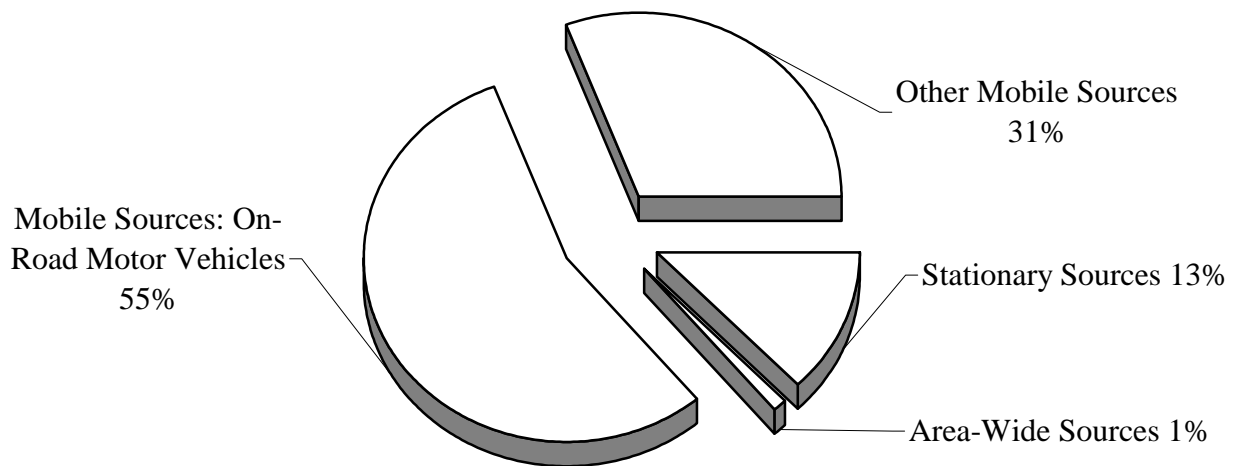
## Figure EX-2

### 2000 Santa Barbara County Planning Emission Inventory

**ROC: 41.84 tons per day**



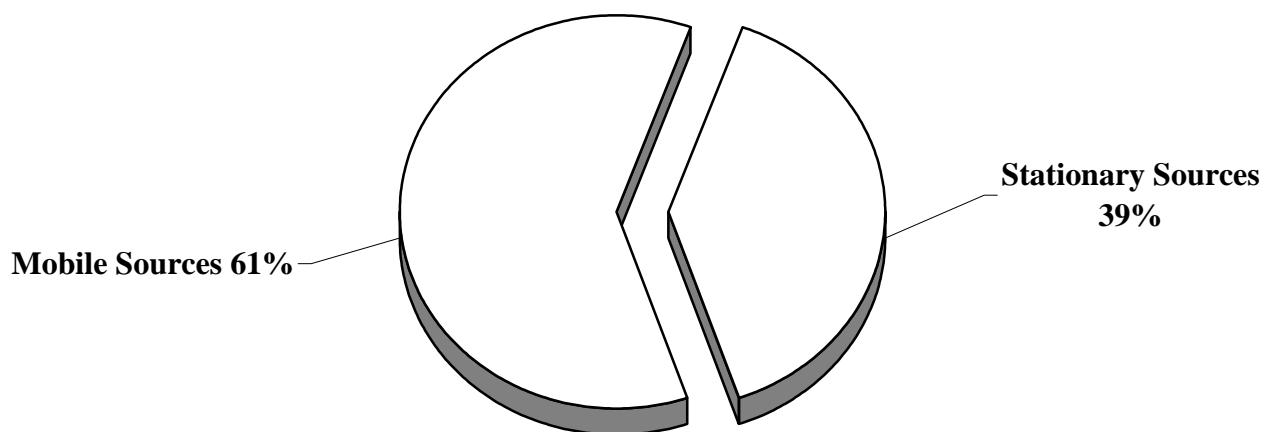
**NOx: 43.89 tons per day**



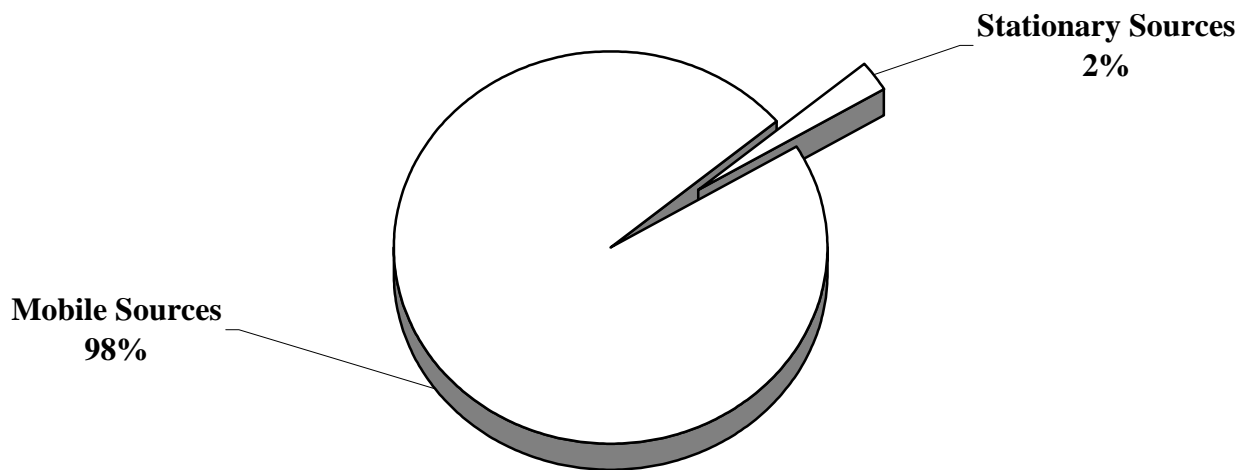
## Figure EX-3

### 2000 OCS Planning Emission Inventory

**ROC: 2.91 tons per day**



**NOx: 33.37 tons per day**



# **CHAPTER 1**

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## **INTRODUCTION**

**Purpose**

**Current State Planning Requirements**

**Summary of Attainment Planning Efforts**

**Plan Organization**

## **1. INTRODUCTION**

### **1.1 PURPOSE**

The purpose of this 2004 Clean Air Plan (2004 Plan) is to chart a course of action that will ensure clean, healthful air for the residents and environment of Santa Barbara County. Clean air is fundamental to good public health; it enhances the environment and contributes to the attractiveness of the area to residents, businesses, and visitors. Fortunately, our air quality has been improving through the implementation of several air quality plans. These plans have been developed for Santa Barbara County as required by both the 1988 California Clean Air Act (State Act) and the 1990 Federal Clean Air Act Amendments (Federal Act).

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 Santa Barbara County complies with the federal 1-hour ambient air quality standard for ozone. And on August 8, 2003, Santa Barbara County officially became an attainment area for the federal 1-hour ozone standard.

While Santa Barbara County's air quality has improved enough to be considered in attainment for the federal 1-hour ozone standard, we do not yet comply with the more health protective state 1-hour ozone standard. Therefore, this 2004 Plan will focus solely on the state 1-hour ozone standard and the associated planning requirements mandated by the State Act.

### **1.2 CURRENT STATE PLANNING REQUIREMENTS**

The California Clean Air 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 on a triennial basis. 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.

The control strategy originally 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 evaluation of every feasible measure was conducted for subsequent plans developed in 1994, 1998, and 2001 and will be re-evaluated in this 2004 Plan. In addition to the requirements that the State Act mandates for Santa Barbara County as a nonattainment area for the state 1-hour ozone standard, we are also responsible for the impacts our air pollution has on areas downwind of us. The State Act mandates that ARB identify air basins (or portions thereof) in which transported air pollutants cause or contribute to violations of the state 1-hour ozone standard in downwind areas and establish mitigation requirements commensurate with the level of contribution.

This 2004 Plan examines the emission reductions achieved from existing and proposed regulations with respect to every feasible measure and identifies measures for further study. It also examines the change in emissions related to changes in population, industrial activity, vehicle use, and provides updated emission inventories out to 2020. Finally, this plan evaluates local air quality indicators and the impact of our local air pollution on areas downwind of us.

### **1.3 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 (1979 AQAP) 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 OCS 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 (1989 AQAP), 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 California 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 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 ozone standard; and a plan to show maintenance of the federal ozone standard through the year 2006. The 1994 CAP also provided a three-year update to the 1991 AQAP for the state 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 Rate-of-Progress Plan, 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 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. The 1998 CAP also addressed the triennial plan revision and progress report requirements under the State Act.

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 Plan also addressed the state triennial plan revision and progress report requirements under the State Act.

A summary of Santa Barbara County’s planning activities that addressed state mandates is presented in Table 1-1 beginning with the 1991 AQAP.

## **1.4 PLAN ORGANIZATION**

Chapter 2, Local Air Quality, provides a summary of Santa Barbara County's climatology, air quality trends, and discusses the status of ARB's re-assessment of our transport contributions to neighboring air districts.

Chapter 3, Emission Inventory, establishes an emissions inventory for Santa Barbara County by quantifying the emissions of reactive organic compounds and oxides of nitrogen for the year 2000. This emission inventory is tailored to meet state requirements.

Chapter 4, Emission Control Measures, provides an overview of the APCD's control measures in relation to the "every feasible measure" requirement of the State Act. This chapter identifies the status of each control measure in relation to state requirements.

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

Chapter 6, Emission Forecasting, details the forecast procedures used to develop future year emission inventories for 2005, 2010, 2015, and 2020.

Chapter 7, Public Participation, summarizes all public input received during the development of this 2004 Plan.

## **REFERENCES**

California Health and Safety Code: 2004 Edition.

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

U.S. Environmental Protection Agency: Clean Air Act Reclassification; California Santa Barbara Nonattainment Area; Ozone. December 10, 1997 (62 FR 65025-65030).

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

U.S. Environmental Protection Agency: Approval and Promulgation of State Implementation Plans and Designation of Areas for Air Quality Planning Purposes; 1-hour Ozone Standard for Santa Barbara, CA. July 9, 2003 (68 FR 40789-40791).

**Table 1 - 1**

**Comparison of the 1991 AQAP, 1994 CAP, 1998 CAP, 2001 CAP, and the 2004 Plan**

	<b>1991 AQAP</b>	<b>1994 CAP</b>	<b>1998 CAP</b>	<b>2001 CAP</b>	<b>2004 Plan</b>
<b>Mandates</b>	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
<b>Air Quality Standards</b>	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).
<b>Region Covered</b>	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.
<b>Emission Inventory</b>	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 <sub>x</sub> 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 <sub>x</sub> 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 <sub>x</sub> 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.
<b>Plan Summary</b>	The 1991 AQAP was required to reduce ROG and NO <sub>x</sub> 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 Plan contains a Maintenance Plan and redesignation request for the federal 1-hour ozone standard.  This 2001 Plan also satisfies state planning requirements.	The 2004 Plan focuses solely on California Clean Air Act requirements.

## **CHAPTER 2**

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### **LOCAL AIR QUALITY**

**Introduction**

**Climate of Santa Barbara County**

**Air Quality Monitoring**

**State Ozone Exceedances**

**Air Quality Indicators**

**Designation Value**

**Transport Impacts**

**Conclusions**

## **2. LOCAL AIR QUALITY**

### **2.1 INTRODUCTION**

This chapter provides the background for this 2004 Plan by presenting an overview of the climate of Santa Barbara County, an assessment of local air quality trends using ARB-specified indicators and a discussion of the impacts our air quality has on neighboring air districts. 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 indicator data are important for assessing progress towards attainment of state ozone standards. The discussion on air pollution transport summarizes the status of the California Air Resources Board (ARB) efforts to re-assess the impacts that our air quality has on neighboring air districts.

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 2003 are highlighted in Section 2.4 while Section 2.5 summarizes 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 details air quality transport and the ARB assessment of the potential impacts of the transport of emissions generated in Santa Barbara County. Finally, Section 2.8 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, 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 USEPA to protect public health, vegetation, materials and visibility (Table 2-1). State standards for ozone and both respirable (less than 10 microns - $PM_{10}$ ) and fine (less than 2.5 microns -  $PM_{2.5}$ ) particles are more stringent than federal standards.

Monitoring of ambient air pollutant concentrations is conducted by the ARB, 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.

## **2.4 STATE OZONE EXCEEDANCES**

Figure 2-2a presents the number of state ozone exceedances in Santa Barbara County during the period of 1988 to 2004. As shown in the figure, Santa Barbara County has experienced between 2 and 42 days per year on which the state ozone standard was exceeded in the county.

The most striking feature of Figure 2-2a is the dramatic decrease in the number of state ozone exceedances since 1988, when the county experienced 42 days where the state standard was exceeded. In contrast, there were only two days where the state ozone standard was exceeded during 2004. A clear declining trend in the number of state ozone exceedances is evident from 1988 through 1999. Since 1999, with the relatively low number of state 1-hour ozone exceedances experienced in Santa Barbara County, the trend is less discernable.

The long-term declining trend in exceedance days has occurred concurrently with increases in both population and daily vehicle miles traveled in Santa Barbara County (Figure 2-2b). This shows 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 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” sub-area, (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 to us by the ARB on August 28, 2003, 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). 2003 exposure data are currently not available for trend analyses.

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 2002 EPDC for a monitoring site uses data from 2000, 2001 and 2002. 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 concentration that is expected to recur at a rate of once per year.

Figure 2-3 presents 1988 through 2003 peak air quality indicators for monitoring sites in Santa Barbara County. Note that data collection on Santa Rosa Island did not begin until 1996, thus EPDC indicator data for that site does not start until 1998. Additionally, Santa Barbara data terminate in 2000 since the station was offline for several months during 2001, but came back online at the beginning of 2003. West Campus data end in 1998 when ozone data collected terminated at that site.

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

indicators for the Las Flores Canyon site fell below the state standard in 2003. The Paradise Road monitoring site, while showing considerable improvement from earlier years, had an EPDC values that remained above the standard during 2003.

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 (see Table 2-2). The Las Flores Canyon monitoring site had a maximum of 24 exceedances in 1990 with no exceedances during 2002, while the number of State exceedances at the Paradise Road site has ranged from 24 in 1988 to zero exceedances during 2000.

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 2003. At the Paradise Road site, the peak indicator was as high as 0.125 ppm in 1989 and 1991, decreasing to 0.105 ppm by 2003. Figure 2-4 presents the overall EPDC trend improvement for both the Las Flores Canyon and Paradise Road sites from 1988 to 2003. Based on the trendline, the overall EPDC improvement for the Las Flores Canyon site from 1989 to 2003 is about 35%. The Paradise Road EPDC trend improvement is about 20% for the period of 1988 to 2003.

In addition to assessing the longer-term trends, the ARB recommends that districts evaluate changes in the EPDC indicator for the most recent three years of data and report any improvement for those years. Between 2000 and 2003, the EPDC for the Las Flores Canyon site decreased from 0.102 to 0.092 ppm, which translates to an improvement of about 7%. The Paradise Road site EPDC dropped from 0.103 ppm to 0.100 ppm between 2000 and 2001 then increased back to 0.105 during 2003. Peak indicators at other monitoring sites in Santa Barbara County have also generally decreased between 2000 and 2002, although the El Capitan site EPDC increased from 0.082 ppm to 0.086 ppm between 2000 and 2001 then decreased to 0.084 ppm in 2002.

The reduction in EPDC indicator data show that Santa Barbara County's air quality has improved significantly over the long-term. There have also been continued improvements at several of the monitoring sites in the county, although the overall trend of countywide exceedances has been less distinct over the last few years. Air quality improvement has led to the reduction in the number of State ozone exceedances from 42 days in 1988 to as few as two days in 2004.

### 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. The exposure values are allocated to population on the basis of census tracts and the distance of the various tracts to the air monitoring stations. The population-weighted exposure indicators represent a composite of exposures at individual locations that have been weighted to emphasize equally the potential exposure for each individual in an area.

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. The area-weighted exposure indicator represents a composite of exposures at individual locations that have been weighted to emphasize equally the potential exposure in all portions of the county.

Population- and area-weighted trends are presented in Figure 2-5a and 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 2000 are presented in a separate figure (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 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 area 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 parts per million (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 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 1988-2003 for Las Flores Canyon, Carpinteria and Paradise Road, sites historically measuring the most ozone exceedances, are presented in Figure 2-6. Based on

these data, only the Paradise Road site remained out of compliance with the State ozone standard during 2003.

## **2.7 TRANSPORT IMPACTS**

The State Act gives ARB the responsibility to assess the movement of air pollutants from one air basin to another (referred to as “transport”) and the relative impacts on ozone concentrations. The ARB must also establish mitigation requirements commensurate with the level of contribution an upwind area has on a downwind area. While Section 2.2 discussed the impacts of pollution transported from the South Coast Air Basin on Santa Barbara County, this section summarizes the status of ARB’s efforts to re-assess the impacts that our air quality has on neighboring air districts.

The ARB staff assesses transport impacts by first identifying “transport couples” that consist of an upwind area and a corresponding downwind area. These areas are generally defined using air basin boundaries or portions thereof. Areas with similar geographic and weather conditions are within the same air basin. Santa Barbara County is part of the South Central Coast Air Basin, which also includes San Luis Obispo County and Ventura County. The greater Los Angeles area is in the South Coast Air Basin. In addition to identifying upwind and downwind relationships between air basins, the ARB is required to assess the degree of impact. State law directs the ARB to determine if the contribution of transported pollution is overwhelming, significant, inconsequential, or some combination.

The ARB determined through modeling of ozone episodes that occurred in the mid-1980’s that under some conditions emissions generated in the South Central Coast Air Basin can contribute to ozone exceedances occurring in the South Coast Air Basin. This led the ARB to classify the South Central Coast Air Basin (excluding San Luis Obispo) as both a significant and an inconsequential contributor to South Coast Air Basin ozone exceedances.

Recently, the ARB performed analyses of state ozone exceedances in the northwestern portion of the South Coast Air Basin to determine whether emissions from the South Central Coast Air Basin, particularly emissions generated in Santa Barbara and Ventura Counties, continue to contribute to exceedances in the South Coast Air Basin. The ARB examined all exceedances that occurred between 2000 and 2003 at monitoring sites located in Reseda and Santa Clarita, northwest of downtown Los Angeles. In all, there were 263 State 1-hour ozone exceedances between these two sites. Due to the large number of exceedance days, it was not possible for the ARB to do an in-depth analysis of each day. Therefore, the ARB used a screening approach to identify days that had the potential for transport from the Santa Barbara area to the eastern South Coast Air Basin.

The ARB utilized two methods to screen potential Santa Barbara County to Reseda/Santa Clarita transport days, and then applied a trajectory model to those days where screening showed a potential for transport. The first method for screening exceedances was the evaluation of weather conditions to determine if winds were conducive to transport. Secondly, ozone, NO<sub>x</sub> and CO concentrations were plotted along with hourly wind speed and direction for a 48-hour period to determine whether pollutants were transported into the Reseda/Santa Clara area overnight or whether they were carried over from the day prior to the exceedance day. After screening, a total of 14 exceedance days were evaluated with a trajectory model.

While none of the trajectories backed into the urban Santa Barbara area, a few did back over the Santa Barbara Channel and into the vicinity of Vandenberg Air Force Base. Emissions from the Vandenberg area are a small fraction of overall county emissions, however, and are unlikely to be sufficient enough to contribute to ozone exceedances in the Santa Clarita and Reseda areas. Chapter 7 includes a more detailed explanation of the methodology used by the ARB to determine Santa Barbara County's transport contributions.

The ARB's analyses suggest that there was a low potential for transport of ozone or ozone precursors from Santa Barbara County into the Santa Clarita and Reseda area during the period of 2000 through 2003 that could have contributed to any of the 263 state ozone

exceedances. The ARB has concluded, therefore, that transport from Santa Barbara County into the South Coast has been inconsequential.

## **2.8 CONCLUSIONS**

Although Santa Barbara County continues to violate the State ozone standard of 0.09 parts per million, long-term EPDC indicator trend and exposure data show that air quality has improved dramatically since 1988. Since 1999, with the relatively low number of State 1-hour ozone exceedances experienced in Santa Barbara County, the trend is less discernable. As a result of overall trend improvement, however, the EPDC has decreased below the State ozone standard at several sites within the county since 1988. This improvement in air quality has decreased the number of days experiencing State ozone exceedances from 42 in 1988 to just 2 in 2004.

The improvement in air quality is not only beneficial to Santa Barbara County, but may also reduce our impact on neighboring counties. Since 1993, the South Central Coast Air Basin, of which Santa Barbara is part of, has been classified by the ARB as both a significant and inconsequential contributor to State ozone exceedances occurring in the neighboring South Coast Air Basin. The ARB has recently performed updated analyses of exceedance days in the South Coast Air Basin between 2000 and 2003 and found that the contribution of ozone and ozone precursors from Santa Barbara County to each of the exceedances was inconsequential.

**Table 2-1**  
**Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards <sup>1</sup>	National Standards <sup>2</sup>	
		Concentration <sup>3</sup>	Primary <sup>2,4</sup>	Secondary <sup>2,5</sup>
Ozone	1 Hour	0.09 ppm (180 ug/m <sup>3</sup> )	0.12 ppm (235 ug/m <sup>3</sup> )	Same as Primary
	8 Hour	--	0.08 ppm (157 ug/m <sup>3</sup> )	Same as Primary
Carbon Monoxide	8 Hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )	Same as Primary
	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	
Nitrogen Dioxide	Annual Average	--	0.053 ppm (100 ug/m <sup>3</sup> )	Same as Primary
	1 Hour	0.25 ppm (470 ug/m <sup>3</sup> )	--	
Sulfur Dioxide	Annual Average	--	0.03 ppm (80 ug/m <sup>3</sup> )	
	24 Hour	0.04 ppm <sup>6</sup> (105 ug/m <sup>3</sup> )	0.14 ppm (365 ug/m <sup>3</sup> )	--
	3 Hour	--	--	0.5 ppm (1,300 ug/m <sup>3</sup> )
	1 Hour	0.25 ppm (655 ug/m <sup>3</sup> )	--	--
Respirable Particulate Matter (PM <sub>10</sub> )	Annual Arithmetic Mean	20 ug/m <sup>3</sup>	50 ug/m <sup>3</sup>	--
	24 Hour	50 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>	Same as Primary
Fine Particulate Matter (PM <sub>2.5</sub> )	Annual Arithmetic Mean	12 ug/m <sup>3</sup>	15 ug/m <sup>3</sup>	Same as Primary
	24 Hour	--	65 ug/m <sup>3</sup>	Same as Primary
Sulfates	24 Hour	25 ug/m <sup>3</sup>		--
Lead	30 Day Average	1.5 ug/m <sup>3</sup>	--	--
	Calendar Quarter	--	1.5 ug/m <sup>3</sup>	Same as Primary
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m <sup>3</sup> )		--
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 ug/m <sup>3</sup> )		--
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility <sup>7</sup> to less than 10 miles when the relative humidity is less than 70%		--

## Table 2-1 (Concluded)

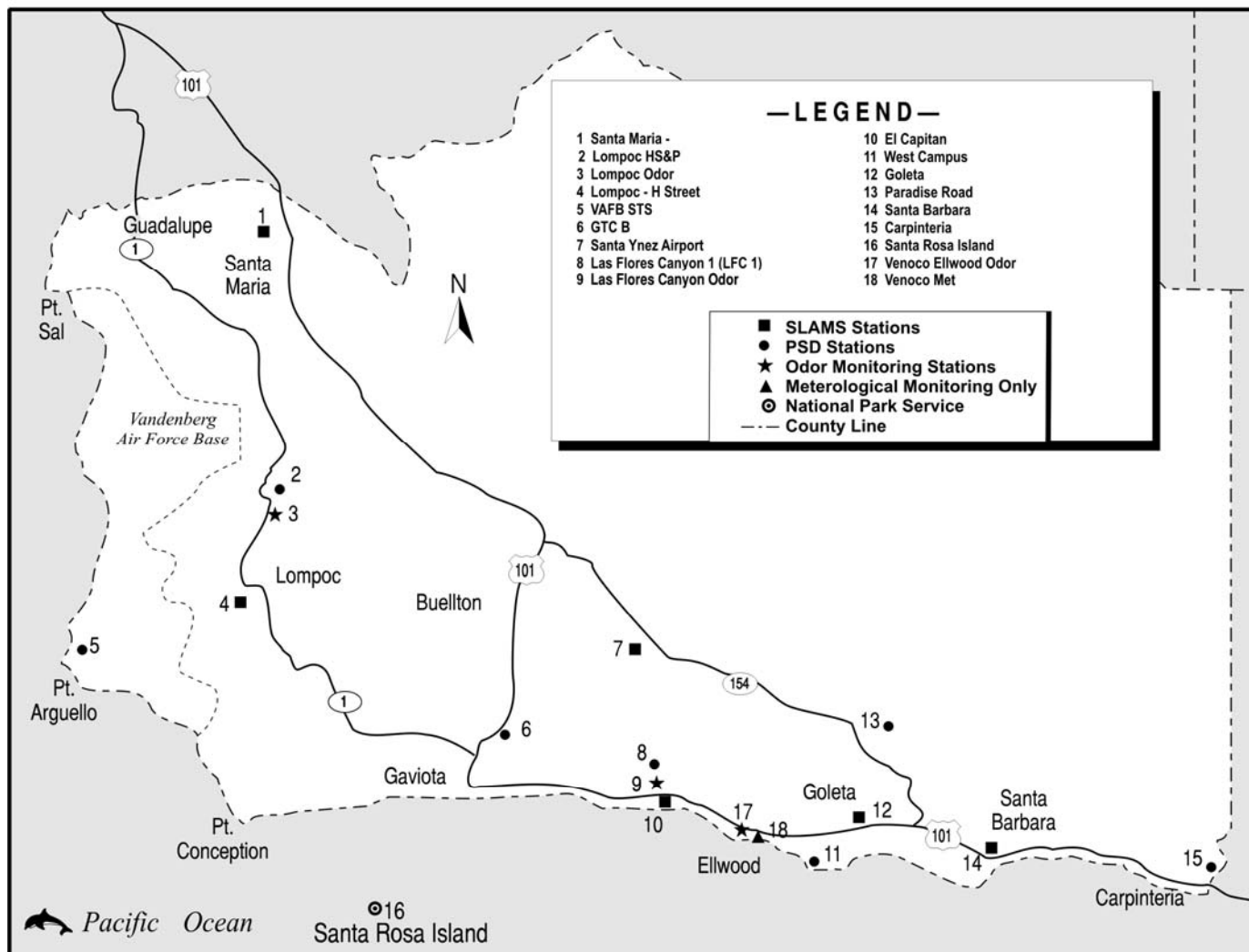
### NOTES:

1. California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter - PM<sub>10</sub>, 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.

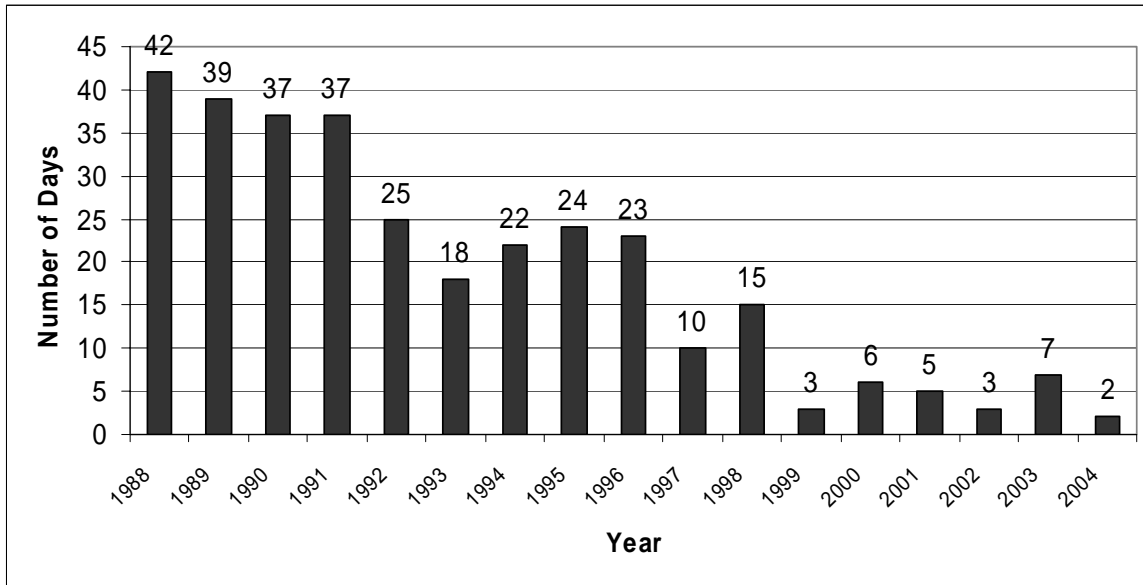
**Table 2-2**  
**Number of Days Exceeding State Ozone Standard by Site**  
**1988-2003**

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Carpinteria</b>	10	14	5	8	9	6	11	7	8	4	3	1	1	1	0	1
<b>El Capitan</b>	0	3	2	2	6	3	2	5	4	0	1	0	0	0	0	1
<b>Goleta</b>	5	6	5	5	8	5	3	3	5	0	1	1	0	0	0	1
<b>Najoqui</b>	4	5	4	7	5	5	2	3	5	1	0	0	1	0	0	1
<b>Las Flores Canyon</b>	10	23	24	12	15	9	15	15	14	5	5	1	4	1	0	1
<b>Lompoc HS&amp;P</b>	4	5	1	3	1	3	1	1	3	0	1	0	1	0	0	1
<b>Lompoc H Street</b>	1	1	0	1	1	1	1	2	0	0	0	0	0	0	0	0
<b>Paradise Road</b>	24	20	10	22	12	7	5	6	10	3	11	3	0	4	3	6
<b>Santa Ynez</b>	3	6	0	3	4	1	1	1	4	1	2	0	0	1	0	0
<b>VAFB STS</b>	0	3	3	2	1	1	0	1	2	0	0	1	0	0	0	0

**Figure 2-1**  
**Santa Barbara County Air Quality Monitoring Stations**

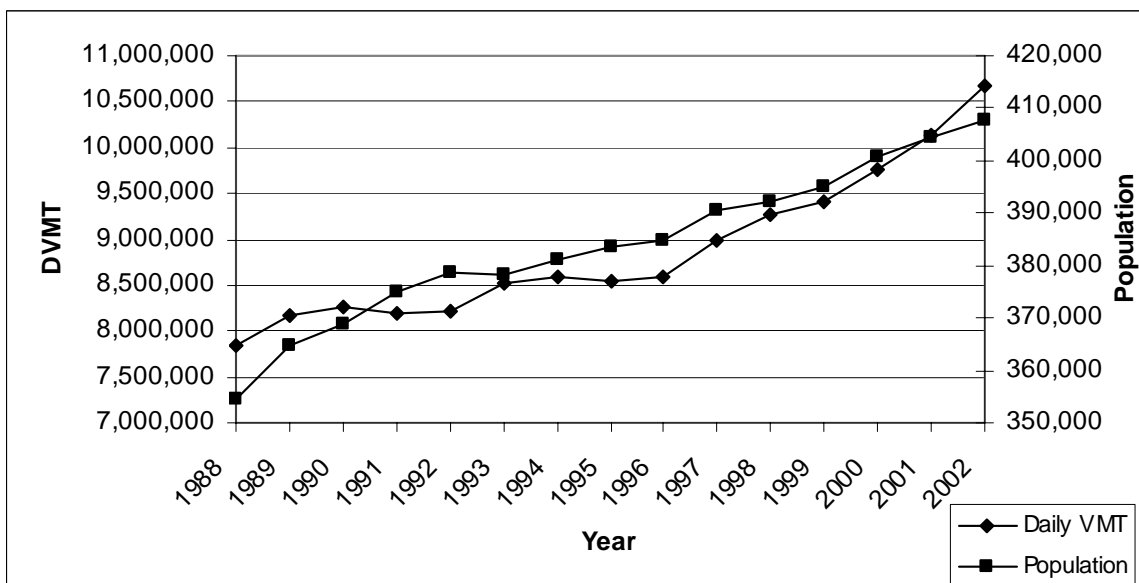


**Figure 2-2a**  
**Number of Days Exceeding State Ozone Standard**  
**Santa Barbara County**  
**1988-2004\***

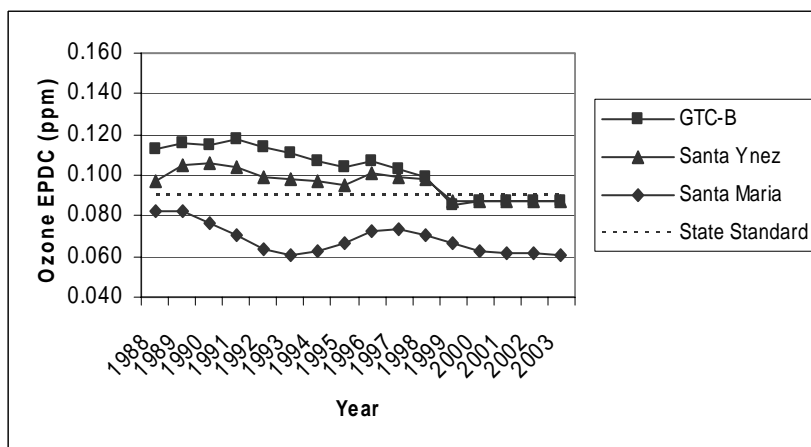
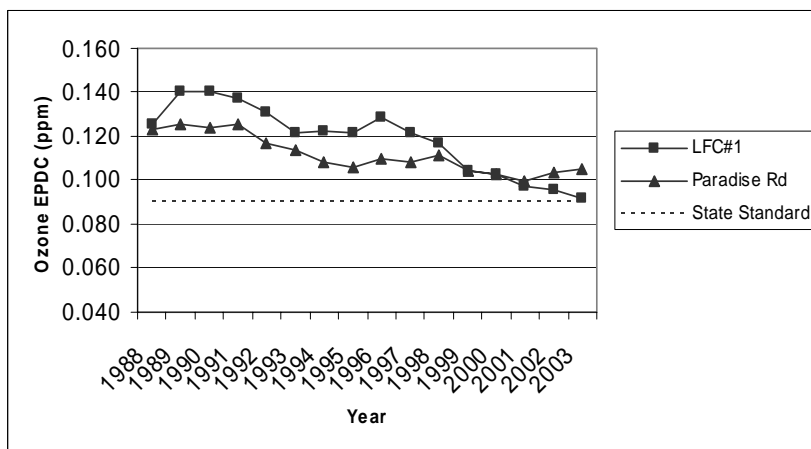
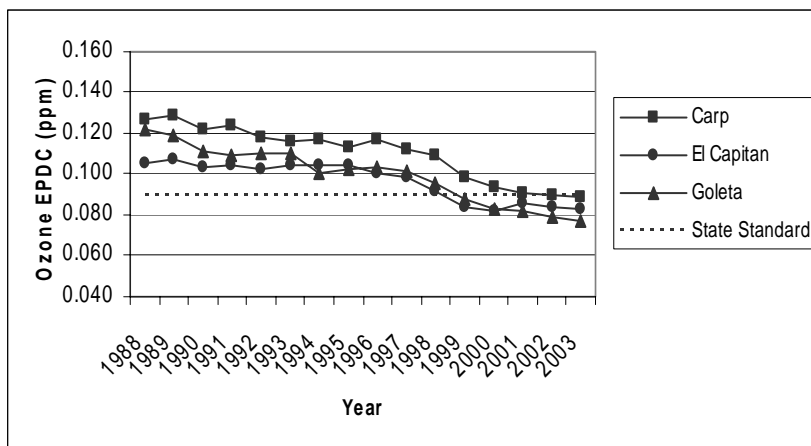


\*2004 data are preliminary

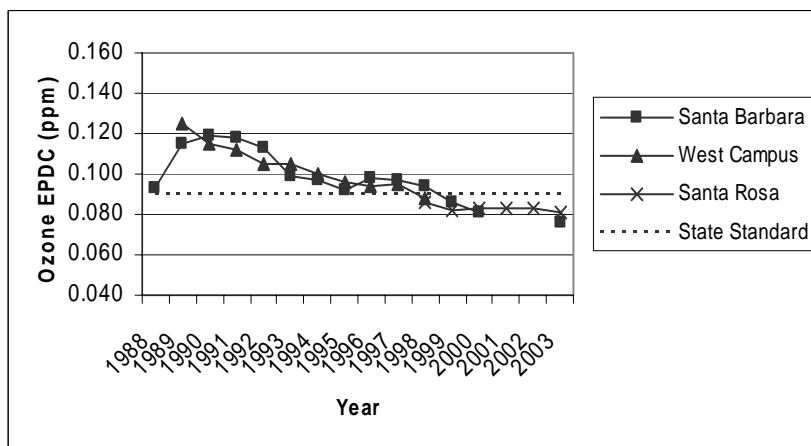
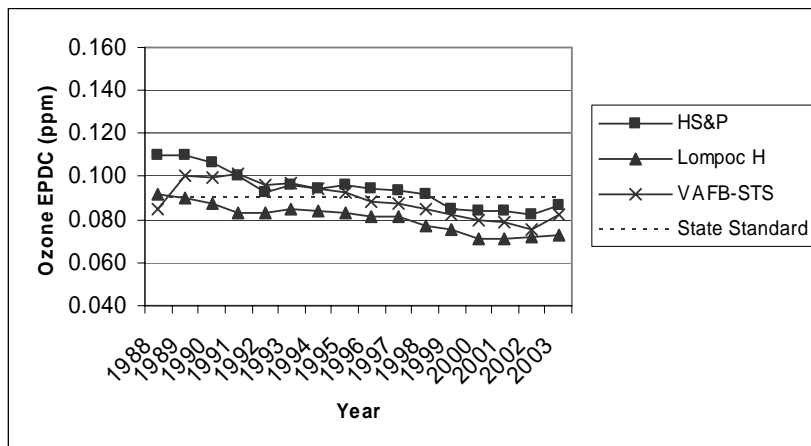
**Figure 2-2b**  
**Population and Daily Vehicle Miles Traveled**  
**Santa Barbara County**  
**1988-2002**



**Figure 2-3**  
**State Ozone Expected Peak Day Concentration**  
**Santa Barbara County Monitoring Sites**  
**1988-2003**

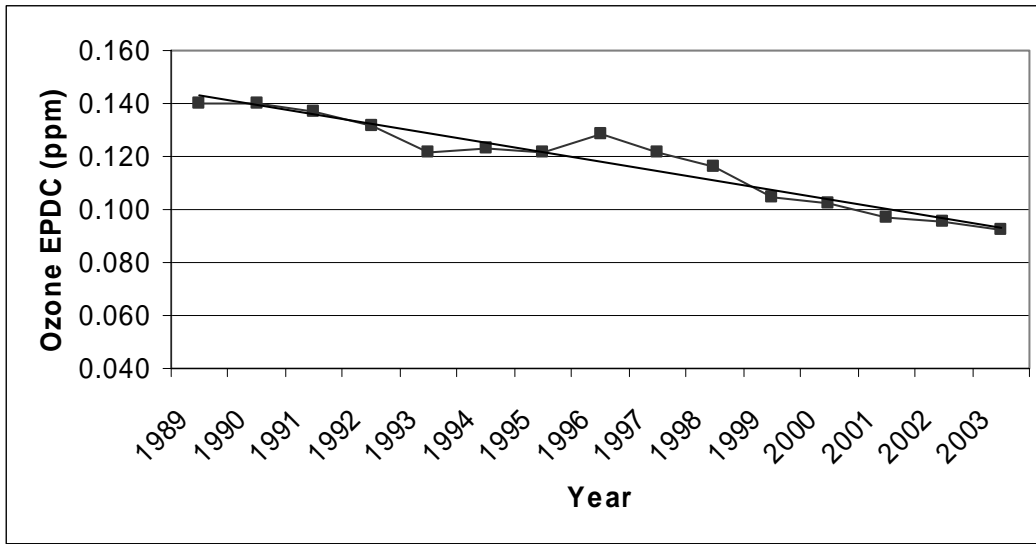


**Figure 2-3 Concluded**  
**State Ozone Expected Peak Day Concentration**  
**Santa Barbara County Monitoring Sites**  
**1988-2003**

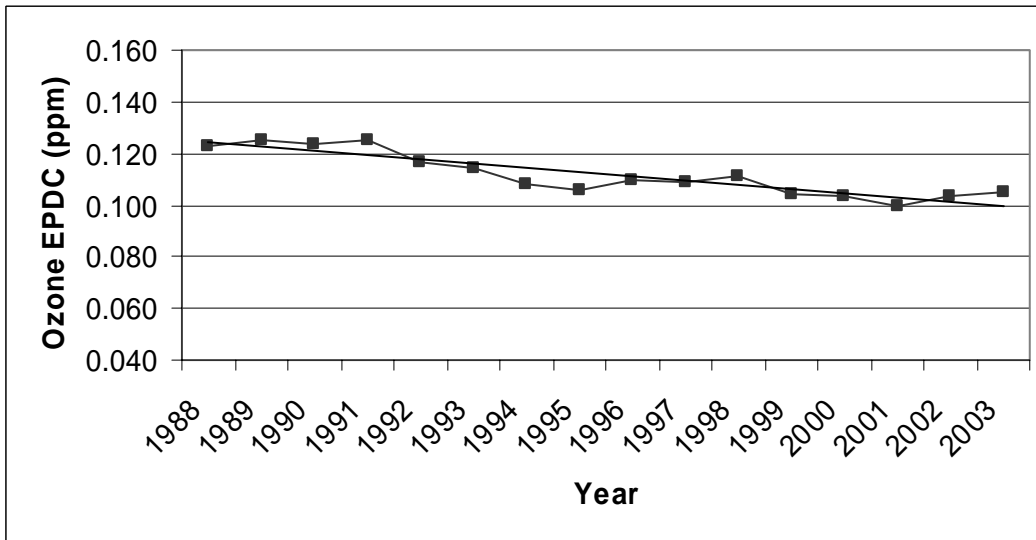


**Figure 2-4**  
**Peak “Hot Spot” EPDC Trends**  
**1988-2003**

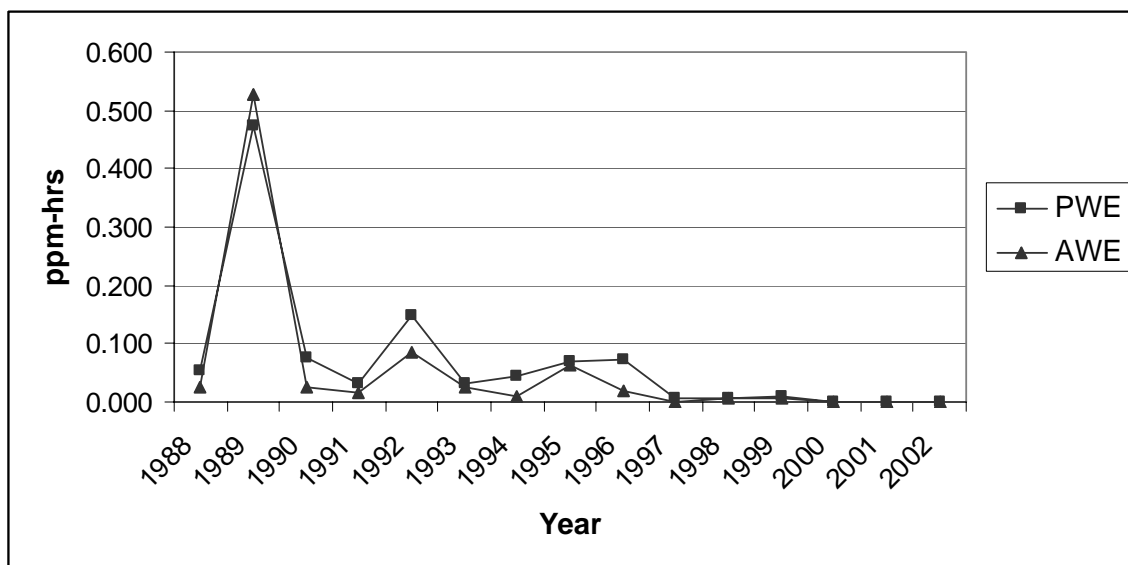
**Las Flores Canyon**



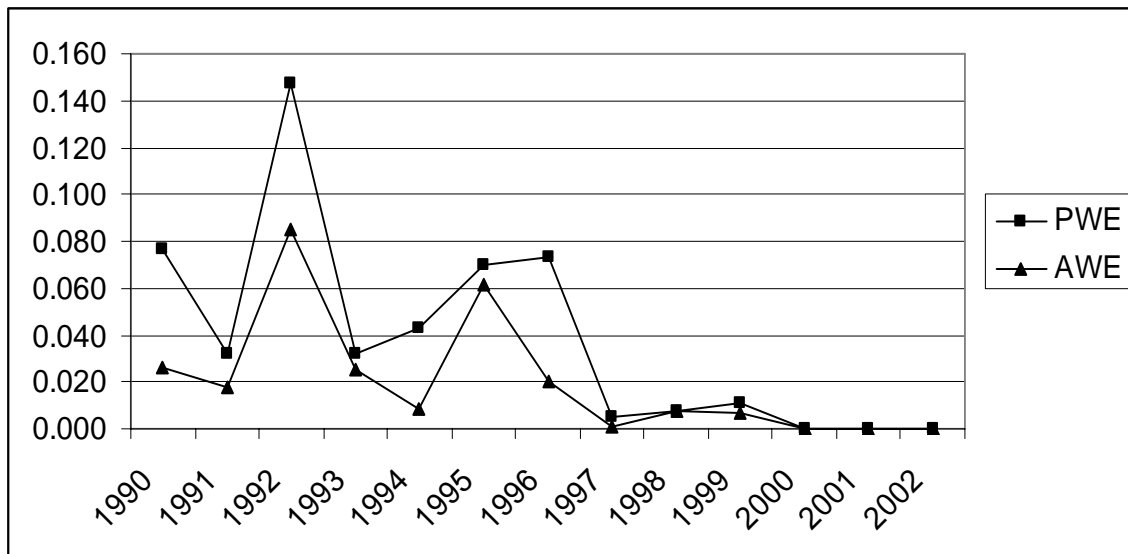
**Paradise Road**



**Figure 2-5a**  
**Population- and Area-Weighted Exposure**  
**Santa Barbara County**  
**1988-2002**

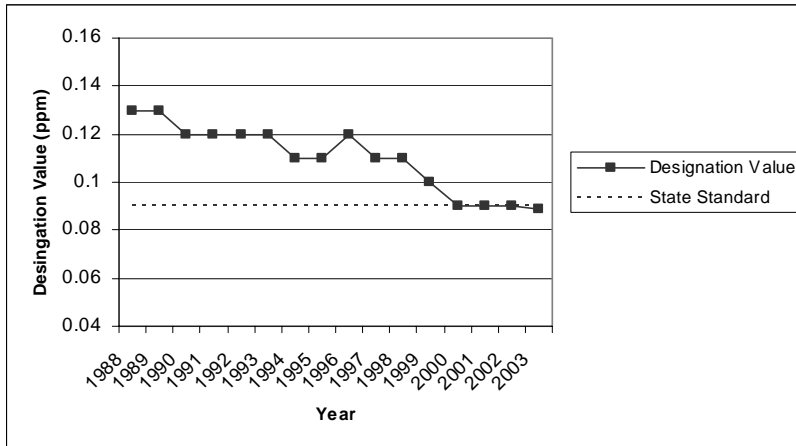


**Figure 2-5b**  
**Population- and Area-Weighted Exposure**  
**Santa Barbara County**  
**1990-2002**

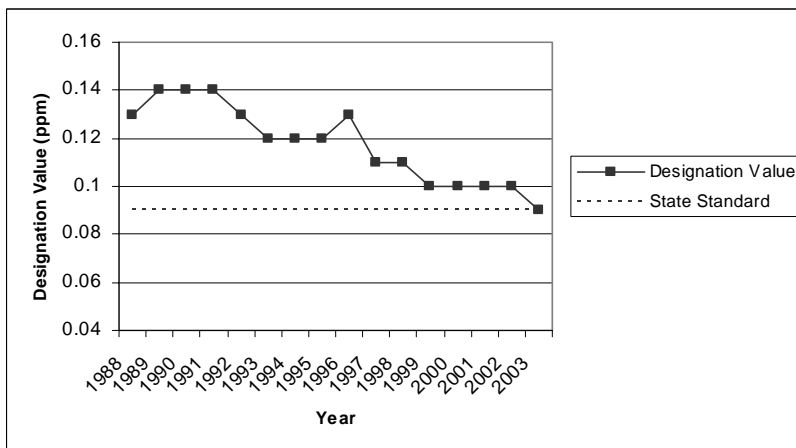


**Figure 2-6**  
**1988-2003 Designation Values**  
**Carpinteria, Las Flores Canyon and Paradise Road**

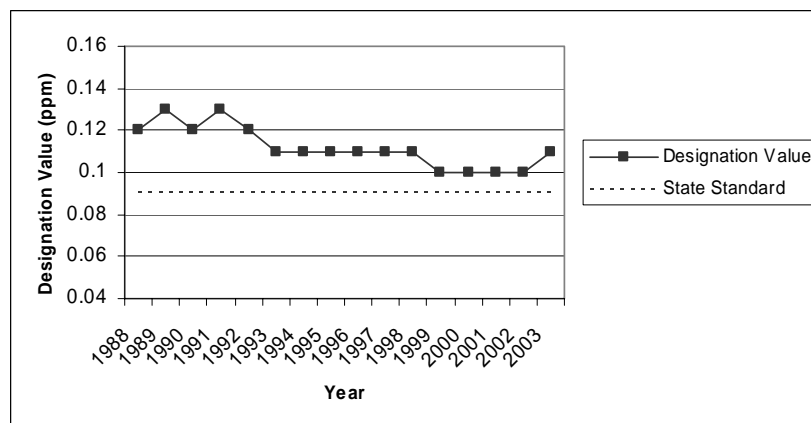
**Carpinteria**



**Las Flores Canyon**



**Paradise Road**



## **CHAPTER 3**

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### **EMISSION INVENTORY**

**Introduction**

**Pollutants**

**Annual Emission Inventory Hierarchy**

**2000 Annual Emission Inventory**

**2000 Planning Emission Inventory**

**Conclusion**

### 3. EMISSION INVENTORY

#### 3.1 INTRODUCTION

This chapter describes the baseline emission inventory used in the development of this 2004 Clean Air Plan (2004 Plan). 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.

The 2000 Annual Emission Inventory was derived from many sources including the APCD's Annual Emission Inventory Questionnaire and Annual Reports programs, the Santa Barbara County Association of Governments, the California Air Resources Board, 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 2000 Annual Emission Inventory, known as a "Planning Emission Inventory," which will be used as the baseline to forecast emissions for the years 2005, 2010, 2015, and 2020. Please refer to Chapter 6, Emission Forecasting, for more discussion on how the 2000 Planning Emission Inventory is used to forecast future emissions.

The Planning Emission Inventory is a modified subset of an Annual Emission Inventory and they differ from each other in several 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 1-hour ozone standard 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 Annual Emission Inventory 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.

This chapter presents both the 2000 Annual Emission Inventory and the 2000 Planning Emission Inventory for both Santa Barbara County and the OCS. These inventories are presented in Tables 3-1 to 3-4 and Figures 3-1 to 3-4.

### 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<sub>x</sub>). 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 ANNUAL EMISSION INVENTORY HIERARCHY

The annual emission inventory is organized in a three-tiered hierarchy that categorizes all air pollution sources. The first tier of this hierarchy contains four *divisions*: **Stationary Sources** (individual facilities and aggregated point sources), **Area-Wide Sources** (geographically dispersed area sources), **Mobile Sources** (both on-road vehicles and off-road sources) and **Natural Sources** (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<sub>x</sub> 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: Diesel engines and 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-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 I & Class II landfill sites. Also 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, in the following six summary categories:

- 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 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 and is the most significant source of ROC emissions in the Stationary Sources division. 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<sub>x</sub> emissions. They include the following 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. 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 entirely 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, 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. Waste 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<sub>x</sub> emissions and substantial amounts of the ROC emissions in the county's onshore and offshore inventory.

#### 3.3.3.1 On-Road Motor Vehicles

The On-Road Motor Vehicles emission inventory in the 2004 Plan was developed from ARB's EMFAC2002 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.

The On-Road Motor Vehicles major source category includes gasoline and diesel light-duty passenger vehicles (automobiles), gasoline and diesel light-duty trucks (pick-up trucks), medium-duty trucks, light heavy-duty trucks, medium heavy-duty trucks, and heavy heavy-duty trucks, motorcycles, heavy-duty gasoline and diesel buses, school buses, and motor homes. The categories are 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. Motor Homes (MH).

#### 3.3.3.2 Other Mobile Sources

The Other Mobile Sources category pertains to emission sources that do not produce their 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, 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<sub>x</sub> emissions come from marine vessels that operate in the State Tidelands and the Outer Continental Shelf. The Other Mobile Sources category is divided into seven summary categories:

- A. Aircraft: Piston and jet powered commercial, civil, and military aircraft, and agricultural crop dusting.
- B. Trains: Diesel road hauling locomotives on the railway line linking the Los Angeles area with the San Francisco Bay area.
- 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.

Also within the Other Mobile Sources major source category is construction equipment. This emission category is diverse in terms of equipment types and sizes, and includes gas and diesel fired engines with horsepower ranges from under 15 to over 500 horsepower. Construction emissions are estimated by the ARB for the APCD using the OFFROAD model in the summary category Off-Road Equipment (Construction and Mining Equipment). Within this category, construction emissions are aggregated with emissions from equipment used in mining operations. This single category includes approximately 27 equipment types including pavers, loaders, excavators, dozers, graders and tractors. The ARB, using the OFFROAD model, estimated that about 1,646 tons per year of NO<sub>x</sub>, 183 tons per year of ROC and 1,146 tons per year of CO were emitted from construction and mining equipment in 2000. Previous estimates from the early- and mid-1990's using statewide construction valuation permit data allocated to the county level and construction permit data from SBCAG showed NO<sub>x</sub> emissions in the range of 300 to 525 tons per year from construction equipment alone. Since current estimates of construction emissions are aggregated with emissions from mining equipment, it is difficult to determine whether these estimates compare favorably with previous estimates. Based on the equipment types included in the Construction and Mining Equipment category along with

housing and population growth, however, it is reasonable to believe that current construction emissions alone equal or exceed the high end of the range suggested from earlier estimates.

### 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<sub>x</sub> 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 2000 Annual Emission Inventory and the 2000 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 2000 ANNUAL EMISSION INVENTORY**

The 2000 Santa Barbara County and the Outer Continental Shelf Annual Emission Inventory document the current sources of ROC and NO<sub>x</sub> emissions, both in quantity and relative contribution.

#### **3.4.1 SANTA BARBARA COUNTY ANNUAL EMISSIONS**

The 2000 Santa Barbara County Annual Emissions Inventory of ROC and NO<sub>x</sub> 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 2000. The largest sources of each pollutant and their percent of contribution are as follows:

#### **2000 Santa Barbara County ROC Annual Emissions: 44,348 tons**

- **8% Stationary Sources: 3,667 tons**  
Primarily from Coatings and Process Solvents (Thinning and Cleanup Solvents), Adhesives and Sealants, and Oil and Gas Production (Fugitives from Crude Oil Valves).
- **7% Area-Wide Sources: 3,064 tons**  
Primarily from Consumer Products, Pesticides & Fertilizers (Methyl Bromide), and Architectural Coatings and Related Process Solvents (Thinning and Cleanup Solvents).
- **14% Mobile Sources – On-Road Motor Vehicles: 6,122 tons**  
Predominantly Light Duty Passenger cars, Light Duty Trucks, and Medium Duty Trucks.
- **6% Other Mobile Sources: 2,565 tons**  
Significant emissions are from Lawn and Garden Equipment, Fuel Storage and Handling, Recreational Boats, and Farm Equipment (Diesel Agricultural Equipment).
- **65 % Natural Sources: 28,930 tons**

Mostly Biogenic Sources with a significant contribution from Geogenic Sources.

**2000 Santa Barbara County NO<sub>x</sub> Annual Emissions: 17,615 tons**

- **12% Stationary Sources: 2,096 tons**

Almost all from Oil and Gas Production (Natural Gas IC Engines), Manufacturing and Industrial (Diesel IC Engines), Agricultural Irrigation (Diesel IC Engines).

- **2% Area-Wide Sources: 350 tons**

Mostly Residential Fuel Combustion (Natural Gas Space and Water Heating).

- **50% Mobile Sources – On-Road Motor Vehicles: 8,890 tons**

The majority from Light Duty Passenger cars, Light Duty Trucks, and Heavy Heavy Duty Diesel Trucks.

- **28% Other Mobile Sources: 4,913 tons**

Contributors are from Off-Road Equipment (Diesel Construction and Mining Equipment), and Farm Equipment (Diesel Agricultural Equipment).

- **8% Natural Sources: 1,365 tons**

Mostly from Biogenic Sources with some Wildfire (Timber and Brush) emissions.

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<sub>x</sub> emissions. On-Road Motor Vehicles, Light Duty Trucks, and Other Mobile Sources, Off-Road Equipment and Farm Equipment, also contribute large amounts of NO<sub>x</sub> emissions.

### 3.4.2 OCS ANNUAL EMISSIONS

The 2000 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 2000. The largest sources of each pollutant and their percent of contribution are discussed below.

**2000 OCS ROC Annual Emissions: 3,067 tons**

- **14% Stationary Sources: 417 tons**  
Primarily Oil and Gas Production (Fugitives from Crude Oil Valves).
- **21% Mobile Sources: 646 tons**  
Mostly Ships and Commercial Boats (Foreign Motor Ships).
- **65% Natural Sources: 2,004 tons**  
All from Geogenic Sources (Gas Seeps and Oil Seeps).

**2000 OCS NO<sub>x</sub> Annual Emissions: 12,175 tons**

- **2% Stationary Sources: 298 tons**  
Primarily Oil and Gas Production (Natural Gas Turbine IC Engines).
- **98% Mobile Sources: 11,876 tons**  
Predominantly Ships and Commercial Boats (Foreign Motor Ships).

It should be noted that the method used for determining emissions from marine shipping was updated since the completion of the 2001 Clean Air Plan. The 1999 marine shipping inventory that was included in the 2001 Clean Air Plan was calculated based on average horsepower ratings for each ship type (e.g., cargo ships, container ships, auto carriers, etc.). In addition, the types of marine vessels transiting off the coast of Santa Barbara County were derived by assuming the same percentages of each vessel type as those departing or arriving from the north out of or into the Port of Los Angeles - Long Beach. The fleet makeup and average horsepower ratings for the 1999 inventory were obtained from the September 1999 report *Marine Vessel Emissions Inventory, Update to 1996 Report: Marine Vessel Emissions Inventory and Control Strategies* prepared by ARCADIS for the South Coast Air Quality Management District. Since the preparation of the 1999 marine shipping inventory, we have acquired the Lloyds Registry of Ships database that includes ship-specific horsepower ratings for marine vessels including those transiting off the coast of Santa Barbara County.

In developing the 2000 marine shipping inventory, ship-specific data including ship name, ship type, and cruising speed were obtained from the Marine Exchange of Los Angeles – Long Beach Harbor. The 2000 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 2000 rather than by using averages of power by ship type and assumed fleet makeup as was done for the 1999 inventory. This methodology update has increased our current marine shipping NO<sub>x</sub> emission estimates by about 4.1 tons per day over 1999 estimates. The significant increase in marine shipping emissions from 1999 to 2000 is a direct result of our updated calculation methodology as opposed to an increase in the level of marine shipping activity or the number of vessel transits off our coast.

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<sub>x</sub> emissions.

### **3.5 2000 PLANNING EMISSION INVENTORY**

The 2000 Planning Emission Inventory was developed by modifying the Annual Emission Inventory three significant ways. First, seasonal variations are factored into the Planning Emission Inventory because most exceedances of the state ozone standard occur during the April to October ozone season. Second, the Planning Emission Inventory excludes emissions from natural sources such as biogenics, oil seeps and gas seeps, and wildfires, since they are not regulated or controlled. Third, the emission values are 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 2000. The largest sources of each pollutant and their relative contribution are discussed in the following section.

**2000 Santa Barbara County ROC Planning Emissions: 41.84 tons per day**

- **24% Stationary Sources: 10.05 tons per day**  
Primarily from Coatings and Process Solvents (Thinning and Cleanup Solvents), Adhesives and Sealants, and from Oil and Gas Production (Fugitives from Crude Oil Valves).
- **19% Area-Wide Sources: 7.94 tons per day**  
Primarily from Consumer Products, Pesticides & Fertilizers (Methyl Bromide), and Architectural Coatings and Related Process Solvents (Thinning and Cleanup Solvents).
- **43% Mobile Sources – On-Road Motor Vehicles: 16.77 tons per day**  
Mostly from Light Duty Passenger cars, Light Duty Trucks, and Medium Duty Trucks.
- **18% Other Mobile Sources: 7.07 tons per day**  
Significant emissions are from Lawn and Garden Equipment, Fuel Storage and Handling, Recreational Boats, and Farm Equipment (Diesel Agricultural Equipment).

**2000 Santa Barbara County NO<sub>x</sub> Planning Emissions: 43.89 tons per day**

- **13% Stationary Sources: 5.57 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: 0.48 tons per day**  
Mostly Residential Fuel Combustion (Natural Gas Space and Water Heating).
- **55% Mobile Sources – On-Road Motor Vehicles: 24.36 tons per day**  
The majority from Light Duty Passenger cars, Light Duty Trucks, and Heavy-Heavy Duty Diesel Trucks.
- **31% Other Mobile Sources: 13.48 tons per day**

Contributions from Off-Road Equipment (Diesel Construction and Mining Equipment), and Farm Equipment (Diesel Agricultural Equipment).

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<sub>x</sub> emissions.

### 3.5.2 OCS PLANNING EMISSION INVENTORY

The 2000 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 2000. The largest sources of each pollutant and their percent of contribution are discussed as follows.

#### **2000 OCS ROC Planning Emissions: 2.91 tons per day**

- **39% Stationary Sources: 1.14 tons per day**  
Primarily Oil and Gas Production (Fugitives from Crude Oil Valves).
- **61% Mobile Sources: 1.77 tons per day**  
Mostly Ships and Commercial Boats (Foreign Motor Ships).

#### **2000 OCS NO<sub>x</sub> Planning Emissions: 33.37 tons per day**

- **2% Stationary Sources: 0.82 tons per day**  
Primarily Oil and Gas Production (Natural Gas Turbine IC Engines).
- **98% Mobile Sources: 32.55 tons per day**  
Predominantly Ships and Commercial Boats (Foreign Motor Ships).

In summary, the most significant contributors of ROC and NO<sub>x</sub> emissions to the 2000 Planning Emission Inventory on the OCS are from Ships and Commercial Boats (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 2004 Plan is on the ozone precursors of ROC and NO<sub>x</sub>. We have also discussed the development of the 2000 Annual Emission Inventory and 2000 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 2005, 2010, 2015, and 2020.

The largest contributor of locally generated ROC and NO<sub>x</sub> emissions in both the Annual Emission Inventory and Planning Emission Inventory is on-road motor vehicles. The most significant source of NO<sub>x</sub> 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****2000 Annual Emission Inventory - Santa Barbara County (Tons per year)**

	ROC	NOx
<b>STATIONARY SOURCES</b>		
<b><i>FUEL COMBUSTION</i></b>		
010 Electric Utilities	3.96	9.81
020 Cogeneration	12.75	40.62
030 Oil and Gas Production (Combustion)	185.60	734.71
040 Petroleum Refining (Combustion)	0.86	18.19
050 Manufacturing and Industrial	36.09	504.82
052 Food and Agricultural Processing	41.28	456.82
060 Service and Commercial	17.86	245.43
099 Other (Fuel Combustion)	0.00	0.00
<b><i>FUEL COMBUSTION TOTAL</i></b>	<b>298.40</b>	<b>2,010.40</b>
<b><i>WASTE DISPOSAL</i></b>		
110 Sewage Treatment	0.11	3.38
120 Landfills	308.41	5.54
130 Incinerators	0.48	4.60
140 Soil Remediation	0.00	0.00
199 Other (Waste Disposal)	0.00	0.00
<b><i>WASTE DISPOSAL TOTAL</i></b>	<b>309.00</b>	<b>13.52</b>
<b><i>CLEANING AND SURFACE COATINGS</i></b>		
210 Laundering	0.55	0.00
220 Degreasing	888.53	0.00
230 Coatings and Related Process Solvents	582.14	0.00
240 Printing	159.72	0.00
250 Adhesives and Sealants	293.53	0.00
299 Other (Cleaning and Surface Coatings)	32.87	0.00
<b><i>CLEANING AND SURFACE COATINGS TOTAL</i></b>	<b>1,957.34</b>	<b>0.00</b>
<b><i>PETROLEUM PRODUCTION AND MARKETING</i></b>		
310 Oil and Gas Production	832.05	22.42
320 Petroleum Refining	16.47	0.03
330 Petroleum Marketing	189.89	0.19
<b><i>PETROLEUM PRODUCTION AND MARKETING TOTAL</i></b>	<b>1,038.41</b>	<b>22.64</b>

**TABLE 3–1****2000 Annual Emission Inventory - Santa Barbara County (*Tons per year*)**

	ROC	NOx
<b><i>INDUSTRIAL PROCESSES</i></b>		
410 Chemical	6.66	0.01
420 Food and Agriculture	38.25	0.00
430 Mineral Processes	3.16	19.42
440 Metal Processes	NA	NA
450 Wood and Paper	NA	NA
470 Electronics	0.04	0.00
499 Other (Industrial Processes)	15.43	30.62
<b><i>INDUSTRIAL PROCESSES TOTAL</i></b>	<b>63.54</b>	<b>50.05</b>
 <b>STATIONARY SOURCES TOTAL</b>		
	<b>3,666.69</b>	<b>2,096.61</b>
 <b>AREA-WIDE SOURCES</b>		
<b><i>SOLVENT EVAPORATION</i></b>		
510 Consumer Products	1,355.98	0.00
520 Architectural Coatings and Related Process Solvents	660.65	0.00
530 Pesticides/Fertilizers	719.46	0.00
540 Asphalt Paving/Roofing	66.93	0.00
<b><i>SOLVENT EVAPORATION TOTAL</i></b>	<b>2,803.02</b>	<b>0.00</b>
 <b><i>MISCELLANEOUS</i></b>		
610 Residential Fuel Combustion	221.20	341.26
620 Farming Operations	0.00	0.00
630 Construction and Demolition	0.00	0.00
640 Paved Road Dust	0.00	0.00
645 Unpaved Road Dust	0.00	0.00
650 Fugitive Windblown Dust	0.00	0.00
660 Fires	1.24	0.42
670 Waste Burning and Disposal	27.24	8.58
690 Cooking	11.58	0.00
699 Other (Miscellaneous Processes)	0.00	0.00
<b><i>MISCELLANEOUS TOTAL</i></b>	<b>261.26</b>	<b>350.26</b>
 <b>AREA-WIDE SOURCES TOTAL</b>		
	<b>3,064.28</b>	<b>350.26</b>

**TABLE 3–1****2000 Annual Emission Inventory - Santa Barbara County (Tons per year)**

	ROC	NOx
<b>MOBILE SOURCES</b>		
<b><i>ON-ROAD MOTOR VEHICLES</i></b>		
710 Light Duty Passenger (LDA)	2,859.53	2,356.81
722 Light Duty Trucks - 1 (LDT1)	1,087.21	1,134.42
723 Light Duty Trucks - 2 (LDT2)	786.70	1,120.19
724 Medium Duty Trucks (MDV)	437.89	659.92
732 Light Heavy Duty Gas Trucks - 1 (LHDV1)	234.33	127.39
733 Light Heavy Duty Gas Trucks - 2 (LHDV2)	43.02	51.47
734 Medium Heavy Duty Gas Trucks (MHDV)	183.64	132.86
736 Heavy Heavy Duty Gas Trucks (HHDV)	151.63	452.97
742 Light Heavy Duty Diesel Trucks - 1 (LHDV1)	3.29	68.62
743 Light Heavy Duty Diesel Trucks- 2 (LHDV1)	5.84	83.95
744 Medium Heavy Duty Diesel Trucks (MHDV)	18.25	576.34
746 Heavy Heavy Duty Diesel Trucks (HHDV)	91.98	1,696.16
750 Motorcycles (MCY)	116.69	25.19
760 Heavy Duty Diesel Urban Buses (UB)	8.76	179.95
762 Heavy Duty Gas Urban Buses (UB)	36.72	42.34
770 School Buses (SB)	10.17	74.46
780 Motor Homes (MH)	46.18	107.31
<b><i>ON-ROAD MOTOR VEHICLES TOTAL</i></b>	<b>6,121.83</b>	<b>8,890.35</b>
<b><i>OTHER MOBILE SOURCES</i></b>		
810 Aircraft	255.34	30.36
820 Trains	26.95	806.03
830 Ships and Commercial Boats	40.12	237.27
840 Recreational Boats	249.85	13.69
850 Off-Road Recreational Vehicles	156.63	17.25
860 Off-Road Equipment	1,207.42	2,325.05
870 Farm Equipment	229.59	1,483.73
890 Fuel Storage and Handling	399.31	0.00
<b><i>OTHER MOBILE SOURCES TOTAL</i></b>	<b>2,565.21</b>	<b>4,913.38</b>
<b>MOBILE SOURCES TOTAL</b>	<b>8,687.04</b>	<b>13,803.73</b>

**TABLE 3–1****2000 Annual Emission Inventory - Santa Barbara County (*Tons per year*)**

	ROC	NOx
<b>NATURAL SOURCES</b>		
<i>NATURAL SOURCES</i>		
910 Biogenic Sources	22,532.47	882.48
920 Geogenic Sources	6,041.62	0.00
930 Wildfires	356.31	482.10
940 Windblown Dust	0.00	0.00
<i>NATURAL SOURCES TOTAL</i>	<b>28,930.40</b>	<b>1,364.58</b>
<b>NATURAL SOURCES TOTAL</b>	<b>28,930.40</b>	<b>1,364.58</b>
<b>SANTA BARBARA COUNTY EMISSION INVENTORY TOTAL</b>		
	<b>44,348.41</b>	<b>17,615.18</b>

**TABLE 3–2****2000 Annual Emission Inventory - Outer Continental Shelf (Tons per year)**

		ROC	NO <sub>x</sub>
<b>STATIONARY SOURCES</b>			
<i><b>FUEL COMBUSTION</b></i>			
030	Oil and Gas Production (Combustion)	32.76	288.21
	<i><b>FUEL COMBUSTION TOTAL</b></i>	<b>32.76</b>	<b>288.21</b>
<i><b>CLEANING AND SURFACE COATINGS</b></i>			
230	Coatings and Related Process Solvents	36.65	0.00
	<i><b>CLEANING AND SURFACE COATINGS TOTAL</b></i>	<b>36.65</b>	<b>0.00</b>
<i><b>PETROLEUM PRODUCTION AND MARKETING</b></i>			
310	Oil and Gas Production	347.17	10.16
	<i><b>PETROLEUM PRODUCTION AND MARKETING TOTAL</b></i>	<b>347.17</b>	<b>10.16</b>
	<b>STATIONARY SOURCES TOTAL</b>	<b>416.58</b>	<b>298.37</b>
<b>MOBILE SOURCES</b>			
<i><b>OTHER MOBILE SOURCES</b></i>			
810	Aircraft	7.42	6.90
830	Ships and Commercial Boats	389.01	11,855.87
840	Recreational Boats	249.84	13.69
	<i><b>OTHER MOBILE SOURCES TOTAL</b></i>	<b>646.27</b>	<b>11,876.46</b>
	<b>MOBILE SOURCES TOTAL</b>	<b>646.27</b>	<b>11,876.46</b>
<b>NATURAL SOURCES</b>			
<i><b>NATURAL SOURCES</b></i>			
920	Geogenic Sources	2,004.38	0.00
	<i><b>NATURAL SOURCES TOTAL</b></i>	<b>2,004.38</b>	<b>0.00</b>
	<b>NATURAL SOURCES TOTAL</b>	<b>2,004.38</b>	<b>0.00</b>
<b>OUTER CONTINENTAL SHELF EMISSION INVENTORY TOTAL</b>		<b>3,067.23</b>	<b>12,174.83</b>

**TABLE 3–3****2000 Planning Emission Inventory - Santa Barbara County (Tons per day)**

		ROC	NOx
<b>STATIONARY SOURCES</b>			
<b><i>FUEL COMBUSTION</i></b>			
010	Electric Utilities	0.0109	0.0269
020	Cogeneration	0.0349	0.1113
030	Oil and Gas Production (Combustion)	0.5085	2.0129
040	Petroleum Refining (Combustion)	0.0024	0.0498
050	Manufacturing and Industrial	0.0999	1.3889
052	Food and Agricultural Processing	0.1113	1.2516
060	Service and Commercial	0.0427	0.4918
099	Other (Fuel Combustion)	0.0000	0.0000
<b><i>FUEL COMBUSTION TOTAL</i></b>		<b>0.8106</b>	<b>5.3332</b>
<b><i>WASTE DISPOSAL</i></b>			
110	Sewage Treatment	0.0003	0.0093
120	Landfills	0.8450	0.0152
130	Incinerators	0.0013	0.0126
140	Soil Remediation	0.0000	0.0000
199	Other (Waste Disposal)	0.0000	0.0000
<b><i>WASTE DISPOSAL TOTAL</i></b>		<b>0.8466</b>	<b>0.0371</b>
<b><i>CLEANING AND SURFACE COATINGS</i></b>			
210	Laundering	0.0015	0.0000
220	Degreasing	2.4343	0.0000
230	Coatings and Related Process Solvents	1.5949	0.0000
240	Printing	0.4376	0.0000
250	Adhesives and Sealants	0.8042	0.0000
299	Other (Cleaning and Surface Coatings)	0.0901	0.0000
<b><i>CLEANING AND SURFACE COATINGS TOTAL</i></b>		<b>5.3626</b>	<b>0.0000</b>
<b><i>PETROLEUM PRODUCTION AND MARKETING</i></b>			
310	Oil and Gas Production	2.2796	0.0614
320	Petroleum Refining	0.0451	0.0001
330	Petroleum Marketing	0.5202	0.0005
<b><i>PETROLEUM PRODUCTION AND MARKETING TOTAL</i></b>		<b>2.8449</b>	<b>0.0620</b>

**TABLE 3–3****2000 Planning Emission Inventory - Santa Barbara County (*Tons per day*)**

		ROC	NO <sub>x</sub>
<b><i>INDUSTRIAL PROCESSES</i></b>			
410	Chemical	0.0183	0.0000
420	Food and Agriculture	0.1210	0.0000
430	Mineral Processes	0.0087	0.0532
440	Metal Processes	NA	NA
450	Wood and Paper	NA	NA
470	Electronics	0.0001	0.0000
499	Other (Industrial Processes)	0.0423	0.0839
<b><i>INDUSTRIAL PROCESSES TOTAL</i></b>		<b>0.1904</b>	<b>0.1371</b>
<b>STATIONARY SOURCES TOTAL</b>		<b>10.0549</b>	<b>5.5694</b>
 <b>AREA-WIDE SOURCES</b>			
<b><i>SOLVENT EVAPORATION</i></b>			
510	Consumer Products	3.7150	0.0000
520	Architectural Coatings and Related Process Solvents	1.8100	0.0000
530	Pesticides/Fertilizers	1.9710	0.0000
540	Asphalt Paving/Roofing	0.2337	0.0000
<b><i>SOLVENT EVAPORATION TOTAL</i></b>		<b>7.7297</b>	<b>0.0000</b>
 <b><i>MISCELLANEOUS</i></b>			
610	Residential Fuel Combustion	0.1242	0.4675
620	Farming Operations	0.0000	0.0000
630	Construction and Demolition	0.0000	0.0000
640	Paved Road Dust	0.0000	0.0000
645	Unpaved Road Dust	0.0000	0.0000
650	Fugitive Windblown Dust	0.0000	0.0000
660	Fires	0.0034	0.0012
670	Waste Burning and Disposal	0.0478	0.0130
690	Cooking	0.0317	0.0000
699	Other (Miscellaneous Processes)	0.0000	0.0000
<b><i>MISCELLANEOUS TOTAL</i></b>		<b>0.2071</b>	<b>0.4817</b>
<b>AREA-WIDE SOURCES TOTAL</b>		<b>7.9368</b>	<b>0.4817</b>

**TABLE 3–3****2000 Planning Emission Inventory - Santa Barbara County (*Tons per day*)**

		ROC	NOx
<b>MOBILE SOURCES</b>			
<b><i>ON-ROAD MOTOR VEHICLES</i></b>			
710	Light Duty Passenger (LDA)	7.8343	6.4570
722	Light Duty Trucks - 1 (LDT1)	2.9786	3.1080
723	Light Duty Trucks - 2 (LDT2)	2.1553	3.0690
724	Medium Duty Trucks (MDV)	1.1997	1.8080
732	Light Heavy Duty Gas Trucks - 1 (LHDV1)	0.6420	0.3490
733	Light Heavy Duty Gas Trucks - 2 (LHDV2)	0.1179	0.1410
734	Medium Heavy Duty Gas Trucks (MHDV)	0.5031	0.3640
736	Heavy Heavy Duty Gas Trucks (HHDV)	0.4154	1.2410
742	Light Heavy Duty Diesel Trucks - 1 (LHDV1)	0.0090	0.1880
743	Light Heavy Duty Diesel Trucks- 2 (LHDV1)	0.0160	0.2300
744	Medium Heavy Duty Diesel Trucks (MHDV)	0.0500	1.5790
746	Heavy Heavy Duty Diesel Trucks (HHDV)	0.2520	4.6470
750	Motorcycles (MCY)	0.3197	0.0690
760	Heavy Duty Diesel Urban Buses (UB)	0.0240	0.4930
762	Heavy Duty Gas Urban Buses (UB)	0.1006	0.1160
770	School Buses (SB)	0.0279	0.2040
780	Motor Homes (MH)	0.1265	0.2940
<b><i>ON-ROAD MOTOR VEHICLES TOTAL</i></b>		<b>16.7720</b>	<b>24.3570</b>
<b><i>OTHER MOBILE SOURCES</i></b>			
810	Aircraft	0.6996	0.0833
820	Trains	0.0738	2.2083
830	Ships and Commercial Boats	0.1122	0.6622
840	Recreational Boats	0.6845	0.0375
850	Off-Road Recreational Vehicles	0.4734	0.0509
860	Off-Road Equipment	3.3080	6.3700
870	Farm Equipment	0.6290	4.0650
890	Fuel Storage and Handling	1.0940	0.0000
<b><i>OTHER MOBILE SOURCES TOTAL</i></b>		<b>7.0745</b>	<b>13.4772</b>
<b>MOBILE SOURCES TOTAL</b>		<b>23.8465</b>	<b>37.8342</b>
<b>SANTA BARBARA COUNTY EMISSION INVENTORY TOTAL</b>		<b>41.8382</b>	<b>43.8853</b>

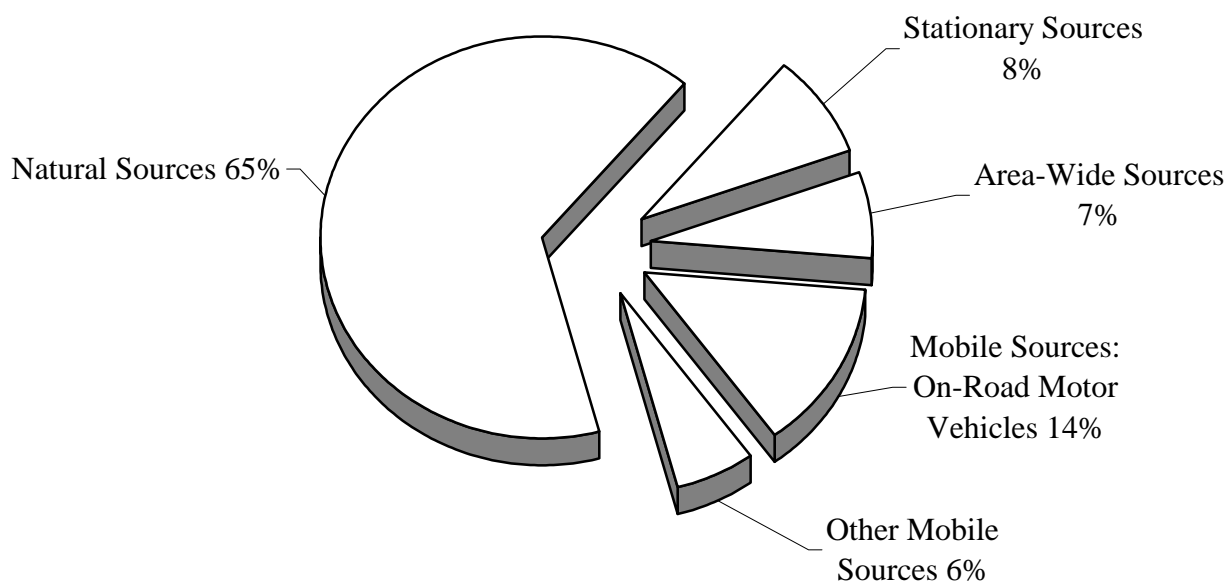
**TABLE 3–4****2000 Planning Emission Inventory - Outer Continental Shelf (*Tons per day*)**

	ROC	NOx
<b>STATIONARY SOURCES</b>		
<i><b>FUEL COMBUSTION</b></i>		
030 Oil and Gas Production (Combustion)	0.0898	0.7896
<i><b>FUEL COMBUSTION TOTAL</b></i>	<b>0.0898</b>	<b>0.7896</b>
<i><b>CLEANING AND SURFACE COATINGS</b></i>		
230 Coatings and Related Process Solvents	0.1004	0.0000
<i><b>CLEANING AND SURFACE COATINGS TOTAL</b></i>	<b>0.1004</b>	<b>0.0000</b>
<i><b>PETROLEUM PRODUCTION AND MARKETING</b></i>		
310 Oil and Gas Production	0.9511	0.0278
<i><b>PETROLEUM PRODUCTION AND MARKETING TOTAL</b></i>	<b>0.9511</b>	<b>0.0278</b>
<b>STATIONARY SOURCES TOTAL</b>	<b>1.1413</b>	<b>0.8174</b>
<b>MOBILE SOURCES</b>		
<i><b>OTHER MOBILE SOURCES</b></i>		
810 Aircraft	0.0203	0.0189
830 Ships and Commercial Boats	1.0678	32.4936
840 Recreational Boats	0.6845	0.0375
<i><b>OTHER MOBILE SOURCES TOTAL</b></i>	<b>1.7726</b>	<b>32.5500</b>
<b>MOBILE SOURCES TOTAL</b>	<b>1.7726</b>	<b>32.5500</b>
<b>OUTER CONTINENTAL SHELF EMISSION INVENTORY TOTAL</b>	<b>2.9139</b>	<b>33.3674</b>

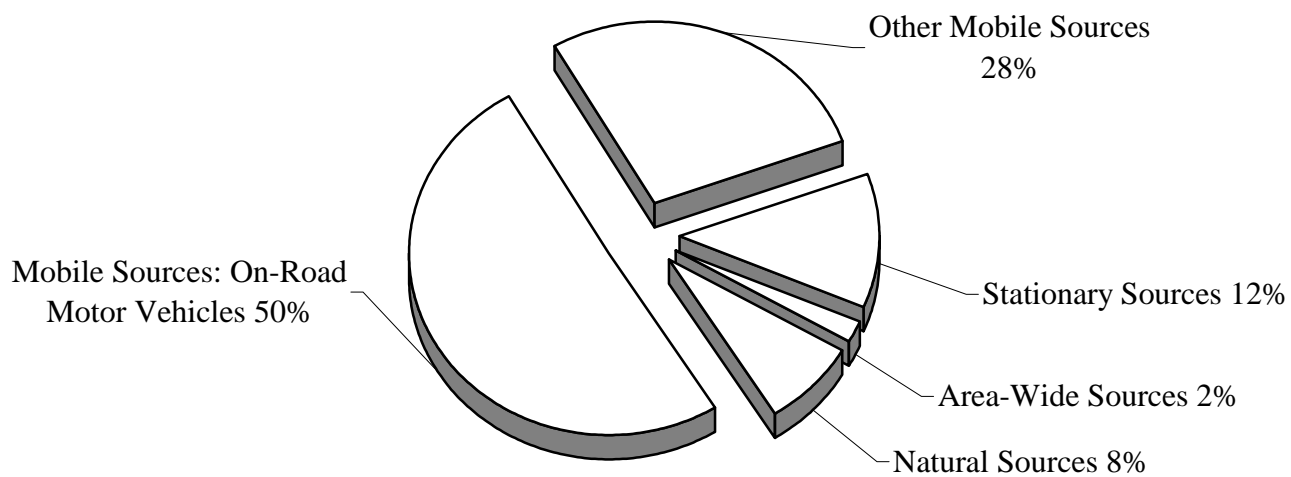
# Figure 3-1

## 2000 Santa Barbara County Annual Emission Inventory

**ROC: 44,348.41 tons per year**



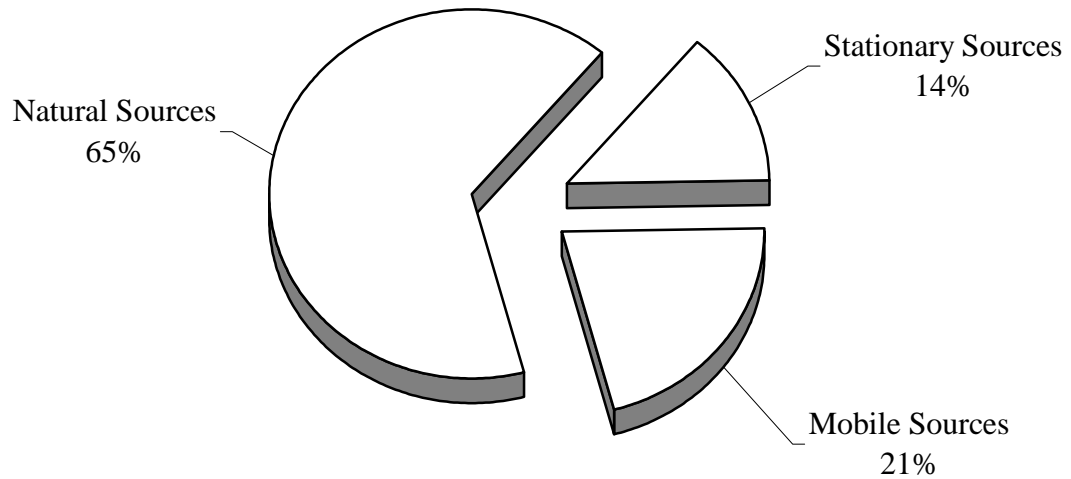
**NOx: 17,615 tons per year**



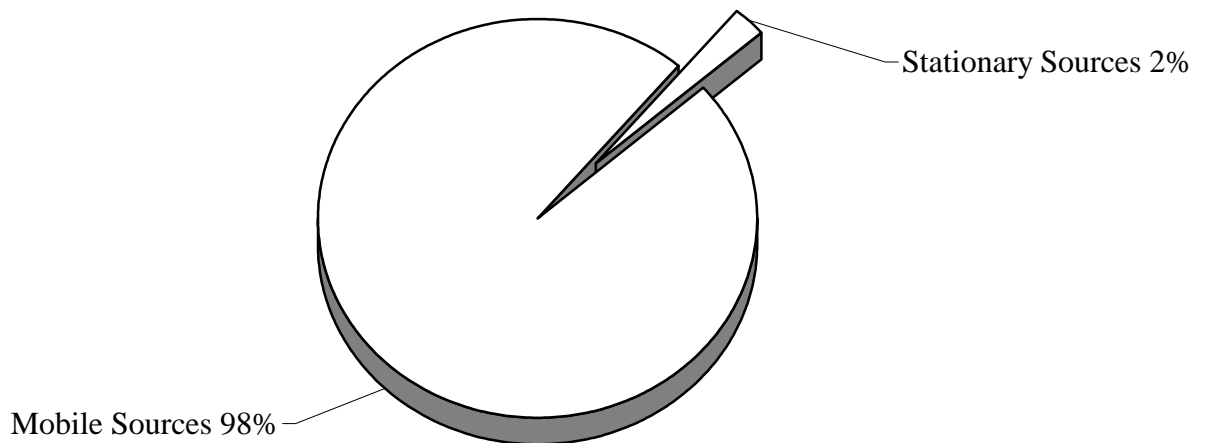
# Figure 3-2

## 2000 OCS Annual Emission Inventory

**ROC: 3,067 tons per year**



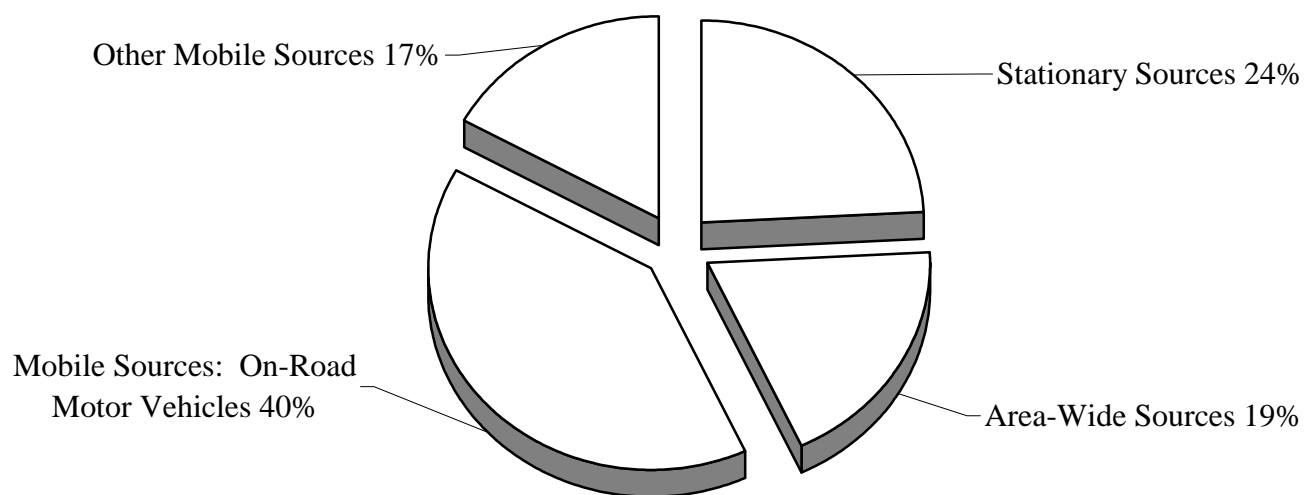
**NOx: 12,175 tons per year**



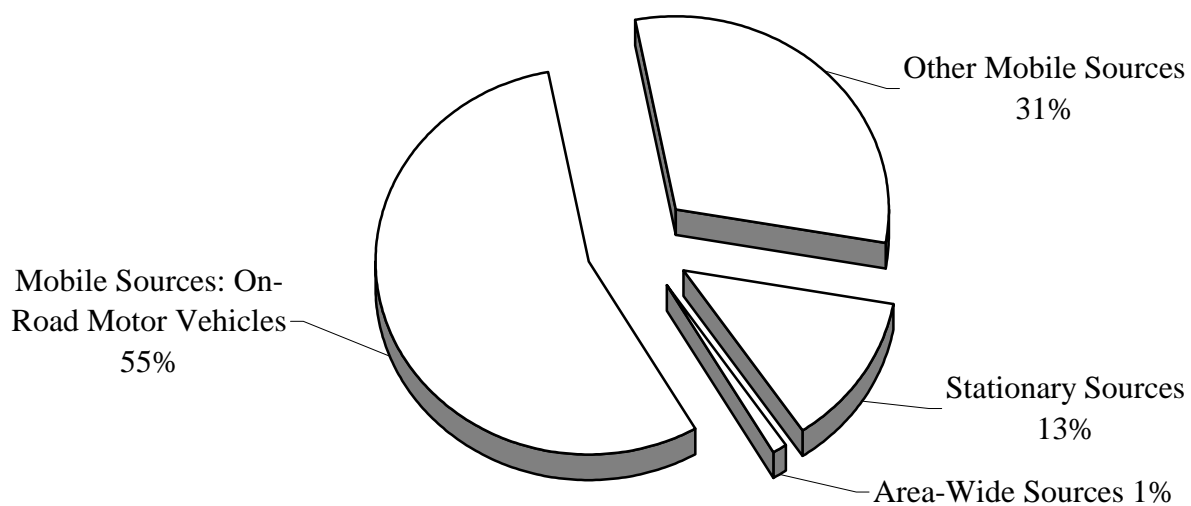
## Figure 3-3

### 2000 Santa Barbara County Planning Emission Inventory

**ROC: 41.84 tons per day**



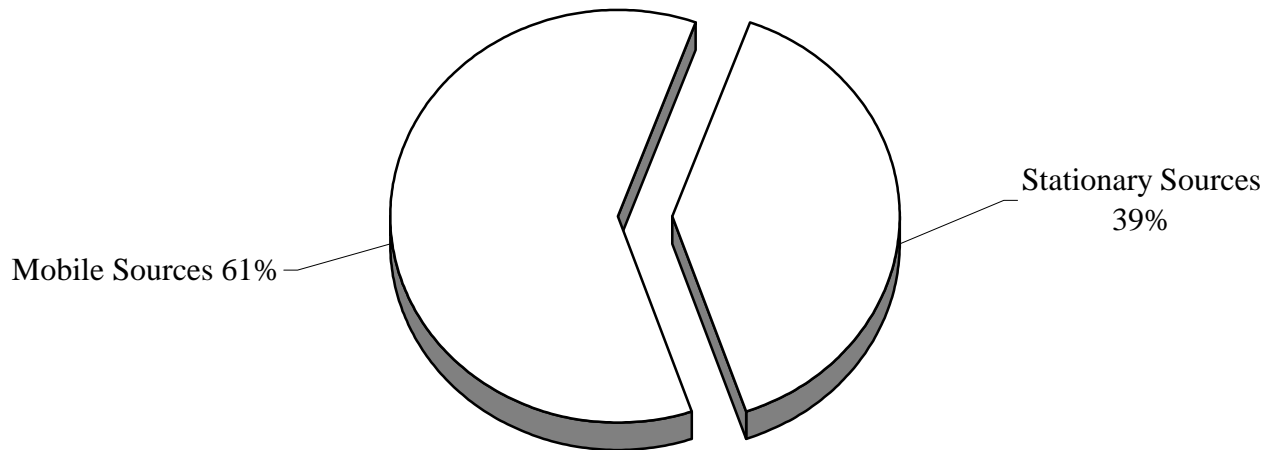
**NOx: 43.89 tons per day**



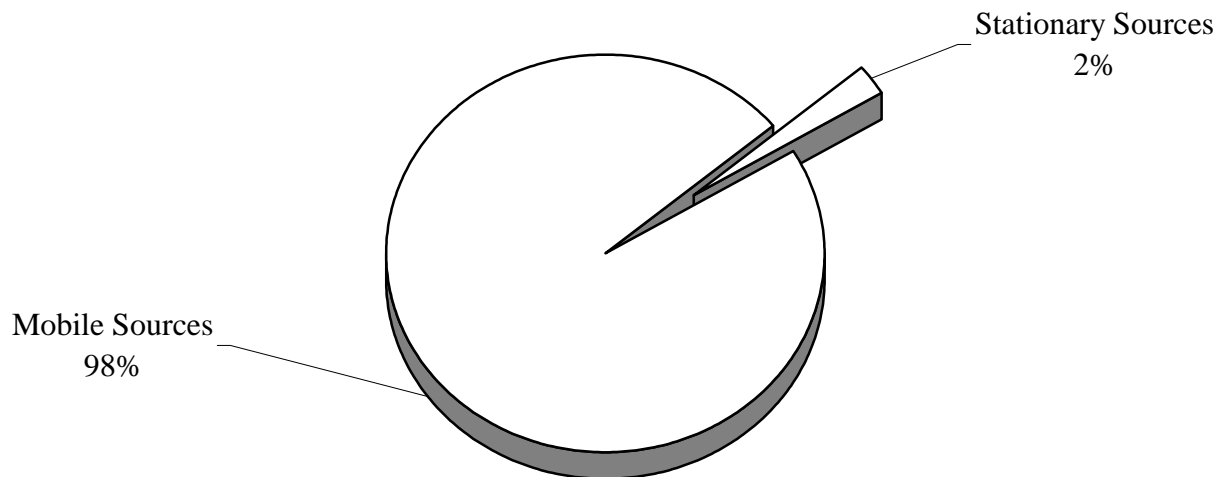
## Figure 3-4

### 2000 OCS Planning Emission Inventory

**ROC: 2.91 tons per day**



**NO<sub>x</sub>: 33.37 tons per day**



## **CHAPTER 4**

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### **EMISSION CONTROL MEASURES**

**Introduction**

**Emission Control Measure Mandates**

**Emission Control Measures Adopted Before 2001**

**Emission Control Measures Adopted During the  
Reporting Period (2001 - 2003)**

**Proposed Emission Control Measures**

**Emission Control Measures for Further Study**

**Conclusions**

## 4. EMISSION CONTROL MEASURES

### 4.1 INTRODUCTION

This chapter evaluates adopted and proposed *stationary source* control measures in order to make progress toward attaining the state one-hour ozone standard and identifies additional measures for further study. The APCD promulgates these ROC and NO<sub>x</sub> control measures to meet the requirements in Section 40914 of the state Health and Safety Code. This chapter also addresses the plan assessment and update requirements specified in Health and Safety Code Sections 40924 and 40925. Chapter 5 discusses local transportation-related 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

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 the purpose of attaining the state one-hour ozone standard. Table 4-1 lists the control measures adopted before 2001 and Table 4-2 identifies the control measures adopted or modified within the reporting period (2001 to 2003) for this 2004 Plan.

- ***Proposed*** control measures are those that the APCD plans to adopt for the purpose of attaining the state one-hour ozone standard. These measures are scheduled as either near-term (2004 - 2006), mid-term (2007 - 2009), or long-term (2010 - 2012). Table 4-3 shows the proposed control measures for this 2004 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. Tables 4-4 and 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.

Section 4.2, Emission Control Measure Mandates, discusses the legal mandates that this 2004 Plan must address when evaluating and proposing emission control measures. Section 4.3 contains information on rules adopted before 2001 and Section 4.4 discusses the rules adopted or modified during the reporting period (2001 - 2003) for this plan. Section 4.5, Proposed Control Measures, includes details on the proposed new and modified control measures that the APCD recommends for adoption. Rules slated for further study are discussed in Section 4.6.

## **4.2 EMISSION CONTROL MEASURE MANDATES**

The air pollution control strategy identified in this chapter is proposed to meet the California Clean Air Act requirements. No federal Clean Air Act requirements are addressed in this 2004 Plan. The 2001 Clean Air Plan addresses all applicable federal planning requirements for Santa Barbara County.

Under Health and Safety Code Section 40914(b), each district in the state that is nonattainment for the California one-hour ozone standard must demonstrate a five percent reduction in

emissions per year or adopt every feasible measure available to that district. 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.

In addition, California Code of Regulations, Title 17, Section 70600(b)(4)(A) requires Santa Barbara County to adopt every feasible measure in order in order to mitigate our downwind impacts on ozone concentrations in the South Coast Air Basin. This is due to ARB analysis that indicated the potential for significant contributions from Santa Barbara County to the South Coast Air Basin. As discussed in Chapter 2, however, current ARB analysis indicates that the Santa Barbara County upwind contributions to the South Coast Air Basin from 2000 to 2003 were inconsequential. Therefore, the transport requirements of Title 17 no longer apply in addition to the every feasible measure requirements under Health and Safety Code Section 40914(b).

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.

#### **4.3 EMISSION CONTROL MEASURES ADOPTED BEFORE 2001**

Table 4-1 identifies the APCD emission control measures adopted before 2001.

**TABLE 4-1**  
**EMISSION CONTROL MEASURES ADOPTED BEFORE 2001**

<b>Rule</b>	<b>CAP Control Measure ID</b>	<b>Description</b>	<b>Rule Adoption Date</b>	<b>Full Implementation Date</b>
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	N-IC-1	IC Engines (Gas-Fired)	December 1991	1994 (1995 OCS)
333	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 / 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
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

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

#### **4.4 EMISSION CONTROL MEASURES ADOPTED DURING THE REPORTING PERIOD (2001 - 2003)**

The APCD is on schedule with adopting and implementing the proposed control measures identified in the 2001 CAP, with the following exceptions:

- The modifications of control measures N-IC-1 and N-IC-3 (amended Rule 202, Permit Exemptions, and amended Rule 333, Control of Emissions from Reciprocating Internal Combustion Engines) has been delayed. The APCD anticipates accomplishing the modifications to these control measures in the 2004 - 2006 term.
- The APCD decided to reclassify the *proposed* control measure (N-IC-2) for Gas-Fired Turbines to be a *further study* control measure because the 2001 CAP identified no emission reductions for the proposed measure.

During the 2001 - 2003 reporting period for this plan, the Board adopted modifications to Rule 323, Architectural Coatings, and the new Rule 360, Emissions of Oxide of Nitrogen from Large Water Heaters and Small Boilers. The 2001 CAP identified the adoption of these proposed control measures (R-SC-1 and N-XC-2) for the near-term period of 2001 - 2003 of the 2001 CAP.

Health and Safety Code Section 40924(b)(2) requires the APCD to identify the *expected* emission reductions that were in the 2001 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 adopted during the 2001 to 2003 reporting period of this plan to fulfill this requirement.

**TABLE 4-2**  
**EMISSION CONTROL MEASURES ADOPTED DURING THE REPORTING PERIOD (2001 - 2003)**

Rule #	CAP Control Measure ID	Description	Rule Adoption Date	Full Implementation Date	Pollutant	2001 CAP EXPECTED EMISSION REDUCTIONS (Tons/Day)				REVISED EMISSION REDUCTIONS (Tons/Day)			
						2005	2010	2015	2020	2005	2010	2015	2020
323	R-SC-1	Architectural Coatings	November 2001	2003	ROC	0.0998	0.1049	0.1092	<sup>a</sup>	0.1836	0.1925	0.2014	0.2102
333	N-IC-1 N-IC-3	Control of Emissions from Reciprocating Internal Combustion Engines (Revisions to Rules 202 and 333, change permit exemption from 100 to 50 bhp, address other EPA deficiencies.)	Revisions not adopted.	Revisions not adopted.	ROC	0.0008	0.0005	0.0003	<sup>a</sup>	0.0000 <sup>b</sup>	--0.0034 <sup>b</sup>	-0.0031 <sup>b</sup>	-0.0029 <sup>b</sup>
333	N-IC-1 N-IC-3	Same as above.	Revisions not adopted.	Revisions not adopted.	NOx	0.0129	0.0089	0.0062	<sup>a</sup>	0.0000 <sup>b</sup>	0.0152 <sup>b</sup>	0.0140 <sup>b</sup>	0.0129 <sup>b</sup>
360	N-XC-2	Large Water Heaters and Small Boilers	October 2002	October 2003	NOx	0.0033	0.0068	0.1333	<sup>a</sup>	0.0004	0.0017	0.0024	0.0029
TOTALS FOR ROC						0.1006	0.1054	0.1095	<sup>a</sup>	0.1836	0.1891	0.1983	0.2073
TOTALS FOR NOx						0.0162	0.0157	0.1395	<sup>a</sup>	0.0004	0.0169	0.0165	0.0158

<sup>a</sup> The 2001 CAP did not project emission reduction figures for 2020.

<sup>b</sup> These have been revised from earlier emission reduction estimates due to equipment removal.

## 4.5 PROPOSED EMISSION CONTROL MEASURES

The proposed control measures are summarized in Table 4-3.

**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 <sub>x</sub>
321 (Revised)	R-SL-2	Solvent Cleaning Operations to become Solvent Degreasers	Near-Term: 2004 – 2006	0.1604	
362 (New)	R-SL-10	Solvent Cleaning Operations	Near-Term: 2004 – 2006	0.6141	
333 (Revised)	N-IC-1	Stationary Internal Combustion Engines (Revisions to Rules 333 and 202 – change from 100 to < 50 bhp exemption, correct EPA deficiencies)	Near-Term: 2004 – 2006	-0.0034 <sup>a</sup>	0.0152 <sup>a</sup>
	N-IC-3				
330 (Revised)	R-SC-2	Surface Coating of Metal Parts and Products; Surface Coating of Aircraft or Aerospace Vehicle Parts and Products (Revisions)	Near-Term: 2004 – 2006	0.0586	
337 (Revised)					
339 (Revised)	R-SC-4	Motor Vehicle and Mobile Equipment Coating Operations	Mid-Term: 2007 – 2009	0.0751	
358 (New)	R-SL-4	Electronic Industry - Semiconductor Manufacturing	Mid-Term: 2007 – 2009	0.0000 <sup>b</sup>	
361 (New)	N-XC-4	Small Industrial and Commercial Boilers, Steam Generators, and Process Heaters (2 MMBtu/hr to < 5 MMBtu/hr)	Mid-Term: 2007 – 2009		0.0019 <sup>c</sup>

<sup>a</sup> These have been revised from earlier emission reduction estimates due to equipment removals.

<sup>b</sup> This is included in Table 4-3 for consistency with the 2001 CAP. However, a reassessment of the emission reductions from the control measure show that the companies performing the negative photoresist process have either left Santa Barbara County or switched over to the positive photoresist process. Furthermore, the majority of the previously assessed emission reductions attributed to this control measure should be obtained through R-SL-2 or R-SL-10. This rule will not need to be adopted if there are no negative photoresist processes in Santa Barbara County and R-SL-2 and R-SL-10 obtain the emission reductions previously identified under this rule by 2007.

<sup>c</sup> This 2015 figure is based upon a point of sale type rule with 5 percent replacement of the existing units. If a retrofit type rule is adopted, the estimated NO<sub>x</sub> emission reduction for 2015 becomes 0.0385 tons per day (about 14 TPY).

**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 <sub>x</sub>
351 (Revised)	R-SC-5	Surface Coating of Wood Products	Mid-Term: 2007 – 2009	0.0055	
349 (Revised)	R-SL-5	Polyester Resin Operations	Mid-Term: 2007 – 2009	0.0056	
353 (Revised)	R-SL-9	Adhesives and Sealants	Mid-Term: 2007 – 2009	0.3589	
354 (Revised)	R-SL-7	Graphic Arts (Revisions to Include Solvent Cleaning plus Additional Requirements for Rotogravure, Flexographic, Lithographic, and Letterpress Printing)	Long-Term: 2010 – 2012	0.1499	
352 (Revised)	N-XC-6	Residential Water Heaters; Residential and Commercial Space Heaters	Long-Term: 2010 – 2012		0.0289 <sup>a</sup>
323 (Revised)	R-SC-1	Architectural Coatings (Revision to Regulate the Cleaning of Application Equipment used in Architectural Coating Applications)	Long-Term: 2010 – 2012	0.1885	
<b>Total for the local control measures</b>				1.6133	0.0461

As shown in Table 4-3, we have included proposed control measures for revising Rules 330, 337, 339, 349, 351, and 353 in the near- and mid-term. In addition, we have included a revision to Rule 354 in the long-term. Modifying these rules to address new solvent cleaning requirements was mentioned in the 2001 CAP under the description for Rule 362, Solvent Cleaning Operations. However, the APCD has decided to incorporate the revised solvent cleaning requirements within the existing rules that apply to specific operations or equipment categories. Therefore, to accomplish the integration of the revised solvent requirements, the APCD has included Rules 330, 337, 339, 349, 353, and 354 in Table 4-3.

Through the process of developing the proposed control measures for this 2004 CAP, the APCD reviewed the ARB's "Identification of Performance Standards," CAPCOA's "Potential All

<sup>a</sup> This is the NO<sub>x</sub> emissions reductions in year 2020 with approximately 50 percent implementation.

Feasible Measures,” and control measures adopted by other APCDs and AQMDs. Because of the commitment to adopt control measures in the 2001 CAP, those measures are being carried forward into this plan, with the addition of the rules mentioned above that contain solvent cleaning requirement components. The 2001 CAP control measures are now listed in Table 4-3 as *near-term* or *mid-term* control measures.

As seen in Table 4-3, the following *long-term* control measures are being proposed for inclusion into the plan:

1. Rule 354, R-SL-7, Graphic Arts – Staff propose revising the rule to be similar to the South Coast AQMD Rule 1130, Graphic Arts, with the addition of the South Coast AQMD Rule 1171, Solvent Cleaning Operations, solvent cleaning requirements applicable to graphic arts operations. Notwithstanding that the 1991 AQAP identified *graphic arts* as a proposed control measure, the APCD adopted the existing Rule 354 to meet EPA reasonably available control technology requirements. The existing rule resulted in very minimal emission reductions. A rule revision is necessary to raise the requirements to an *all feasible* level of control.

The major changes would be to 1) increase the rule applicable to apply to lithographic and letterpress printing, 2) eliminate the 300 pounds per month exemption, 3) establish new standards for fountain solutions, adhesives, and porous flexographic printing ink, 4) set a grams per liter limit on the cleaning of adhesive application equipment used in a graphic arts operation, and 5) limit the grams per liter of solvent used for the cleaning of various ink application equipment used in graphic arts operations. Concurrent with the Rule 354 revision, the APCD will revise the Rule 202 permit exemptions to make the printing exemptions similar to those in South Coast AQMD Rule 219.

2. Rule 352, N-XC-6, Natural Gas-Fired Fan-Type Central Furnaces and Residential Water Heaters – The APCD proposes revising the rule to be similar to the South Coast AQMD Rule 1121. This would result in decreasing the allowable NO<sub>x</sub> emissions for natural gas-

fired water heaters from 0.0930 to 0.0465 pounds per million British thermal units (output). The rule will remain a *point of sale* type rule.

3. Rule 323, R-SC-1, Architectural Coatings – Staff propose a rule revision to incorporate the South Coast AQMD Rule 1171 requirements for the cleaning of coatings application equipment. This would result in use of low-ROC solvents for the cleaning of spray application equipment.

#### **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). Some of the further study control measures are being carried forward from the 2001 CAP. Others were identified through reviews of the September 2003 CAPCOA, “Potential All Feasible Measures Report,” the April 1999 CARB document, “Identification of Performance Standards,” other APCD/AQMD rules, and Santa Barbara County Air Pollution Control District staff suggestions.

**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 <i>proposed</i> (as listed in the 2001 CAP) to a <i>further study</i> 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 <i>all feasible</i> control measure.	Ventura Rule 74.23 and San Joaquin Rule 4703
Natural Gas Fuel Specifications	The SBCAPCD wants to set a <i>higher heating value</i> 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
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 2001 CAP.	Possibly a new rule being developed by the San Joaquin Valley APCD

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	Could modify the NOx limits to be: 1) 20 MMBtu/hr and greater: 9 ppmv @ 3% O2 and 2) < 20 MMBtu/hr: 15 ppmv @ 3% O2	San Joaquin Valley APCD 4306
331	R-PG-1	Fugitive Emissions Inspection and Maintenance	This is an ARB-identified performance standard and a CAPCOA-identified AFM category. The South Coast AQMD and Bay Area AQMD rules have lower thresholds for leaks.	South Coast AQMD 1173 and Bay Area AQMD 8-18
333	N-IC-3	IC Engines (Diesel-Fired)	Possibly change NOx limit for CI 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
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 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 Sac 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 8-5 San Joaquin 4602

## **4.7 CONCLUSIONS**

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 2004 CAP and identifies every feasible measure available to make progress toward attainment of the state ozone 1-hour standard. Staff considered the ARB-identified performance standards, the CAPCOA-identified potential all feasible measures, the commitments in the 2001 CAP, and other APCD and AQMD rules to derive the proposed control measures and control measures for further study.

The 2004 CAP control measures include controls on all inventory categories contributing ROC and NO<sub>x</sub> 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, show that Santa Barbara County is making significant progress in reducing emissions from sources subject to our control.

## **CHAPTER 5**

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### **TRANSPORTATION CONTROL MEASURES**

**Background**

**Historical Trends In Vehicle Activity**

**Transportation Control Measures**

**On-Road Mobile Source Emissions Analysis**

**Emission Results**

**Departures From EMFAC2002 Defaults**

## **5. TRANSPORTATION CONTROL MEASURES**

### **5.1 BACKGROUND**

In June 1993, the boards of the Santa Barbara County Association of Governments and the Santa Barbara County Air Pollution Control District 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 towards 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 2004 Plan on-road mobile source emission estimates and transportation control measures (TCMs). SBCAG also provides the APCD with socio-economic projections, which form the basis for many of the stationary and area source growth forecasts for this 2004 Plan.

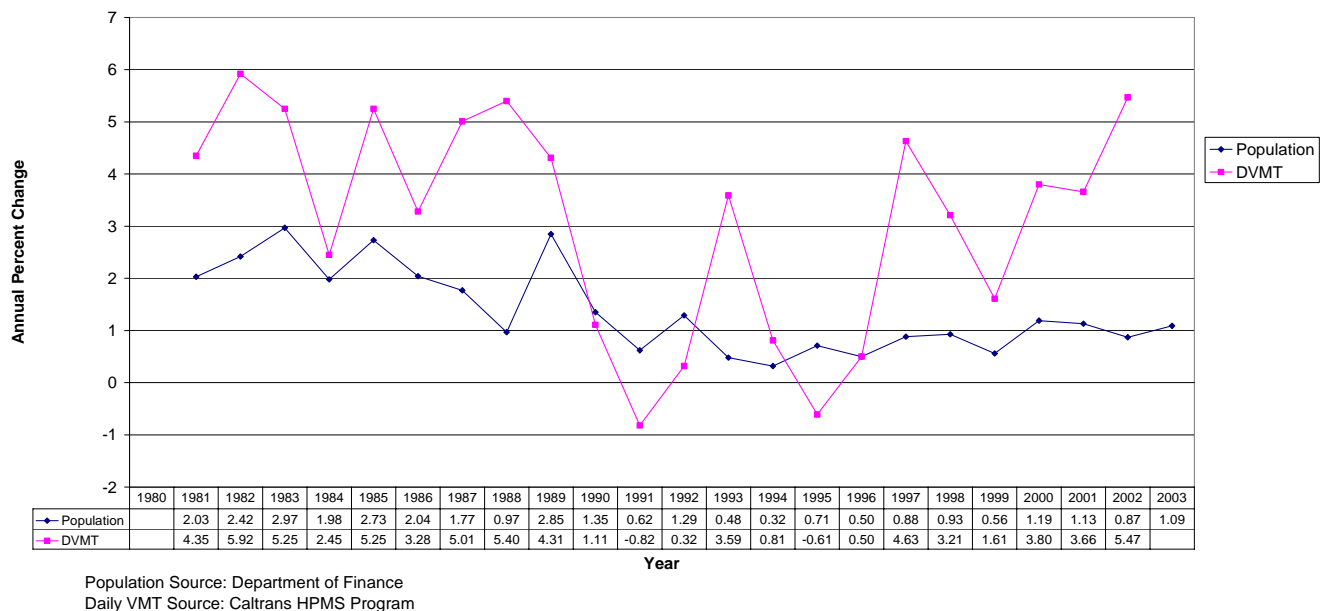
### **5.2 HISTORICAL TRENDS IN VEHICLE ACTIVITY**

The State Act requires areas classified as having a "moderate" air quality classification for the state one-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).<sup>1</sup> ARB has defined substantial reduction as holding growth in VMT and trips to the same growth rate as population. For Santa Barbara County, this would equate to reducing VMT growth rates by more than one half the growth rates experienced during the 1980's.

Figure 5-1 shows that the annual VMT growth rate since 1980 has been highly variable with many peaks accompanied by negative growth occurring during the recession years of 1991 and 1995. However, for 12 of the 16 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. The figure also shows that the annual VMT growth rate over the last three years (2000-

2002) has begun to approach the VMT growth rates experienced during the 1980's – a period of significant vehicle growth and activity. As shown in Table 5-1, the average annual VMT growth rate from 1980 to 1989 was 4.11 percent. During the 1990's, VMT growth rates dropped by more than half – falling to an annual average of 1.31 percent - a significant decline from previous levels. However, over the three year period spanning from 2000 to 2002, the annual average growth rate in VMT has risen to 3.02 percent in Santa Barbara County. The annual average population growth rate over these three analysis periods is 1.97 percent, 0.63 percent, and 0.75 percent respectively – well below the comparable average annual rates of VMT growth. Ratios of these rates also indicate an increase in the disparity of VMT growth over population in recent years. Based on this information, Santa Barbara County is clearly not meeting this State Act performance standard.

**Figure 5-1**  
**Population Growth Rate vs. Daily VMT Growth Rate (1980-2003)**  
**Santa Barbara County**



**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)
1980-1989	1.97 %	4.11 %	1:2.08
1990-1999	0.63 %	1.31 %	1:2.08
2000-2002	0.75 %	3.02 %	1:4.03

1 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 EPA in Section 108(f) of the Federal Clean Air 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 State Implementation Plan (SIP). These TCM projects/programs were developed as part the 1994 CAP and 1998 CAP and are listed in Table 5-3 and Table 5-4 respectively. These measures meet the every feasible control measure (Health and Safety Code, Section 40914(b)) provisions of the State Act. All TCM's evaluated as part of the last triennial update (2001 CAP) 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-12 Vehicle Use Limitations/Restrictions
- 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 For Rejection**

- T-11 Special Events
- T-16 Extremely Low-Temperature Cold Starts

**Proposed As Contingency Measures**

- T-1,2 Trip Reduction - Employer Based Transportation Demand Management (Countywide Implementation of Tier III TDM Program)
- T-5 Improve Commuter Public Transit Service (new projects)
- T-7 Traffic Flow Improvements (new projects)
- T-9 Park-and-Ride / Fringe Parking (new project)
- T-21 Enhanced Inspection and Maintenance Program

**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)  SIP Conformity (SBCAG)
T-3	Work Schedule Changes	Voluntary	County and Cities	County and Cities; Private Sector	Adopted Policy, County, 1988	Not Applicable (TDM)
T-4	Area Wide Ridesharing	Voluntary	County and Cities	SBCAG	Interagency Agreement	SIP Conformity (SBCAG)
T-5	Public Transportation	Programmed	County and Cities	SBMTD; SMAT; SBCAG; APCD; Lompoc Transit; Santa Ynez Valley Transit;	FTIP and RTIP; SRTP, TDP	List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-7	Traffic Flow Improvement	Programmed	County and Cities	County and Cities; Caltrans; SBMTD; SBCAG	FTIP and RTIP	List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-8	Parking Management	Parking Ordinance	City of Santa Barbara	City of Santa Barbara	Not Applicable	City of Santa Barbara Parking Task Force; SIP Conformity (SBCAG)
T-9	Park-and-Ride Fringe Parking	Voluntary; Programmed	County and Cities	County and Cities; Caltrans	FTIP and RTIP	Caltrans, District 5; List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-10	Bicycle/Pedestrian	Programmed	County and Cities	County and Cities; Caltrans; SBCAG	FTIP and RTIP; General Bikeway Elements; Bikeway Master Plans	List of Programmed Projects Implemented by 1999 (SBCAG); SIP Conformity (SBCAG)
T-13	Accelerated Retirement of Vehicles	Voluntary	APCD	APCD	Contract APCD/Engineering	APCD; SIP Conformity (SBCAG)
T-17	Telecommunication	Voluntary	County and Cities	County and Cities; Private Sector	Not Applicable	Not Applicable (TDM)
T-18	Alternative Fuel Program	Voluntary	APCD	APCD; County and Cities	Interagency Agreements Unnecessary	APCD; SIP Conformity (SBCAG)
T-19	Public Education	Committal; Voluntary	County and Cities APCD; SBCAG	County and Cities APCD; SBCAG	Interagency Agreements Unnecessary	Not Applicable; CMP Conformance (SBCAG); SIP Conformity (SBCAG);

**TABLE 5-3**

**1994 CLEAN AIR PLAN - ON ROAD MOBILE SOURCE CONTROL MEASURES**

<b>TCM</b>	<b>Description</b>	<b>Project Sponsor</b>	<b>Project/Program Description</b>	<b>Implementation Status</b>	<b>SIP Analysis</b>
1-4	Travel Demand Management Areawide Ridesharing Work Schedule Changes	Traffic Solutions Traffic Solutions Traffic Solutions/Business	City-County TDM Program County Rideshare Program Flexibie Work Hours	Program On-Going Program On-Going Program On-Going	Yes Yes No
5	Public Transportation	SBMTD SBMTD APCD City of Santa Maria City of Lompoc City of Solvang AMTRAK	Isla Vista - SBCC Express Service Downtown Waterfront Shuttle Expansion Clean Air Express Expansion SMAT Expansion - 1 30 foot bus Lompoc Transit Expansion - 2 buses & farebox system SYVT Expansion - 1 van to establish fixed route service Service Expansion from 2 to 4 train stops per day	Service On-Going Service On-Going Service On-Going Service On-Going Service On-Going Service On-Going Service On-Going	Yes Yes Yes Yes Yes Yes Yes
7	Traffic Flow Improvements	Caltrans County/Caltrans SBCAG/Caltrans SBCAG/Caltrans SBCAG/Caltrans County/Caltrans City of Santa Maria County of Santa Barbara City of Santa Barbara County of Santa Barbara	Crosstown Freeway Project Rte. 101/ Patterson Avenue I/C Rte. 101 / La Cumbre Road I/C Rte. 101 / Storke Road I/C Rte. 101/ Betteravia Road I/C Rte. 101/Fairview Avenue I/C Rte. 135/Betteravia Road Intersection Hollister Avenue/Fairview Avenue Castillo Street/Montecito Street Signal Synchronization – Hollister Avenue	Completed Completed Completed Completed Completed Completed Completed Completed Completed	Yes Yes Yes Yes Yes Yes Yes Yes Yes
8	Parking Management	City of Santa Barbara	Residential Parking Program	On-going	No
9	Park-n-Ride Lots	N/A	N/A	N/A	No
10	Bicycle/Pedestrian	City of Santa Maria City of Santa Maria City of Solvang City of Santa Barbara City of Santa Barbara City of Santa Barbara County of Santa Barbara County of Santa Barbara County of Santa Barbara	Santa Maria Valley Railroad Bikeway Battles Road Bicycle and Pedestrian Project Alamo Pintado Creek Bikeway/Pedestrian Bridge SBCC - East Campus Bicycle and Pedestrian Project Crosstown East - West Bikelane Couplet Shoreline Drive/Cabrillo Blvd. Bikeway Fairview Avenue Bicycle Lane Bradley Road Bikeway El Capitan Ranch Bikeway	Completed Completed Partially Completed Completed Completed Completed Completed Completed Completed	Yes Yes Yes Yes No No Yes Yes No
13	Old Car Buyback	APCD	Vehicle Buyback Program	Completed 1996-99	Yes
17	Telecommunication	County of SB - Probation	Expansion of Video Conferencing Network	Completed	Yes
18	Alternative Fuel Program	APCD APCD SBMTD SBMTD SBMTD SBMTD	ITG Program Clean Air Express Expansion Waterfront Shuttle Service Expansion Easy Lift Conversion of 5 vans to CNG Gillig Bus Refurbishment AMG Bus Refurbishment	On-Going Completed - On-Going Completed - On-Going Completed - On-Going Completed - On-Going Completed - On-Going	Yes Yes -T-5 Yes -T-5 Yes Yes Yes
19	Public Education	APCD SBCAG	Overall Work Program Overall Work Program	On-going On-going	No No
<b>CONTINGENCY PLAN</b>					
21	Enhanced I/M Program	BAR	Enhanced I/M Program	Pending	Yes

**TABLE 5-4**

**1998 CLEAN AIR PLAN - ON ROAD MOBILE SOURCE CONTROL MEASURES**

TCM	Description	Project Sponsor	Project/Program Description	Implementation Status	SIP Analysis
1-4	Travel Demand Management	Traffic Solutions	City-County TDM Program	Program On-Going	Yes
	Areawide Ridesharing	Traffic Solutions	County Rideshare Program	Program On-Going	Yes
	Work Schedule Changes	Traffic Solutions/Business	Flexibie Work Hours	Program On-Going	No
5	Public Transportation	City of Santa Maria	CNG Transit Bus, expanded service to Guadalupe	Service On-Going	Yes
		County of Santa Barbara	Goleta Rail Platform - San Diegan Extension	Service On-Going	Yes
			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	N/A	N/A	NA	NA
8	Parking Management	City of Santa Barbara	Residential Parking Program	On-going	No
9	Park-n-Ride Lots	County of Santa Barbara	Lompoc Park-n-Ride Lot – Ocean Ave./7 <sup>th</sup> Ave.	Completed	Yes
		County of Santa Barbara	Santa Maria Park-n-Ride Lot – Clark/HWY101	Completed	Yes
10	Bicycle/Pedestrian	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	Rufugio Road Class II Bikeway-Samantha Dr-SR246	Completed	Yes
		County of Santa Barbara	Phelps Road Class II Bikelane	Completed	Yes
		County of Santa Barbara	Via Real Class II Bikeway – Cravens Lane to Padaro	Completed	No
		County of Santa Barbara	Maria Ygnacia Creek Class I Bikeway	Completed	No
13	Old Car Buyback	APCD	Vehicle Buyback Program (1996-1999)	Completed	Yes
17	Telecommunication	County of SB – Probation	Expansion of Video Conferencing Network	Completed	Yes
18	Alternative Fuel Program	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	Completed - On-Going	Yes -T-5
		City of Santa Maria	Purchase 1 CNG Bus	Completed - On-Going	Yes
19	Public Education	APCD	Overall Work Program	On-going	No
		SBCAG	Overall Work Program	On-going	No
		SB Bike Coalition	Bicycle Video	On-going	No
		County of Santa Barbara	Local Regulations for Electric Vehicles	On-going	No
<b>CONTINGENCY PLAN</b>					
21	Enhanced I/M Program	BAR	Enhanced I/M Program	Delayed by State	Yes
22	Expanded TDM Program	Local Businesses+APCD+ Traffic Solutions	Countywide Employer-Based Trip Reduction Ordinance 100+EMPLOYEES	Pending	

The TCM's proposed for further study and as contingency measures under federal air quality planning requirements (2001 Clean Air Plan) will form the basis for the 2004 CAP on-road mobile source control strategy. Table 5-5 lists these measures and the process by which the implementation feasibility will be assessed. The source of most measures included in Table 5-5 is the Highway 101 Deficiency Plan (SBCAG, June 2002). The potential air quality impacts of the worsening Highway 101 congestion in the South Coast of Santa Barbara County was raised as a major concern by the APCD's Community Advisory Council and by members of the public during the development of the 2001 CAP.

The Highway 101 Deficiency Plan is a multi-jurisdictional plan prepared as a result of the growing congestion on Highway 101 within the South Coast (Ventura County Line to western city limit of Goleta). The plan, adopted by local agencies and SBCAG, includes short-term congestion relief improvements and commits the adopting agencies to complete the 101 In-Motion Plan to provide long-term solutions to the growing congestion on Highway 101 within the South Coast. The goal of the 101 In-Motion Plan is to thoroughly examine all the options that will improve mobility on the South Coast for years to come rather than revisiting the problem every funding cycle. It recognizes that no single option, including widening Highway 101, will solve the congestion problem for the long-term. The magnitude of the problem will require a comprehensive plan with a range of both short and long term strategies to increase vehicle capacity, reduce demand, improve management of the system, expand transportation alternatives and change land use planning policies and decisions.

Exacerbating the demand for travel on Highway 101 in Santa Barbara County is the jobs-housing imbalance that exists in the South Coast (Goleta, Santa Barbara, and Carpinteria) that serves to foster long-distance commuting. The 2002 Commuter Survey funded by SBCAG was conducted in order to provide an indication of the magnitude of intercity commute activity within Santa Barbara County. This data indicates that 14 percent of the South Coast's workforce comes from Ventura County while another 11 percent drive from northern Santa Barbara County. This suggests that well over 17,000 commuters are making long distance commutes to the South Coast each weekday. Although now over ten-years old, 1990 Census data corroborates this

**TABLE 5-5**  
**2004 PLAN - TRANSPORTATION CONTROL MEASURES**  
**PROPOSED FOR FURTHER STUDY & CONTINGENCY MEASURES**

TCM	Description	Project Sponsor	Project/Program Description	Process
5	Public Transportation	MTD/SBCAG MTD/SBCAG MTD/SBCAG MTD/SBCAG SBCAG/VCTC  SBCAG/Local Agencies	Express Bus Transit Service –Carpinteria–Goleta Express Bus Transit Service –Carpinteria–Santa Barbara Express Bus Transit Service – Westside SB – Goleta Express Bus Transit Service – UCSB Line 24 Extension Enhanced Express Bus Service–Ventura–Carp/SB/Gol Enhanced Commuter Rail Service Ventura Carp/SB/Gol Enhanced Commuter Rail Service North – South Cnty Inter-community Transit Bus Service – North County	101 Def 101 Def 101 Def 101 Def 101 Def 101 I-M 101 I-M TDA
7	Traffic Flow Improvements	Caltrans/SBCAG  Caltrans/SBCAG Caltrans/SBCAG  Caltrans/CHP MTD  Caltrans/SBCAG	High Occupancy Vehicle Lane or High Occupancy Toll Lane on Route 101 – Segment 1: between Ventura County Line to Milpas. Segment 2: between Milpas and Glen Annie/Storke. Network Surveillance – CCTV&Loop Detectors on Route 101 between Ventura County Line and Hollister Changeable Message Signs – Junction of Route 101/Route 154 (N&S) and Junction of Route 101 and Route 1 Traffic Management Center (in SLO) – integrated freeway and arterial control Transit Operations – vehicle tracking/passenger counts/electronic fare collection/surveillance and /communications Smart Call Boxes on Route 101 between Ventura County Line and Hollister	101 I-M  SHOPP SHOPP  101 Def 101 Def  101 Def
8	Parking Management	City of Santa Barbara	Residential Parking Program	N/A
9	Park-n-Ride Lots	City of Carpinteria SBCAG/Caltrans	Park-n-Ride Lot – Bailard Interchange Countywide – SLO & Ventura Cnty	Funded 2005 Study
13	Old Car Buyback	APCD	Vehicle Buyback Program (2004+)	ITG/DMV
14	Activity Centers	Local Agencies/SBCAG	See Chapter 7 2004 CAP	
15	Extended Vehicle Idling	City of Santa Barbara	Scale of applicability too small – City Ordinance restricting extended bus idling in the vicinity of the County Courthouse continues.	
19	Public Education	APCD SBCAG	On-going Efforts On-going Efforts	APCD SBCAG
20	Parking Management to Reduce Non-Commute Single Occupant Vehicle Activity	City of Santa Barbara	In 1999, the City of Santa Barbara reduced free parking from 90 to 75 minutes and extended the hours of parking restrictions within downtown Santa Barbara. At this time, the parking pricing structure does not account for vehicle occupancy (i.e., reduced cost for carpools).	
<b>CONTINGENCY MEASURES</b>				
21	Inspection and Maintenance	BAR	Enhanced I/M Program	Pending

information. It is anticipated that these long distance commute patterns have been exacerbated by the steep rise in housing costs in the South Coast coupled with only nominal increases in South Coast housing supply, relative to continued job growth, since 1990.

Census inter-county commuting trend data is shown in Table 5-6, Table 5-7 and Table 5-8. In 2000, the number of workers commuting into Santa Barbara County (20,000) exceeded workers commuting out of Santa Barbara County (10,500) by 9,500. Compared to the 1990 Census, there was an increase of 5,000 workers commuting into Santa Barbara County and a nominal increase of 345 workers commuting out of Santa Barbara County in 2000.

### **5.3.1 TCM Funding**

Since, the passage of the Inter-modal Transportation and Efficiency Act (ISTEA) in 1991 and the Transportation Efficiency Act for the 21<sup>st</sup> Century (TEA-21) in 1998, the source of funding for transportation control measures has primarily come 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 8-hour ozone standard and revocation of the 1-hour federal ozone standard in April 2005, annual apportionments of federal CMAQ funds may cease for Santa Barbara County beginning in June 2005. The potential loss of federal CMAQ funding combined with the state's current fiscal crisis will make progress towards implementing the 2004 CAP TCM projects difficult.

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 2009. An effort to renew Measure D will be initiated by SBCAG and the local agencies. As part of this effort, SBCAG will explore public and local agency support for procuring "new" Measure D funding for regional highway, transit, and other transportation measures. This renewal effort could potentially provide a new dedicated funding source for some of the TCM's listed in Table 5-5.

**Table 5-6 County to County Commuting (2000 Census)**

<b>County</b>	<b>Workers Commuting Into SB County</b>	<b>Workers Commuting Out of SB County</b>	<b>SB County Difference</b>
Ventura	9,009	2,419	+6,590
San Luis Obispo	7,480	5,045	+2,435
Los Angeles	1,750	1,589	+161
Other	1,797	1,528	+269
Total	20,036	10,581	+9,455

**Table 5-7 In-coming Commuters 1990 and 2000 (Census)**

<b>County</b>	<b>Census 1990 Workers Commuting Into SB County</b>	<b>Census 2000 Workers Commuting Into SB County</b>	<b>1990-2000 Change</b>
Ventura	5,594	9,009	+3,415
San Luis Obispo	5,478	7,480	+2,002
Los Angeles	1,267	1,750	+483
Other	2,294	1,797	-497
Total	14,633	20,036	+5,403

**Table 5-8 Out-going Commuters 1990 and 2000 (Census)**

<b>County</b>	<b>Census 1990 Workers Commuting Out of SB County</b>	<b>Census 2000 Workers Commuting Out of SB County</b>	<b>1990-2000 Change</b>
Ventura	2,433	2,419	-14
San Luis Obispo	3,584	5,045	+1,461
Los Angeles	1,775	1,589	-186
Other	2,444	1,528	-862
Total	10,236	10,581	+345

## 5.4 ON-ROAD MOBILE SOURCE EMISSIONS ANALYSIS

On-road emission estimates for this 2004 Plan were analyzed, in aggregate, using the ARB EMFAC2002 on-road emissions model. On-road mobile source emission forecasts were generated using the EMFAC2002 model for 2000 (baseline year), 2005, 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. For the 2000 and 2010 emission forecasts, on-road activity data was interpolated from the 1999, 2005 and 2015 model forecasts.

### 5.4.1 On-Road Activity Data Inputs

Table 5-9 lists the transportation and emissions modeling assumptions of the 2004 CAP on-road mobile source emissions analysis.

**Table 5-9 2004 CAP On-Road Mobile Source Activity Modeling Assumptions**

<b>Modeling Assumptions</b>	<b>Information Source</b>
Socio-economic growth assumptions (Housing & Employment)	1994 Regional Growth Forecast (1990-2015) (SBCAG)
Vehicle Activity Forecasts (LDA, LDT, MDT, MCY)	Santa Barbara Travel Model - SYSTEM2 (1999, 2005, 2015) (SBCAG)
Vehicle Activity Forecasts (HDDT, HDGT, UB, SBUS)	EMFAC2002 v2.2 April 03 (ARB) ARB Default Activity
Infrastructure Improvements & Schedules – Travel Model Networks	Programmed/Planned Projects–2002 FTIP SBCAG 2001 RTP SBCAG
VMT by Speed Class Distributions (LDA, LDT, MDT, MCY)	Santa Barbara Travel Model - SYSTEM2 (1999, 2005, 2015) (SBCAG)
VMT by Speed Class Distributions (HDDT, HDGT, UB, SBUS)	EMFAC2002 v2.2 April 03 (ARB) ARB Default Activity
Emission Model	EMFAC2002 v2.2 April 03 (ARB)
Vehicle Type/Technology and Demographic Distributions	EMFAC2002 v2.2 April 03 (ARB/DMV)

Since 2001, SBCAG has been in the process of updating the Santa Barbara Travel Model using the TRANSCAD software developed by Caliper Corporation. Although SBCAG anticipates completion and of the model base year and forecasts by mid 2004, the need for a comprehensive review process of these modeling products by SBCAG, Caltrans and ARB will preclude the use of the model in time for this triennial update. In lieu of using the new travel model, past modeling performed by SBCAG using the SYSTEM2 software was relied upon to provide the on-road activity data inputs (countywide VMT, vehicle trips, and VMT by speed class distribution (SCD)) for this 2004 CAP.

The last modeling products produced by the SYSTEM2 model were a 1999 (base year) and 2005, 2015, and 2020 forecasts. These modeling products were used for the transportation air quality conformity assessments of SBCAG's 2001 Regional Transportation Plan (RTP), SBCAG's 2002 Federal Transportation Improvement Programs (FTIP), and the 2001 Clean Air Plan (CAP). The coded transportation networks for each forecast scenario reflect road improvement projects identified in the 2001 RTP and 2002 FTIP. Which model year scenarios (i.e., 2005, 2015 and 2020) include particular projects was based on programmed and planned project scope and schedule information known at the time of the 2002 FTIP. Table 5-10 and Table 5-11 include all regionally significant infrastructure improvement projects currently programmed and planned in Santa Barbara County respectively. As a result of the state fiscal crises and its impact on the flow of state transportation funds – some project sponsors may have difficulty delivering projects consistent with modeling performed as part of the 2002 FTIP and 2001 RTP.

The socio-economic inputs (employment and households) that form the basis for the transportation model used in the SYSTEM2 model were based on the SBCAG's 1994 Regional Growth Forecast (RGF). The 1994 RGF forecasts population, housing, and employment growth in Santa Barbara County out to 2015. The 2002 RGF, adopted March 2002, resulted in updates to the countywide forecasts for population, housing, and employment. Table 5-12 provides a comparison for the socio-economic forecasts between the 1994 RGF and the 2002 RGF. Differences between the forecasts for population, housing and employment range between +/- one to four percent with the largest percent differences occurring in the 2015 out year. Although underestimating population and housing by four percent in 2015 is not insignificant, it well within the error limitations of network travel models. Hence, use of the 1994 RGF is considered reasonable for generating on-road activity estimates for emissions modeling.

**Table 5-10**  
**2002 FTIP Network Analysis**  
**Programmed Projects and Modeling Assumptions**

2002 FTIP Project Description Programmed Improvements	Analysis Yea	Modeling Assumptions Programmed Projects
<b>Network</b>		
: 2020 No-Build Network Plus all programmed projects in this table (T III-2)		
<b>State Highways</b>		
Rt.101/Rt.154 - Const. Interchange	2005, 2015, 2020	No network changes necessary
Rt.101/Fairview - Add turn lanes, replace bridges	2005, 2015, 2020	Modified as specified.
Rt.101/Milpas St./Cacague - Imp.ramps, widen O/C, const. roundabout	2005, 2015, 2020	Modified as specified, added roundabout.
Rt.246 (101 to Buell Flat Rd) - Widen for LT lane.	2005, 2015, 2020	Increased capacity on 246 from 900 to 950 vplph.
Rt.135/UDP - Const. at-grade intersection	2005, 2015, 2020	Add at-grade intersection on 135.
Rt.101/L. Carneros Interchange - Widen approach to SB on-ramp	2005, 2015, 2020	Added 50 cap. on 101SB on ramp.
Rt.101/Hollister - Relocate interchange to join C. Oaks Ext'n.	2015, 2020	Relocated interchange.
Rt.101/Clark Ave Interchange - Realign and signalize interchange	2015, 2020	No network changes necessary
Rt.101/Donovan - Widening O/C, ramps improvements	2005, 2015, 2020	Minor network adjustments.
Rt.101/Stowell - Reconst. Interchange, widening O/C	2005, 2015, 2020	Modified as specified.
Rt.246/Ave. of Flag - Redesign and signalize intersection	2005, 2015, 2020	No network changes necessary
Rt.101 SM Way-SLO County line - Widen to 6-lane	2005, 2015, 2020	Modified as specified.
Rt.154, SB to Lake Cachuma, Operational Improvements	2005, 2015, 2020	Increased capacity 50 vplph at specific locations.
Rt.217 - Convert to expressway	2015, 2020	Lowered speed to 55 mph, cap. To 1,600 vplph.
101/Milpas Interchange reconst, const. Cacique undercrossing	2015, 2020	Modified as specified.
101 (Rt.144 to Hot Springs SB) - Add auxi. lane	2015, 2020	Added SB auxi. lane.
101 (Hot Springs - Milpas NB) - Add auxi. (3rd) lane	2015, 2020	Added NB auxi. lane.
101 Hot Springs/Cabrillo - Improve interchange	2015, 2020	Assumed "as is," except 101SB off ramp improvements.
101/Eucalyptus Lane - Lengthen SB on-ramp	2005, 2015, 2020	No network changes necessary
101 (Evans - Sheffield NB) - Add auxiliary lane, const. C1 bikeway	2005, 2015, 2020	Added NB auxi. lane.
101/Linden & 101/Casitas Pass - Reconstruct interchanges	2015, 2020	Assumed "as is" due undetermined I/C configurations.
Rt.101/Carrillo Blvd. - Widen NB ramp to 2-lane, add NB auxiliary lane	2015, 2020	Added auxi lane, incr.cap. to 850 vplph on 101 on-ramp.
Rt.101/UDP - Const. full interchange	2005, 2015, 2020	Added full diamond interchange on 101.
Rt.101/Storke - Improve I/C w/ 2 LT, 1 RT & one auxiliary lane	2005, 2015, 2020	Modified as specified, add auxi lane (Storke-L.Carneros.)
Rt.166 (SM to Guadalupe) - Widen for additional capacity	2015, 2020	Increase Free-Flow speed from 45 to 50 mph.
Rt.246 (Buellton to Lompoc) - Widen to 4 lanes	2015, 2020	Change segment from 2 to 4 lanes.
101 Bridge over SM River - Widen for additional lane	2015, 2020	No network changes necessary.
101, Clark to SM Way - Widening to 6 lanes.	2020	Widen 101 freeway to 6 lanes.
101/Mission I/C undercrossing	2015, 2020	No network changes, bike lane & MTD service imp.
<b>South County</b>		
Hollister at Patterson Ave - Add exclusive RT on Hollister WB appr.	2005, 2015, 2020	Modified as specified.
Lillie/Evan Rd. Intersection - intersection improvement	2005, 2015, 2020	No network adjustments necessary.
Calle Real (Patterson to Kellogg) - Widen to 4-lane	2005, 2015, 2020	Modified as specified.
Evans Ave/Ortega Hill Rd - Improve intersection, widen 101 NB ramp	2005, 2015, 2020	No network adjustments necessary.
Fowler Rd Ext. - Const. road extension & intersection at Rt.217	2015, 2020	Added link @ 1,200 cap.35 mph, 2-lane at-grade I/S on 217.
Ekwil Rd Ext. - Const. road extension & intersection at Rt.217	2015, 2020	Added link @ 1,200 cap.35 mph, 2-lane at-grade I/S on 217.
El Colegio (Camino Corto to UCSB Westgate - Widen to 4-lane	2015, 2020	Modified as specified.
Summerland Downtown Circulation Improvements	2005, 2015, 2020	No network changes necessary.
Fairview/Calle Real - Add NB LT on Fairview & EB LT on Calle Real	2005, 2015, 2020	Added 50 vplph on all approaches
Hollister/Storke - Widen I/S w/dual LT all apps. & excl. RT & 3rd thru.	2005, 2015, 2020	Added 100 vplph on Hollister and Storke
Hollister/L. Carneros - Add NB LT on L. Carneros, LT on WB Hollister	2015, 2020	Added 50 vplph on Hollister approaches
<b>North County</b>		
UDP - Const E/W arterial from Hummel Dr. to Blosser Road.	2005, 2015, 2020	Added link @ 1,600 cap.45 mph, 2-lane.
Hummel Drive	2005, 2015, 2020	No network adjustments necessary.
<b>City of Carpinteria</b>		
Via Real (Linden - Casitas Pass) - Const. frontage road betw. I/Cs	2015, 2020	Added link betw. I/Cs, 900 vplph cap., 2-lane
Via Real Ext. - Extend road from Casitas Pass across Carp. Creek	2015, 2020	Modified as specified.
101 at Bailard - Widen Overcrossing	2015, 2020	No network changes necessary.
<b>City of Santa Barbara</b>		
Las Positas Road/Cliff Drive Intersection Improvement	2005, 2015, 2020	No network changes necessary.
<b>City of Santa Maria</b>		
UDP - Const. arterial from Rt.135 to Blosser Road	2005, 2015, 2020	Added link @ 1,600 cap 45 mph.
Blosser Rd (Cook to north city limit) - Widen to 4-lane	2015, 2020	U/G to Minor Arterial @ 800 Cap. 4-lane.
Miller St. (Stowell - Cook St.) - Widen to 4-lane	2005, 2015, 2020	Modified as specified.
Miller St. (Chapel to Alvin Ave.) - Widen to 4-lane	2005, 2015, 2020	Modified as specified.
Betteravia /Bradley - Add Dual Left Turn Lanes	2005, 2015, 2020	No network changes necessary.
Betteravia (Rte. 101 to Blosser Rd.) Signal Interconnect	2005, 2015, 2020	Off-Model Emissions Analysis

**Table 5-11  
2002 FTIP & 1999 RTP Network Analysis  
Planned Projects and Modeling Assumptions**

99RTP Proj. #	RTP Project Description Planned Improvements	Yea	Modeling Assumptions Planned Projects
<b>Network</b> 2020 Programmed Network plus all planned projects in this table (T III-3).			
<b>State Highways</b>			
SHS	101/135 I/C - Revise NB ramps, widen overcrossing.	2015, 2020	Reconfig. to diamond I/C, Inc. O/C cap. to 1,400 vplph, all ramps to 900 vplph except 101SB ramp to 850 vplph. No network changes necessary.
SHS	101SB to Jonata Rd./Ave of Flags: Lengthen SB off-ramp, realign I/S	2015, 2020	Relocate 246/101 off ramp to join McMurray on
SHS	RT.246/McMurray at 101 - Relocate off-ramp	2015, 2020	No network changes necessary.
SHS	Rt.166 at Rt.1 - Construct overpass over train tracks	2015, 2020	Increase 50 vplph on all LT lanes to Cuyama.
SHS	Rt.166 at Cuyama - Add turning lanes	2015, 2020	No network changes necessary.
SHS	101SB near Gaviota Tunnel: Realign SB lane horizontal alignment	2015, 2020	Change segments from 4 to 6
SHS1	Rt.135 UVP to Beteravia - Widen to 6 lanes	2015, 2020	Change Turnpike NB on-ramp from 750 to 800 vplph.
SHS1	101/Turnpike I/C - Add RT lane	2015, 2020	Change segments from 4 to 6
SHS1	Rt.135 betw. Stowell & Cook St. - Widen to 6 lanes	2015, 2020	Change segments from 4 to 6
SHS1	101 (Fairview - Storke Rd) - Widen to 6 lanes	2015, 2020	Change segments from 4 to 6
SHS1	101/Damassa Rd I/C - Improve	2015, 2020	No network changes necessary.
SHS1	Rt.166 (West Main St.) - Widen to 4 lanes, bring to standards	2015, 2020	Change segment to 4 lanes, 900 vplph capacity, 45 mph.
SHS2	Rt.192, Alamar to S. Canyon - Widen for bikelanes and sidewalks.	2015, 2020	Not applicable.
SHS2	Rt.1, Las Cruces to Lompoc - Spot widening, curve alignment.	2015, 2020	No network changes necessary.
SHS2	Rt.154/246 Jct: Construct Grade separation.	2015, 2020	No network changes necessary.
SHS2	101 (Milpas to Ventura Co. Line) - Widening to 6 lanes	2020	Widen 101 Freeway to 6 lanes.
	Ph 1: Milpas - S. Ysidro Rd.	2020	
	Ph 2: S. Ysidro - Padaro Ln	2020	
	Ph 3: Vta Co.Line - Padaro Ln incl. Linden & C. Pass I/Cs reconstr'n.	2020	
SHS2	101, Clark to SM Way - Widening to 6 lanes.	2020	Widen 101 freeway to 6 lanes.
SHS2	101 (Cabrillo - Rt.217) - Operational Imp'ts incl. restriping for auxi. lanes.	2020	Add auxi. lane on 101SB L.Positas-Mission, and 101NB Las Positas- La
<b>South County of S.B.</b>			
SC	Storke - Widen from Phelps Rd to El Colegio	2015, 2020	Change segments from 2 to 4
SC	Hollister Ave (Entrance Rd. to 101) - Widen to 4 lanes.	2015, 2020	Change segments from 2 to 4
SC1	Hollister, Old Town Imp'ts - LT lane channelization. Pedestrian access.	2015, 2020	No network changes necessary.
SC1	Hollister Ave (San Antonio - 101) - Widen to 4-lane.	2015, 2020	Modified as specified.
SC1	Calle Real (Patterson to Turnpike) Const. 2-lane road.	2015, 2020	Modified as specified.
SC1	C. Oaks (Patterson to Rt.154) - Widen to 4 lanes	2015, 2020	Change segments from 2 to 4
SC1	C. Oaks (S. Margarita - G. Annie) - Widen to 4 lanes	2015, 2020	Change segments from 2 to 4
SC1	Kellogg Ave over 101 - Const. New roadway overcrossing w/ C2 bikelanes.	2015, 2020	Add link (Kellogg O/C), 2 In, 400 cap., 30vplph.
NA	Phelps Road Extension between Storke and L. Carneros.	2015, 2020	Add Phelps Road Extension per GTIP as Collector with 2 lanes, 25 mph, and 400 vplph capacity.
<b>North County of S.B.</b>			
NC2	Clark / Bradley - Widen I/S and add turn lanes	2015, 2020	Add 50 vplph on Clark, U/G Bradley s/o Clark Ave to Minor Arterial (4 lanes, 800 vplph, 35 mph).
NC3	Bradley / SM Way - Widen I/S, add turn lanes	2015, 2020	U/G Bradley n/o SM Way to 850 vplph & 35 mph. plus U/G College n/o SM Way to Minor Arterial (4 lanes, 800 vplph and 35 mph.)
<b>City of Carpinteria</b>			
C2	Holly Ave Extension/Railroad Crossing	2015, 2020	Not applicable.
C3	Various locations: channelization and signalization	2015, 2020	Not applicable or included in other city projects.
C4	Carpinteria Ave/Carp. Creek Br. - Widen to 4 lanes	2015, 2020	Change links from 2 to 4 lanes.
C5	Via Real (SY Bridge - S. Monica) - Widen to 4 lanes	2015, 2020	Change links from 2 to 4 lanes.
C6	101 at Santa Ynez: Widen overcrossing to 4 lanes	2015, 2020	Change links from 2 to 4 lanes.
<b>City of Lompoc</b>			
L3	Central Ave Extension - A St. to Rt246	2015, 2020	Extend Central Ave, 2 lanes, 50 mph, 1,200 vplph capacity.
<b>City of Guadalupe</b>			
SHS1	166 at Rt. 1 - Construct overpass	2015, 2020	No network changes necessary.
SHS2	166 (West Main St.) - Widen to 4 Lanes, bring to standards.	2015, 2020	U/G to Minor Arterial (4 lanes, 45 mph, 900 vplph capacity).
<b>City of Solvang</b>			
Sol3	A. Pintado / Old Mission Dr. - Widen & signalize intersection.	2015, 2020	No network changes necessary.
Sol4	246 and Buell flat Rd - Widen & signalize intersection.	2015, 2020	Change segments to 2 lanes at 950 vplph capacity.
<b>City of Santa Maria</b>			
SM	Miller St. Roble St. to Cook St.: Widen to arterial standards.	2015, 2020	No network changes necessary.
SM	Alvin Ave: Curryer - Miller St.- Improve to arterial stds w/bikelane.	2015, 2020	Not applicable.
SM	Depot/Railroad/Fesler I/S - Operational improvements.	2015, 2020	No network changes necessary.
SM	Stowell / College Dr. - Lengthen EB LT lane.	2015, 2020	Not applicable.
SM	Betteravia (Blosser - 135) - Widen to 6 lanes/signalize intersections.	2015, 2020	Change segments from 4 to 6
SM	College (Battles to Betteravia) - Const. 4 lane arterial	2015, 2020	Construct 4-lane segments.
SM	College (Southside Pky - Sunrise Dr.) - Const. 4-lane arterial w/bikelane.	2015, 2020	Construct 4-lane segments.
SM	A St.: McCoy - Stowell: Const. To secondary arterial stds.	2015, 2020	No network changes necessary.
SM1	Miller (Barcellus to Stowell) - Widen to 4-lane	2015, 2020	Change segments to 4 lanes.
SM1	McCoy Lane: A-Mahoney Rd: Const. To secondary arterial stds.	2015, 2020	No network changes necessary.
SM1	Foster (135 - Blosser) - Widen to 4-lane	2015, 2020	Change segments to 4 lanes.
SM1	Main St. (Palisade Dr. - City Limit) - Widen to 4-lane	2015, 2020	No network changes necessary.
SM1	E Street - Acquire ROW	2015, 2020	No network changes necessary.

1/ This project is incorporated in the network for modeling purposes, but not included in the 01RTP project list.

Phelps Road is not on the CMP system nor a regionally significantly roadway.

Not applicable: Projects are beyond the sensitivity of the model and does not result in network changes.

**TABLE 5-12. 2004 CAP ACTIVITY INDICATOR COMPARISON (1994 RGF vs. 2002 RGF)**

Activity Indicator	Units	1994	2002	1994	2002	1994	2002	1994	2002
		RGF	RGF	RGF	RGF	RGF	RGF	RGF	RGF
		2000	2000	2005	2005	2010	2010	2015	2015
Population	Residents	416,200	399,000	437,400	436,000	457,441	462,000	479,321	488,000
Housing	Households	139,306	136,622	144,522	146,663	149,134	154,053	154,035	160,724
Employment	Workers	169,300	171,239	184,400	188,508	194,881	200,587	203,846	212,560

The vehicle activity forecasts generated by the Santa Barbara Travel Model are provided in Table 5-13. These forecasts reflect countywide non-commercial vehicles activity. Adjustments made to reflect commercial vehicle activity (VMT and trips) and key ignition events (trip starts) are described later in this chapter.

**Table 5-13 Vehicle Activity Forecasts**

Activity	2000	2005	2010	2015	2020
<b>VMT</b>	9,575,000	10,148,000	10,718,000	11,288,000	11,683,000
<b>Trip Ends</b>	1,340,665	1,400,426	1,449,447	1,498,468	1,555,140

Figure 5-2 incorporates the VMT information presented above with the historical population vs. VMT annual average growth rate analysis presented earlier (see Figure 5-1). This graph indicates that annual average VMT growth rates are forecast to fall below annual average population growth rates beginning in 2005 – becoming equal by the end of the 2020 forecast horizon of the 2004 CAP. This represents a departure of trends experienced between 1980 and 2000. For the 20 year forecast period (2000-2020), the Santa Barbara Travel Model forecasts an annual average VMT growth rate of 1.00 percent while population is estimated to grow at an annual average growth rate of 1.18 percent (Regional Growth Forecast, SBCAG).

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 1970's through the 1980's 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 1990's 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 1990’s 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.

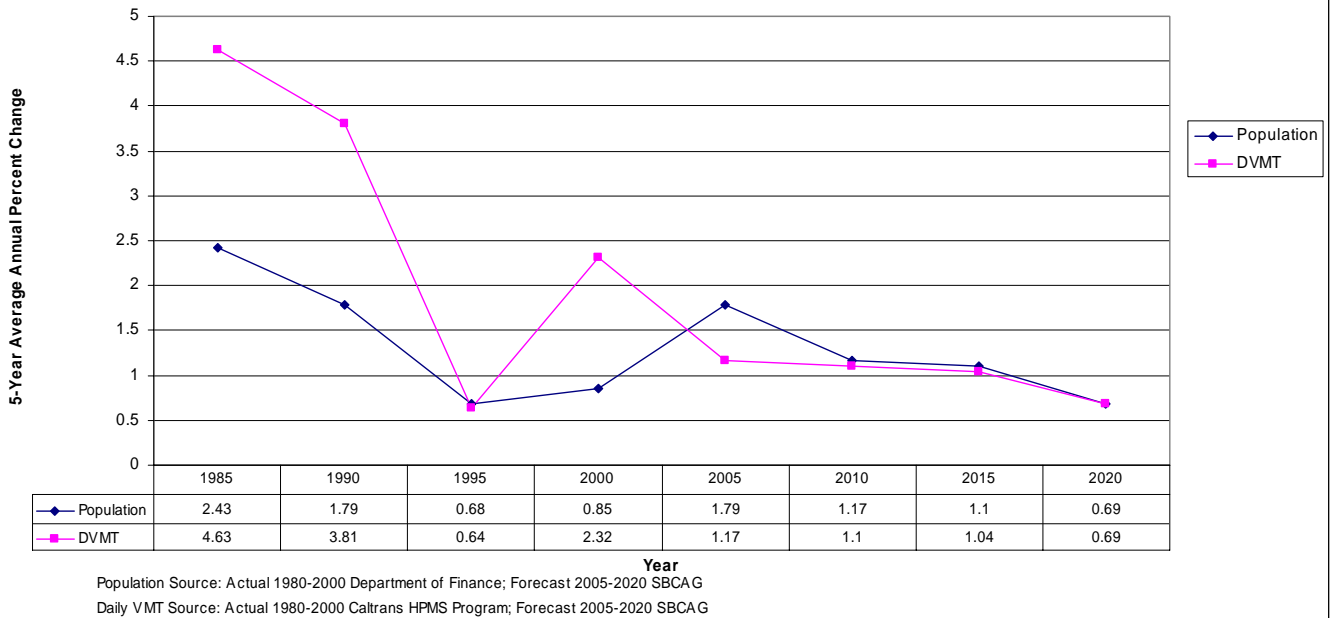
Another economic trend that is impacting travel demand in Santa Barbara County is the high cost of housing in the South Coast. With median housing costs over \$1,000,000, many workers in the South Coast are opting to buy more affordable homes in northern Santa Barbara County or Ventura County – living further 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<sup>2</sup>. The resulting jobs-housing imbalance that these housing costs have fostered may be a contributing factor to VMT growth rates remaining twice as high as population growth between 1980 and 2000 and more recently (2000-2002) four times higher (See Table 5-1).

As stated earlier, SBCAG will be updating the Santa Barbara Travel Model. Although the “new” travel model would not be completed in time for this triennial update – it will be available for the next State Act triennial update. Updated travel forecasts generated by the new model will replace those used for this 2004 CAP. These updated travel forecasts will result in different forecasted annual VMT growth rates than those reported in the 2004 CAP.

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<sup>2</sup> This estimate includes inter-county commuting into Santa Barbara County from outside counties (e.g., Los Angeles, Ventura and San Luis Obispo) and implicitly assumes that these inter-county commutes require 30 minutes or more to achieve.

**Figure 5-2**  
**Population Growth Rate vs. Daily VMT Growth Rate (5-Year Average Annual Change)**  
**Santa Barbara County (1980-2020)**



#### 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) presented above and the emission factors contained in the emissions model EMFAC2002 developed by ARB. A more detailed description of this modeling process is provided below.

For purposes of emissions modeling, all on-road activity data was stratified into 24 1-hour time intervals within EMFAC2002. Summer ozone temperatures for each EMFAC2002 time period were derived from the 10 worst episodic days monitored in Santa Barbara County.

EMFAC2002 computes the emissions associated with the following emitting processes:

- 1) Running exhaust emissions based on VMT;
- 2) Cold start incremental emissions and hot start incremental emissions based on the number of vehicle 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 numbers of vehicles.

Depending on the activity data used, EMFAC2002 will produce two types of inventories, an annual average inventory or a planning inventory. This 2004 Plan is based on a summer ozone season (April to October) average daily emissions planning inventory. The latter is based on meteorological and activity conditions that exist during peak episodic conditions for a given pollutant.

ARB distributions were used to allocate VMT and vehicle trips into 24 1-hour EMFAC2002 time periods. To compute running emissions, each time period's VMT total was stratified into 13 speed classes (0 - 65 in 5 mile increments) and by vehicle classification. Hence, for the 13 vehicle classifications modeled by EMFAC2002, there are 24 VMT by Speed Class Distributions (SCD), one for each time period.

The emissions associated with vehicle starts are accounted for in the EMFAC2002 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 ROC). EMFAC2002 adds these vehicle start and evaporative emissions to running emissions to compute total on-road mobile source emissions.

As required by the EMFAC2002 model, vehicle trips were stratified into the following 13 vehicle classifications: Light Duty Auto (LDA); Light Duty Truck (LDT1 & LDT2); Medium Duty Truck (MDT); Light-Heavy Duty Truck (LHDT1 & LHDT2); Medium-Heavy Duty Truck (MHDT); Heavy-Heavy Duty Truck (HHDT); Urban Bus (UB); School Bus (SBUS); Mobile Home (MH); Motorcycle (MCY); and, Line Haul Vehicles (LHV – currently not used). The distribution of each vehicle by age (model year), operating mode (e.g., cold start, hot start), and technology class (e.g. catalytic, non-catalytic, diesel) was based on the most recent ARB distributions for Santa Barbara County. Vehicle age distributions were based on 2000-2001 vehicle registration data for Santa Barbara County.

The EMFAC2002 activity data summaries for the 2000 baseline, and the 2005, 2010, 2015 and 2020 forecasts are provided in Table 5-14 through 5-18 respectively.

**TABLE 5-14 ARB/SBCAG ON-ROAD ACTIVITY DATA  
2000 & 2005**

**Year: 2000**

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	156,962	5,246,691	698,202	1.668	1,164,601
LDT1-TOT	51,359	1,691,256	227,647	1.766	402,025
LDT2-TOT	45,436	1,582,653	205,099	1.766	362,206
MDV-TOT	21,639	741,243	97,322	1.63	158,636
LHDT1-TOT	3,709	201,390	81,978	1.63	133,625
LHDT2-TOT	1,222	69,590	21,601	1.63	35,209
MHDT-TOT	2,733	135,000	97,429	1	97,429
HHDT-TOT	1,910	261,000	32,798	1	32,798
LHV-TOT	0	0	0	1	0
SBUS-TOT	356	15,000	1,423	1	1,423
UB-TOT	260	33,000	1,039	1	1,039
MH-TOT	4,225	59,000	423	1	423
MCY-TOT	6,170	42,176	8,815	1	8,815

**TOTAL 295,982 10,078,000 1,473,777 2,398,229**

**2000 VMT by Speed Class Distributions (LDA, LDT1, LDT2, MDT, MCY)**

Time/Speed	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
<b>12-6 AM</b>	0.0000	0.0000	0.0000	0.0000	3.4482	9.1333	14.5909	19.2818	20.7724	3.8005	6.3279	10.6656	11.9793
<b>6-9 AM</b>	0.6774	1.0030	27.1672	2.4313	3.5096	7.8138	6.1951	13.1682	7.5551	11.8149	6.1072	4.2279	8.3292
<b>9-12 AM</b>	0.4760	0.4510	12.6804	3.1597	6.8238	8.4812	11.1490	13.8315	14.7529	7.9319	7.0663	3.8425	9.3538
<b>12-3 PM</b>	0.0924	0.4993	9.2963	1.2936	3.8212	5.2794	5.6661	12.0554	6.6612	13.6514	9.8117	8.8200	23.0519
<b>3-6 PM</b>	0.8683	0.6988	19.3233	1.6961	4.5771	1.8125	9.2325	16.5862	14.0317	16.9630	3.9465	5.6703	4.5936
<b>6-12 PM</b>	0.0000	0.0000	0.0000	0.0000	3.6962	8.8134	5.1191	17.7463	6.3718	8.7865	12.8128	5.8076	30.8462

**2000 VMT by Speed Class Distributions - ARB Defaults (LHDT1, LHDT2, MHDT, HHDT, LHV, SBUS, UB, MH)**

VMT	Starts
<b>SBCAG % Difference from ARB Defaults</b>	<b>SBCAG % Difference from ARB Defaults</b>
5.14	25.37

**Year: 2005**

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	166,841	5,592,973	730,436	1.668	1,218,367
LDT1-TOT	54,805	1,789,961	238,241	1.766	420,734
LDT2-TOT	48,696	1,628,665	214,512	1.766	378,829
MDV-TOT	23,196	768,772	101,956	1.63	166,187
LHDT1-TOT	3,975	245,085	83,400	1.63	135,941
LHDT2-TOT	1,307	70,174	22,604	1.63	36,844
MHDT-TOT	2,932	153,000	99,942	1	99,942
HHDT-TOT	2,061	275,000	31,350	1	31,350
LHV-TOT	0	0	0	1	0
SBUS-TOT	384	16,000	1,534	1	1,534
UB-TOT	280	36,000	1,120	1	1,120
MH-TOT	4,556	65,000	456	1	456
MCY-TOT	6,594	52,369	9,278	1	9,278

**TOTAL 315,627 10,693,000 1,534,828 2,500,582**

**2005 VMT by Speed Class Distributions (LDA, LDT1, LDT2, MDT, MCY)**

Time/Speed	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
<b>12-6 AM</b>	0.0000	0.0000	0.0000	0.0000	3.1723	9.1331	14.867	17.1333	20.7725	3.7375	6.3276	7.2146	17.6421
<b>6-9 AM</b>	0.5368	0.7796	27.2255	2.3307	3.3047	9.3583	5.9114	15.9306	7.9562	9.2002	5.5137	5.4826	6.4698
<b>9-12 AM</b>	0.3098	0.451	12.5322	3.1574	5.6613	9.0782	11.5921	12.6466	16.0231	6.5467	7.4201	3.5655	11.016
<b>12-3 PM</b>	0.0924	0.3553	9.1718	1.3678	3.1232	6.4032	5.8987	10.9244	6.6301	11.5571	10.5098	8.5874	25.3789
<b>3-6 PM</b>	0.5166	0.474	19.3565	1.6183	4.3432	2.7048	9.2344	18.1572	13.9707	15.0633	4.2282	6.3184	4.0144
<b>6-12 PM</b>	0.0000	0.0000	0.0000	0.0000	3.4047	8.8134	5.3621	16.2887	6.4205	7.0373	14.2218	5.0788	33.3728

**2005 VMT by Speed Class Distributions - ARB Defaults (LHDT1, LHDT2, MHDT, HHDT, LHV, SBUS, UB, MH)**

VMT	Starts
<b>SBCAG % Difference from ARB Defaults</b>	<b>SBCAG % Difference from ARB Defaults</b>
4.50	22.89

**TABLE 5-14 cont. ARB/SBCAG ON-ROAD ACTIVITY DATA  
2010 & 2015**

**Year: 2010**

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	177,395	5,949,152	756,679	1.668	1,262,140
LDT1-TOT	58,542	1,902,247	247,094	1.766	436,369
LDT2-TOT	52,051	1,691,592	221,238	1.766	390,707
MDV-TOT	24,780	800,277	105,035	1.63	171,207
LHDT1-TOT	4,257	246,646	86,279	1.63	140,635
LHDT2-TOT	1,395	68,807	23,470	1.63	38,257
MHDT-TOT	3,097	165,000	102,559	1	102,559
HHDT-TOT	2,180	321,000	26,890	1	26,890
LHV-TOT	0	0	0	1	0
SBUS-TOT	406	17,000	1,626	1	1,626
UB-TOT	297	38,000	1,187	1	1,187
MH-TOT	4,827	70,000	483	1	483
MCY-TOT	7,039	59,280	9,651	1	9,651
<b>TOTAL</b>	<b>336,266</b>	<b>11,329,000</b>	<b>1,582,192</b>		<b>2,581,711</b>

**2010 VMT by Speed Class Distributions (LDA, LDT1, LDT2, MDT, MCY)**

Time/Speed	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
<b>12-6 AM</b>	0.0000	0.0000	0.0000	0.0000	3.1723	9.1331	14.867	17.1333	20.7725	3.7375	6.3276	7.2146	17.6421
<b>6-9 AM</b>	0.5368	0.7796	27.2255	2.3307	3.3047	9.3583	5.9114	15.9306	7.9562	9.2002	5.5137	5.4826	6.4698
<b>9-12 AM</b>	0.3098	0.451	12.5322	3.1574	5.6613	9.0782	11.5921	12.6466	16.0231	6.5467	7.4201	3.5655	11.016
<b>12-3 PM</b>	0.0924	0.3553	9.1718	1.3678	3.1232	6.4032	5.8987	10.9244	6.6301	11.5571	10.5098	8.5874	25.3789
<b>3-6 PM</b>	0.5166	0.474	19.3565	1.6183	4.3432	2.7048	9.2344	18.1572	13.9707	15.0633	4.2282	6.3184	4.0144
<b>6-12 PM</b>	0.0000	0.0000	0.0000	0.0000	3.4047	8.8134	5.3621	16.2887	6.4205	7.0373	14.2218	5.0788	33.3728

**2010 VMT by Speed Class Distributions - ARB Defaults (LHDT1, LHDT2, MHDT, HHDT, LHV, SBUS, UB, MH)**

VMT	Starts
SBCAG % Difference from ARB Defaults 5.52	SBCAG % Difference from ARB Defaults 21.21

**Year: 2015**

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
LDA-TOT	188,761	6,283,689	783,962	1.668	1,307,648
LDT1-TOT	62,232	2,008,773	254,934	1.766	450,214
LDT2-TOT	55,333	1,785,576	228,151	1.766	402,915
MDV-TOT	26,343	840,459	107,832	1.63	175,766
LHDT1-TOT	4,528	234,944	89,286	1.63	145,536
LHDT2-TOT	1,483	70,483	24,286	1.63	39,587
MHDT-TOT	3,263	175,000	105,948	1	105,948
HHDT-TOT	2,295	372,000	22,439	1	22,439
LHV-TOT	0	0	0	1	0
SBUS-TOT	429	18,000	1,714	1	1,714
UB-TOT	313	40,000	1,251	1	1,251
MH-TOT	5,087	75,000	509	1	509
MCY-TOT	7,483	64,076	10,016	1	10,016
<b>TOTAL</b>	<b>357,549</b>	<b>11,968,000</b>	<b>1,630,329</b>		<b>2,663,543</b>

**2015 VMT by Speed Class Distributions (LDA, LDT1, LDT2, MDT, MCY)**

Time/Speed	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
<b>12-6 AM</b>	0.0000	0.0000	0.0000	0.0000	3.1721	9.1333	14.8671	20.3204	17.5855	3.7377	6.3278	7.2144	17.6420
<b>6-9 AM</b>	0.9186	2.2316	26.2148	1.0595	3.7530	10.0744	10.4266	15.1757	2.7631	9.5542	5.2714	7.4541	5.1031
<b>9-12 AM</b>	0.4965	0.9199	12.4163	2.0899	5.6613	10.4688	17.4536	14.0700	8.0198	6.5468	7.4201	4.7527	9.6840
<b>12-3 PM</b>	0.2493	0.8234	9.0745	0.6807	3.1232	6.7301	8.3605	11.0456	4.0008	11.5571	10.5098	9.5846	24.2604
<b>3-6 PM</b>	0.7337	1.2997	18.7817	0.6640	4.5917	3.3499	13.9856	18.6809	7.8810	15.2646	4.0905	7.4395	3.2372
<b>6-12 PM</b>	0.0000	0.0000	0.0000	0.0000	3.4047	8.8134	5.3621	16.8495	5.8596	7.0373	14.2218	5.0788	33.3728

**2015 VMT by Speed Class Distributions - ARB Defaults (LHDT1, LHDT2, MHDT, HHDT, LHV, SBUS, UB, MH)**

VMT	Starts
SBCAG % Difference from ARB Defaults 6.38	SBCAG % Difference from ARB Defaults 19.54

**TABLE 5-14 cont. ARB/SBCAG ON-ROAD ACTIVITY DATA  
2020**

**Year: 2020**

	<b>Vehicles</b>	<b>VMT</b>	<b>Trip Ends</b>	<b>7G Adj</b>	<b>Trip Starts</b>
LDA-TOT	197,373	6,512,851	815,282	1.668	1,359,890
LDT1-TOT	64,937	2,085,564	264,076	1.766	466,359
LDT2-TOT	57,738	1,851,818	235,949	1.766	416,686
MDV-TOT	27,486	872,009	111,430	1.63	181,631
LHDT1-TOT	4,725	222,005	92,728	1.63	151,147
LHDT2-TOT	1,547	72,578	25,247	1.63	41,153
MHDT-TOT	3,405	182,000	109,212	1	109,212
HHDT-TOT	2,394	388,000	19,820	1	19,820
LHV-TOT	0	0	0	1	0
SBUS-TOT	448	19,000	1,792	1	1,792
UB-TOT	327	42,000	1,308	1	1,308
MH-TOT	5,312	78,000	531	1	531
MCY-TOT	7,805	66,174	10,428	1	10,428
<b>TOTAL</b>	<b>373,498</b>	<b>12,392,000</b>	<b>1,687,803</b>		<b>2,759,957</b>

**2020 VMT by Speed Class Distributions (LDA, LDT1, LDT2, MDT, MCY)**

<b>Time/Speed</b>	<b>0-5</b>	<b>5-10</b>	<b>10-15</b>	<b>15-20</b>	<b>20-25</b>	<b>25-30</b>	<b>30-35</b>	<b>35-40</b>	<b>40-45</b>	<b>45-50</b>	<b>50-55</b>	<b>55-60</b>	<b>60-65</b>
<b>12-6 AM</b>	0.0000	0.0000	0.0000	0.0000	5.9200	6.2783	15.5895	17.1332	20.8794	3.7377	5.6054	7.2141	17.6423
<b>6-9 AM</b>	0.5911	1.2371	0.8456	22.6395	3.0261	4.7955	9.0807	10.5537	13.9003	13.1448	3.0947	8.6838	8.4071
<b>9-12 AM</b>	0.0930	0.2375	0.4848	16.1465	3.5885	3.9204	8.3423	11.1512	17.6657	12.6009	5.5691	8.6286	11.5716
<b>12-3 PM</b>	0.0820	0.2502	0.4434	9.4816	2.1830	2.9573	7.8904	11.1209	8.1986	17.1356	7.5735	11.6661	21.0174
<b>3-6 PM</b>	0.4827	0.4160	0.4890	19.7386	3.3617	1.4586	9.0914	12.9662	14.4034	18.8279	4.6937	8.9939	5.0770
<b>6-12 PM</b>	0.0000	0.0000	0.0000	0.0739	3.2180	6.1482	7.6173	15.2986	8.3958	7.0374	14.2218	6.8716	31.1174

**2020 VMT by Speed Class Distributions - ARB Defaults (LHDT1, LHDT2, MHDT, HHDT, LHV, SBUS, UB, MH)**

<b>VMT</b>	<b>Starts</b>
<b>SBCAG % Difference from ARB Defaults</b>	<b>SBCAG % Difference from ARB Defaults</b>
6.32	19.29

## 5.5 EMISSION RESULTS

The 2004 CAP emission results are summarized below (see back of Chapter for model output).

From 2000-2020, ROC on-road mobile source emissions are forecast to decrease as follows:

2000 ROC Baseline	16.80 tons/day
2005 ROC Forecast	11.92 tons/day
2010 ROC Forecast	8.34 tons/day
2015 ROC Forecast	5.93 tons/day
2020 ROC Forecast	4.35 tons/day
Total On-Road Mobile Source ROC Emission Decrease 2000 – 2020	<b>12.45 tons/day</b>

From 2000-2020, NOx on-road mobile source emissions are forecast to decrease as follows:

2000 NOx Baseline	24.36 tons/day
2005 NOx Forecast	19.60 tons/day
2010 NOx Forecast	14.45 tons/day
2015 NOx Forecast	9.76 tons/day
2020 NOx Forecast	6.67 tons/day
Total On-Road Mobile Source NOx Emission Decrease 2000-2020	<b>17.69 tons/day</b>

On-road mobile source emissions of ROC and NOx are forecast to decline by 12.45 and 17.69 tons per day respectively. This represents a 74 and 73 percent reduction in ROC and NOx respectively over the 20 year planning horizon of the 2004 CAP. Figure 5-3 illustrates the ROC and NOx emission inventory trends and estimated emission reductions of the 2004 CAP. ROC emissions are forecast to decline between 25-30 percent every five years. NOx emissions are forecast to decline over 30 percent every five years after 2010. These ROC and NOx 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 5-4 through 5-7 illustrates how the on-road mobile source emissions are distributed among the six major vehicle type categories. These figures show that light-duty vehicles will continue to be the primary source of ROC whereas heavy-duty vehicles will continue to be the primary source of NOx 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 NOx emissions in the future.

**FIGURE 5-3. ON-ROAD MOBILE SOURCE EMISSION RESULTS**

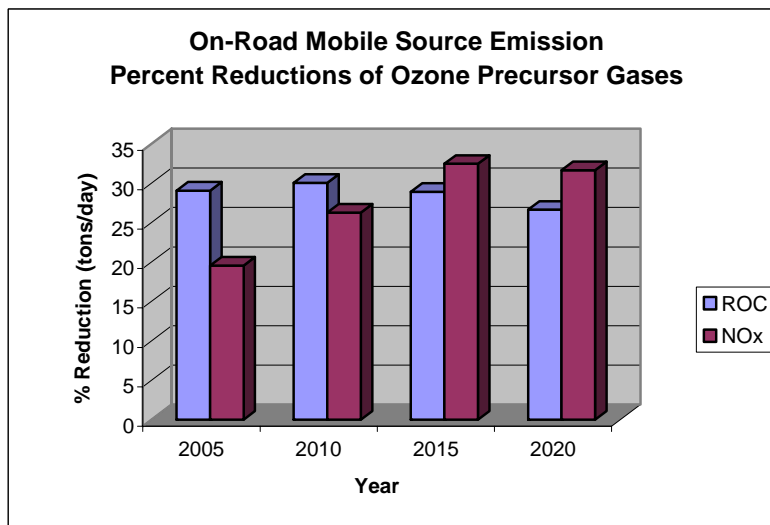
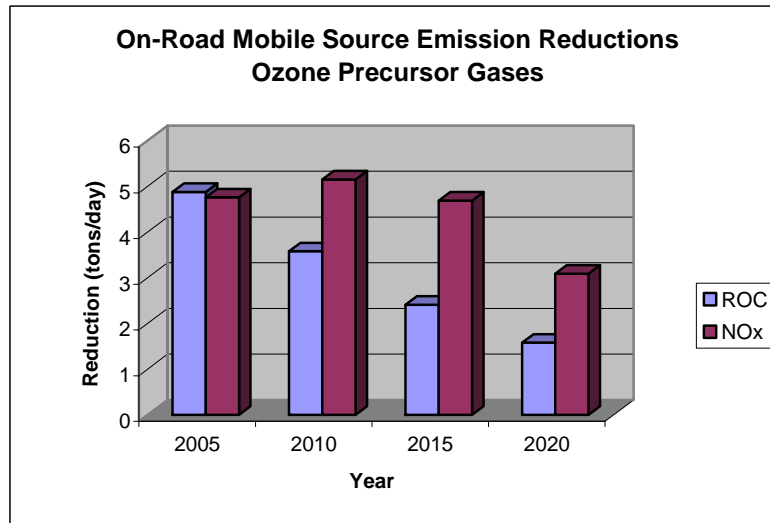
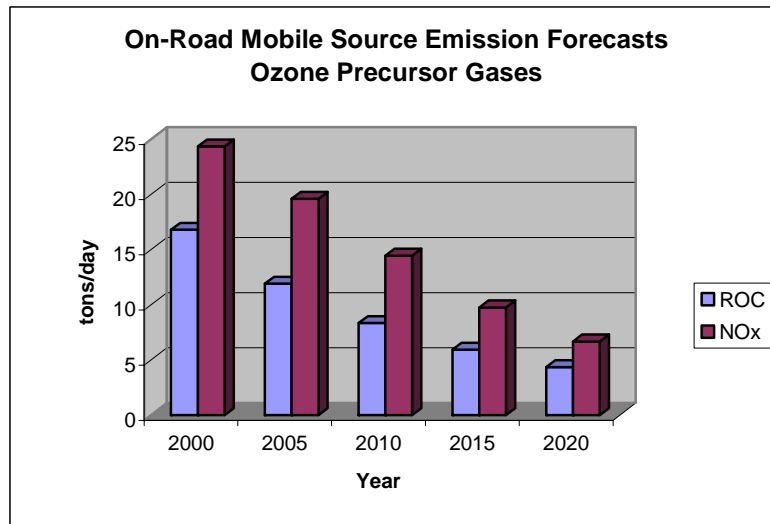
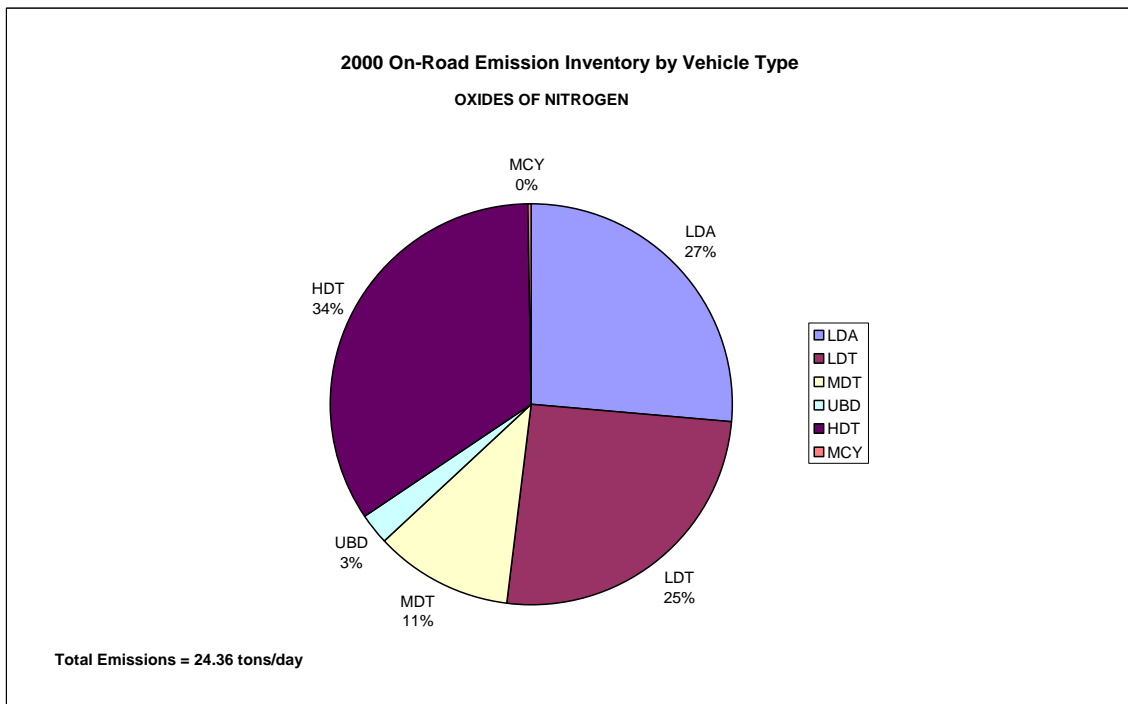
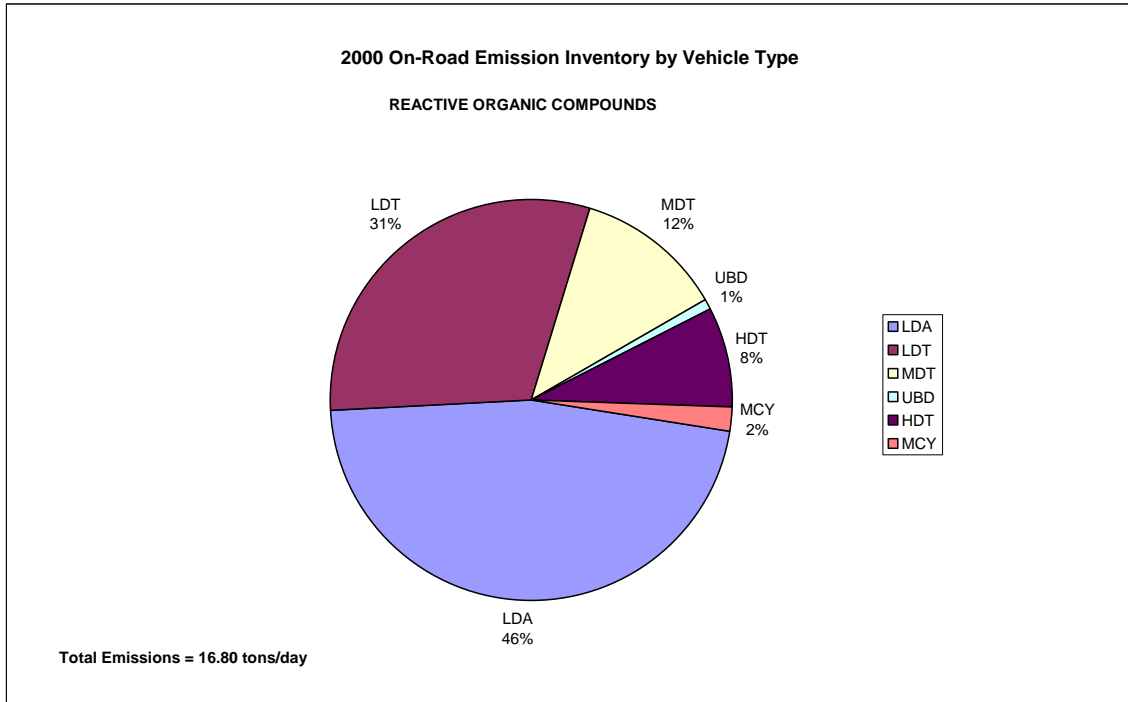


FIGURE 5-4 2000 ON-ROAD EMISSION INVENTORY BY VEHICLE TYPE



**FIGURE 5-5 2005 ON-ROAD EMISSION FORECAST BY VEHICLE TYPE**

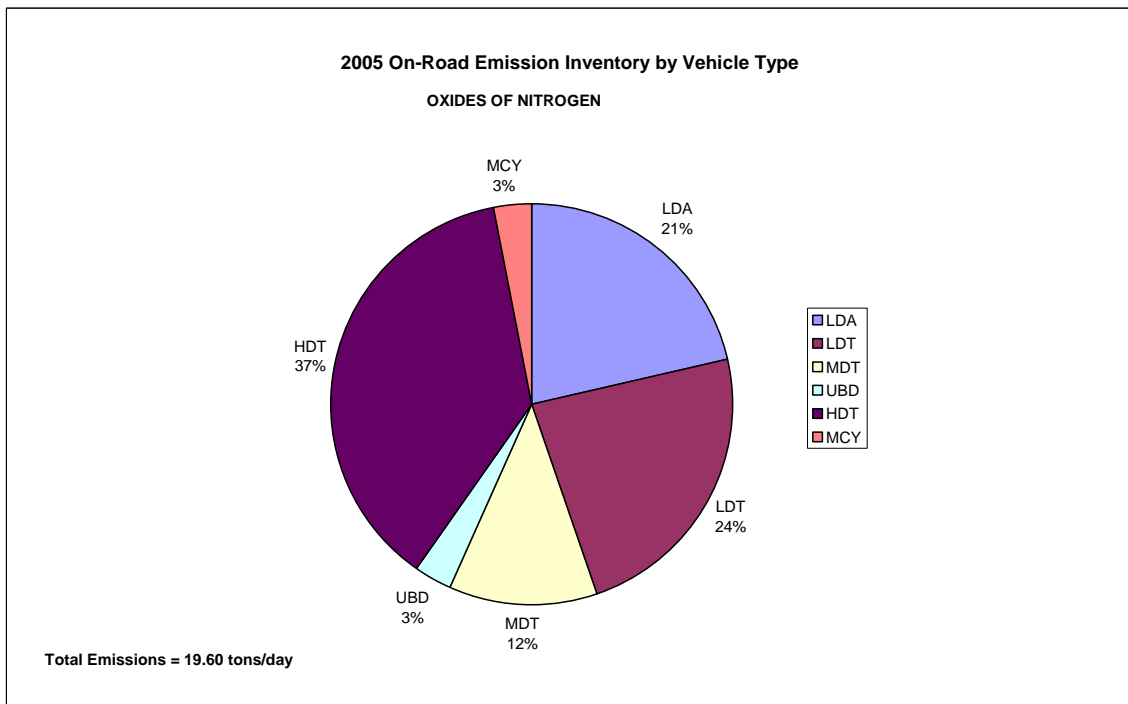
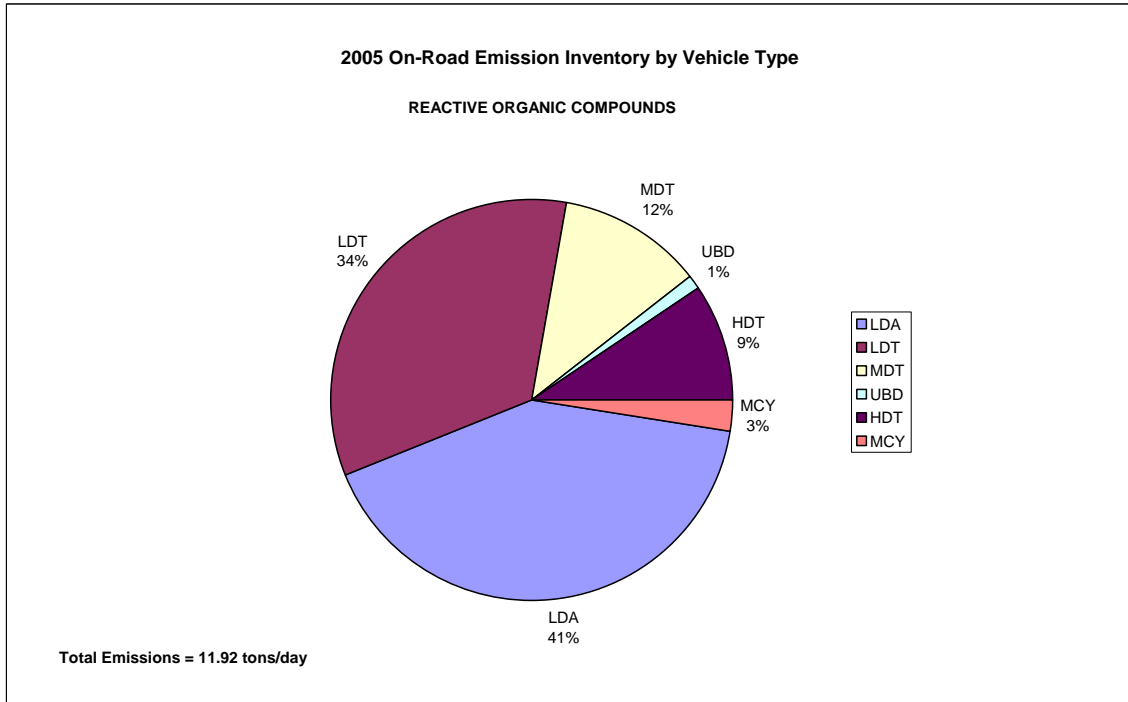
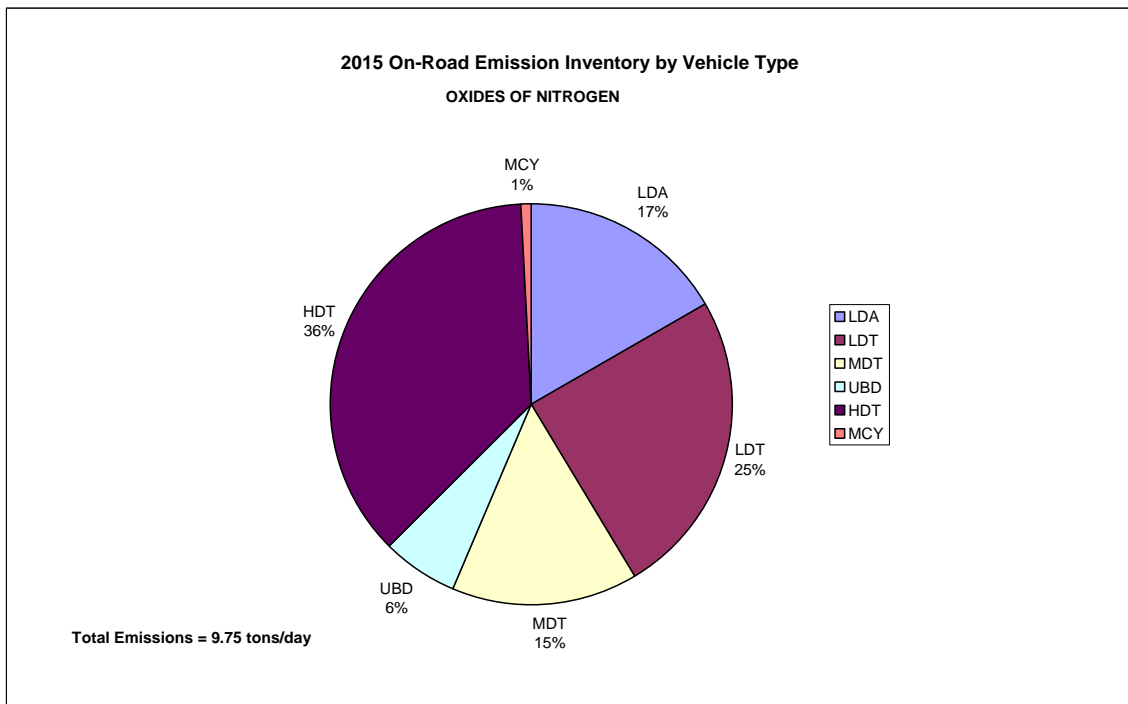
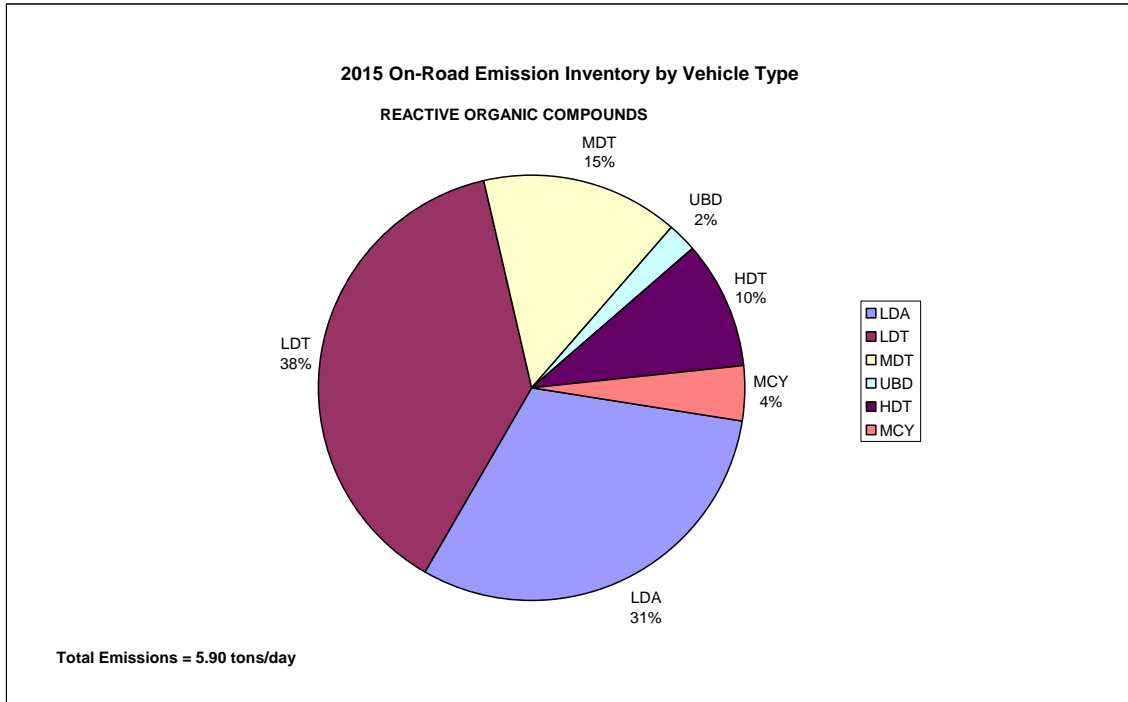
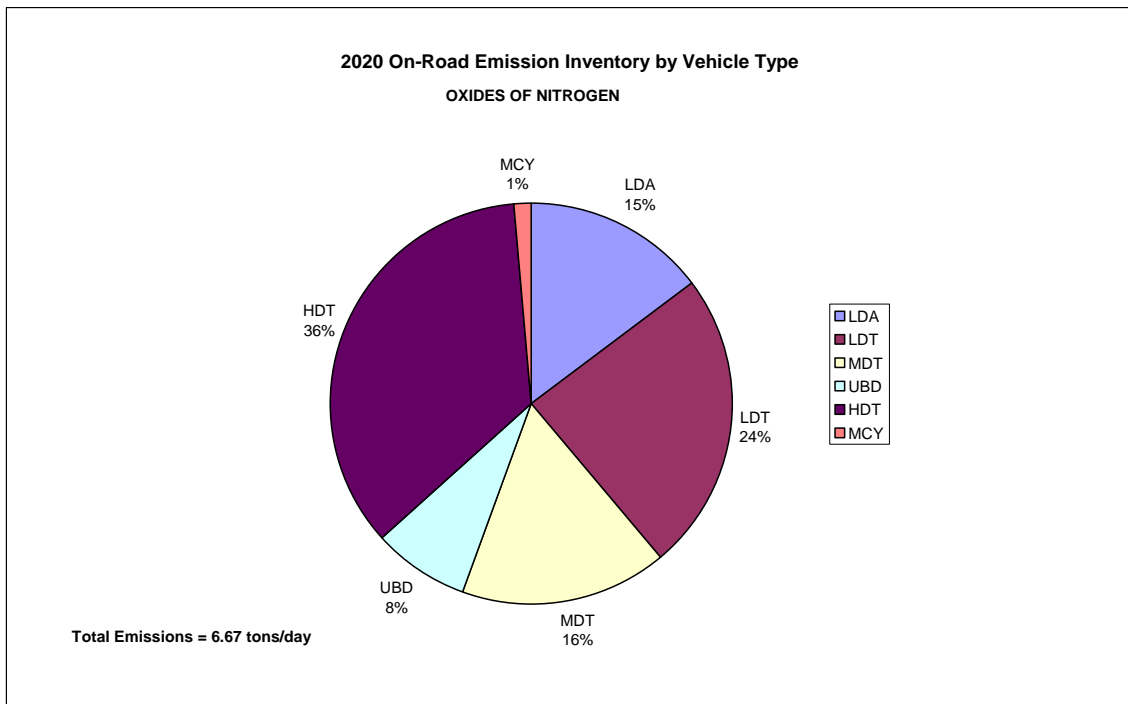
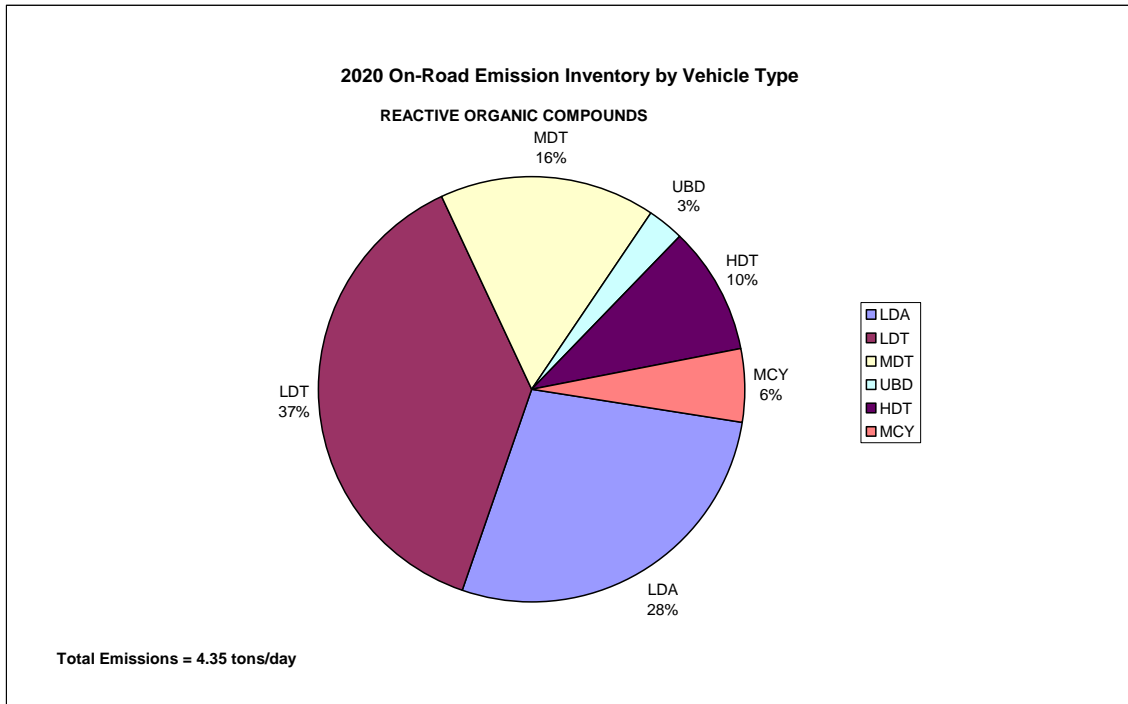


FIGURE 5-6 2015 ON-ROAD EMISSION FORECAST BY VEHICLE TYPE



**FIGURE 5-7 2020 ON-ROAD EMISSION FORECAST BY VEHICLE TYPE**



## **5.6 DEPARTURES FROM EMFAC2002 DEFAULTS**

ARB approved the use of EMFAC2002 for purposes of on-road mobile source emission inventory development in California in September 2002. As part of the development of the 2004 CAP, several changes were also made to the vehicle activity data default values resident in the EMFAC2002 model in order to more accurately reflect Santa Barbara County travel characteristics. For each of the 2004 Clean Air Plan emission forecasts, adjustments were made to: vehicle population, vehicle starts; and, vehicle miles of travel related to commercial vehicle activity. These adjustments were agreed to by ARB and are consistent with how on-road mobile source emissions were modeled as part of the federally approved 2001 Clean Air Plan. EMFAC2002 allows these adjustments through its WIS (what-if-scenario) user-interface module. Justification for each of these vehicle activity adjustments is provided below.

### **5.6.1 Vehicle Population**

Vehicle population estimates in EMFAC2002 are based on an area's county specific vehicle registration data. One concern with this approach is that it effectively ignores the population of vehicles that are operated within Santa Barbara County but are registered outside the county. This is an issue for MPOs like SBCAG that have destination resort areas within its modeling domains and/or experience a greater proportion of in-coming inter-county commuters. For instance, based on 2000 U.S. Census data, Santa Barbara County experienced a daily net increase of 9,455 incoming commuters versus those leaving Santa Barbara County to go to work. Combined with the influx of tourists, relying solely on county specific registration data would tend to underestimate the number of vehicles actually operating within Santa Barbara County on a given weekday – thereby underestimating the ROC and NO<sub>x</sub> emissions associated with these vehicles. Adjustments to the LDA, LDT and MDT vehicle populations were made within EMFAC2002 based on maintaining the VMT to vehicle population relationship (i.e., keeping the mileage accrual rates constant). The VMT adjustment is described section 5.6.3.

## 5.6.2 Vehicle Starts

Departing from its predecessors<sup>3</sup>, the EMFAC2002 methodology for generating vehicle starts for the LDA, LDT, and MDT vehicle types is now based solely on factoring an area's county specific vehicle registration data. There are two concerns that SBCAG has with respect to this approach.

- 1) It effectively ignores the contribution of internal visitor trips, i.e., trip starts from vehicles that are registered outside the county. ARB is developing a county-to-county trip matrix based on instrumented vehicle data to address these trips. However, this matrix is currently not complete and will not be operational for this generation of EMFAC. This may be an issue for MPOs like SBCAG that have destination resort areas within its modeling domains.
- 2) It creates an analytical disconnect between regional transportation network model output and vehicle start emissions. This is especially problematic when making emission forecasts. Relying on model defaults for vehicle starts makes EMFAC2002 insensitive to present/future mode split/vehicle trip changes resulting from HOV facilities, new transit services, transit fare policy changes, market based TCMs, traditional TCMs etc.

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 EMFAC2002 and allocated by vehicle type based on EMFAC2002's existing activity data distribution percentages.

## 5.6.3 Commercial Vehicle Activity

Given that SBCAG travel model does not explicitly model commercial truck activity, a two-step process was taken to appropriately augment SBCAG's modeled VMT estimates with VMT from heavy-duty gas trucks (HDGT), heavy-duty diesel trucks (HDDT) and urban diesel buses (UBD).

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<sup>3</sup> For EMFAC7F and MVEI7G, ARB accepted travel demand model activity estimates of trip ends, VMT, and VMT by speed class distributions from MPOs/RTPAs. In MVEI7G, vehicle trip ends as produced by the regional transportation planning agency network models (or statewide travel survey derived trip end estimates) were adjusted to vehicle starts. These adjustments were based on ARB instrumented vehicle surveys and appropriately allowed the estimate of vehicle emissions to capture non-destination trips (i.e., trip chaining activity) and short trips (e.g., ignition key events associated with shuffling cars at home or moving a car in a parking lot). Because the resulting trip start control totals for each vehicle type are factored from the trip end data, the nexus between vehicle start emissions with MPO travel model results was maintained.

This task was accomplished by distributing SBCAG's modeled VMT and trip activity to only the light and medium duty vehicle classes (including motorcycles) and retaining the ARB default estimates of VMT and vehicle trips for heavy duty trucks and urban buses. The sum of SBCAG's modeled VMT and ARB's default VMT estimates for commercial truck and urban diesel bus activity yields the total countywide VMT estimate. This new countywide VMT total is then input into EMFAC2002 for emissions modeling.

The effect these default adjustments have on SBCAG's and ARB's activity estimates are shown in Table 5-15 below. These changes allow EMFAC2002 to more accurately reflect the impact that inter-county travel (e.g., commuting and tourism) and heavy-duty commercial vehicle activity have on air quality in Santa Barbara County. This information is also presented at the bottom of the ARB/SBCAG Activity Data information provided in Table 5-14.

**Table 5-15 Percentage Change from ARB Activity Data Defaults**

<b>Analysis Year</b>	<b>% Change in Vehicles</b>	<b>% Change in Starts</b>	<b>% Change in VMT</b>
2000	5.25	25.37	5.14
2005	4.68	22.89	4.50
2010	5.66	21.21	5.52
2015	6.56	19.54	6.38
2020	6.50	19.29	6.32

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty Trucks - Gasoline Trucks			Heavy Duty 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	Diesel Trucks					
Vehicles	8651	146934	1377	156962	5445	89473	1878	96795	1439	23968	1163	26570	1354	4554	5908	3316	9224	260	6170	295982	
VMT/1000	108	5107	32	5247	126	3087	62	3274	28	918	66	1012	18	140	158	312	470	33	42	10078	
Trips	47826	1107030	9744	1164600	32981	716391	14859	764231	23644	288832	14993	327470	21438	59225	80662	51411	132073	1039	8815	2398230	
Reactive Organic Gas Emissions																					
Run Exh	0.65	1.82	0.01	2.48	0.74	1.23	0.01	1.99	0.19	0.55	0.02	0.76	0.14	0.31	0.45	0.26	0.71	0.13	0.17	6.23	
Idle Exh	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	0.00	0.00	0.02	0.00	0.00	0.00	
Start Exh	0.25	0.72	0.00	1.97	0.16	1.10	0.00	1.27	0.16	0.42	0.00	0.58	0.26	0.18	0.44	0.00	0.44	0.00	0.03	4.29	
Total Ex	0.89	3.54	0.01	4.44	0.91	2.34	0.01	3.26	0.35	0.97	0.02	1.35	0.40	0.49	0.89	0.27	1.16	0.13	0.20	10.54	
Diurnal	0.05	0.22	0.00	0.27	0.03	0.13	0.00	0.16	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.48	
Hot Soak	0.12	0.22	0.00	0.33	0.08	0.15	0.00	0.23	0.02	0.05	0.00	0.07	0.01	0.01	0.02	0.00	0.02	0.00	0.01	0.65	
Running	0.88	1.75	0.00	2.63	0.38	1.05	0.00	1.42	0.17	0.37	0.00	0.54	0.10	0.09	0.19	0.00	0.19	0.00	0.08	4.88	
Resting	0.03	0.11	0.00	0.14	0.02	0.06	0.00	0.08	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.25	
Total	1.97	5.84	0.01	7.82	1.41	3.72	0.01	5.14	0.55	1.44	0.02	2.01	0.51	0.59	1.10	0.27	1.37	0.13	0.32	16.80	
Carbon Monoxide Emissions																					
Run Exh	8.29	37.33	0.03	45.65	9.75	32.57	0.05	42.38	3.31	9.13	0.07	12.51	3.67	5.69	9.36	1.25	10.61	1.10	2.21	114.47	
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.01	0.02	0.02	0.07	0.10	0.00	0.00	0.14	
Start Exh	1.53	17.93	0.00	19.46	1.07	13.36	0.00	14.42	1.12	4.93	0.00	6.05	2.43	2.89	5.32	0.00	5.32	0.05	0.09	45.39	
Total Ex	9.82	55.26	0.03	65.11	10.82	45.92	0.05	56.80	4.44	14.10	0.07	18.61	6.10	8.60	14.70	1.33	16.03	1.15	2.30	160.00	
Oxides of Nitrogen Emissions																					
Run Exh	0.57	4.85	0.05	5.47	0.65	4.61	0.09	5.35	0.17	1.66	0.43	2.26	0.12	1.36	1.48	6.22	7.70	0.60	0.07	21.45	
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	0.23	0.23	0.00	0.00	0.23	
Start Exh	0.07	0.91	0.00	0.98	0.05	0.78	0.00	0.83	0.03	0.43	0.00	0.45	0.04	0.36	0.40	0.00	0.40	0.00	0.00	2.67	
Total Ex	0.64	5.76	0.05	6.46	0.70	5.39	0.09	6.18	0.20	2.08	0										

Title : South Central Coast Avg 2005 Summer 2004 CAP  
Version : Emfac2002 V2.2 Apr 23 2003 \*\* WIS Enabled \*\*  
Run Date : 03/15/04 15:09:42  
Scen Year: 2005 -- Model Years: 1965 to 2005  
Season : Summer  
Area : Santa Barbara (SCC)  
I/M Stat : I and M program in effect  
Emissions: Tons Per Day

	- - - Light Duty Passenger Cars - - -				- - - - Light Duty Trucks - - - -				- - - - Medium Duty Trucks - - - -				- - - - Heavy Duty Trucks - - - -				- - - - Diesel 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	Diesel	Total	Non-cat	Cat	Diesel	Total						
Vehicles	4982.	160953.	906.	166841.	3344.	98431.	1726.	103501.	721.	26018.	1739.	28478.	903.	5028.	5931.	4002.	9933.	280.	6594.	315627.						
VMT/1000	52.	5522.	18.	5593.	74.	3291.	54.	3419.	15.	972.	97.	1084.	11.	127.	138.	371.	509.	36.	52.	10693.						
Trips	24920.	1187400.	6047.	1218370.	18151.	768153.	13259.	799563.	7806.	310108.	21058.	338972.	12894.	57318.	70212.	63070.	133282.	1120.	9278.	2500580.						
Reactive Organic Gas Emissions																										
Run Exh	0.34	1.13	0.01	1.47	0.47	0.96	0.01	1.43	0.10	0.35	0.04	0.49	0.08	0.24	0.33	0.24	0.57	0.12	0.20	4.29						
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	0.01	0.02	0.00	0.00	0.02						
Start Ex	0.14	1.31	0.00	1.44	0.09	0.93	0.00	1.02	0.05	0.35	0.00	0.40	0.16	0.17	0.33	0.00	0.33	0.00	0.03	3.22						
Total Ex	0.47	2.43	0.01	2.91	0.56	1.88	0.01	2.46	0.15	0.71	0.04	0.90	0.24	0.42	0.66	0.26	0.91	0.13	0.23	7.54						
Diurnal	0.03	0.18	0.00	0.21	0.02	0.12	0.00	0.14	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.40						
Hot Soak	0.06	0.14	0.00	0.20	0.04	0.11	0.00	0.15	0.01	0.03	0.00	0.04	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.41						
Running	0.44	1.05	0.00	1.50	0.19	1.04	0.00	1.22	0.05	0.34	0.00	0.39	0.06	0.15	0.21	0.00	0.21	0.00	0.05	3.37						
Resting	0.02	0.09	0.00	0.11	0.01	0.06	0.00	0.07	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.20						
Total	1.02	3.90	0.01	4.93	0.83	3.21	0.01	4.04	0.22	1.12	0.04	1.38	0.31	0.57	0.88	0.26	1.13	0.13	0.30	11.92						
Carbon Monoxide Emissions																										
Run Exh	4.09	25.89	0.02	30.00	5.82	25.07	0.04	30.93	1.70	6.31	0.12	8.12	2.14	4.17	6.31	1.14	7.45	1.02	2.58	80.10						
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.02	0.02	0.09	0.11	0.00	0.00	0.15						
Start Ex	0.81	13.59	0.00	14.39	0.60	10.95	0.00	11.55	0.37	3.72	0.00	4.09	1.51	2.56	4.07	0.00	4.07	0.05	0.09	34.26						
Total Ex	4.90	39.47	0.02	44.39	6.42	36.03	0.04	42.49	2.07	10.07	0.12	12.26	3.66	6.75	10.41	1.22	11.63	1.07	2.67	114.51						
Oxides of Nitrogen Emissions																										
Run Exh	0.27	3.15	0.03	3.45	0.37	3.54	0.08	3.99	0.09	1.27	0.55	1.92	0.07	1.01	1.07	5.80	6.87	0.61	0.08	16.92						
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	0.26	0.26	0.00	0.00	0.27						
Start Ex	0.04	0.80	0.00	0.83	0.03	0.73	0.00	0.75	0.01	0.44	0.00	0.45	0.02	0.34	0.37	0.00	0.37	0.00	0.00	2.41						
Total Ex	0.31	3.94	0.03	4.28	0.40	4.26	0.08	4.74	0.10	1.71	0.56	2.37	0.09	1.35	1.44	6.06	7.50	0.62	0.08	19.60						
Carbon Dioxide Emissions (000)																										
Run Exh	0.03	2.31	0.01	2.35	0.04	1.67	0.02	1.74	0.01	0.77	0.05	0.84	0.01	0.09	0.10	0.79	0.89	0.07	0.01	5.89						
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	0.01	0.10	0.00	0.10	0.00	0.08	0.00	0.08	0.00	0.03	0.00	0.03	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.22						
Total Ex	0.04	2.41	0.01	2.45	0.05	1.75	0.02	1.82	0.01	0.80	0.05	0.87	0.01	0.09	0.11	0.80	0.91	0.07	0.01	6.12						
PM10 Emissions																										
Run Exh	0.00	0.07	0.00	0.08	0.00	0.07	0.00	0.07	0.00	0.02	0.01	0.03	0.00	0.00	0.00	0.13	0.14	0.01	0.00	0.33						
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	0.01	0.01	0.00	0.01						
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	0.08	0.00	0.09	0.00	0.08	0.00	0.08	0.00	0.03	0.01	0.03	0.00	0.00	0.00	0.14	0.14	0.01	0.00	0.36						
TireWear	0.00	0.05	0.00	0.05	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	0.10						
BrakeWtr	0.00	0.08	0.00	0.08	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.15						
Total	0.00	0.21	0.00	0.21	0.00	0.15	0.01	0.16	0.00	0.05	0.01	0.06	0.00	0.01	0.01	0.16	0.16	0.01	0.00	0.61						
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	0.07	0.07	0.01	0.00	0.14						
Fuel Consumption (000 gallons)																										
Gasoline	4.53	254.20	0.00	258.73	5.89	185.62	0.00	191.51	1.56	84.05	0.00	85.62	1.83	10.94	12.77	0.00	12.77	1.67	1.25	551.54						
Diesel	0.00	0.00	0.66	0.66	0.00	0.00	1.87	1.87	0.00	0.00	4.75	4.75	0.00	0.00	0.00	72.13	72.13	5.12	0.00	84.52						

Title : South Central Coast 2010 Summer  
Version : Emfac2002 V2.2 Apr 23 2003 \*\* WIS Enabled \*\*  
Run Date : 04/06/04 08:24:18  
Scen Year: 2010 -- Model Years: 1965 to 2010  
Season : Summer  
Area : Santa Barbara (SCC)  
I/M Stat : I and M program in effect  
Emissions: Tons Per Day

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty Trucks				Urban Buses	Motor-cycles	All Vehicles	
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Gasoline Trucks	Cat	Total				Diesel Trucks
Vehicles	2259.	174619.	517.	177395.	1746.	107568.	1279.	110593.	393.	28219.	1820.	30432.	418.	5459.	5876.	4634.	10510.	297.	7039.	336266.
VMT/1000	20.	5920.	9.	5949.	37.	3520.	37.	3594.	8.	1014.	94.	1116.	5.	119.	124.	449.	573.	38.	59.	11329.
Trips	10378.	1248640.	3117.	1262140.	8660.	809144.	9273.	827076.	3233.	324896.	21971.	350099.	6967.	52356.	59322.	72236.	131558.	1187.	9651.	2581710.
Reactive Organic Gas Emissions																				
Run Exh	0.13	0.62	0.00	0.76	0.24	0.69	0.01	0.94	0.06	0.25	0.03	0.34	0.04	0.15	0.19	0.20	0.39	0.12	0.20	2.75
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	0.85	0.00	0.90	0.05	0.69	0.00	0.74	0.02	0.28	0.00	0.31	0.08	0.14	0.21	0.00	0.21	0.00	0.02	2.19
Total Ex	0.19	1.47	0.00	1.66	0.28	1.39	0.01	1.67	0.08	0.54	0.03	0.65	0.12	0.29	0.41	0.22	0.63	0.12	0.22	4.96
Diurnal	0.01	0.15	0.00	0.17	0.01	0.12	0.00	0.13	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.33
Hot Soak	0.03	0.12	0.00	0.14	0.02	0.10	0.00	0.12	0.00	0.03	0.00	0.03	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.30
Running	0.18	0.72	0.00	0.90	0.08	1.00	0.00	1.08	0.02	0.33	0.00	0.35	0.03	0.17	0.20	0.00	0.20	0.00	0.02	2.56
Resting	0.01	0.09	0.00	0.10	0.01	0.07	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.19
Total	0.41	2.54	0.00	2.96	0.40	2.66	0.01	3.07	0.11	0.94	0.03	1.08	0.15	0.46	0.62	0.22	0.83	0.13	0.27	8.34
Carbon Monoxide Emissions																				
Run Exh	1.57	16.77	0.01	18.34	2.94	18.98	0.03	21.95	0.99	4.83	0.12	5.93	0.94	2.62	3.56	0.98	4.54	0.89	2.24	53.91
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.02	0.02	0.10	0.12	0.00	0.00	0.16
Start Ex	0.34	9.40	0.00	9.73	0.29	8.41	0.00	8.70	0.16	2.94	0.00	3.10	0.79	2.03	2.81	0.00	2.81	0.05	0.10	24.50
Total Ex	1.91	26.16	0.01	28.08	3.23	27.39	0.03	30.66	1.14	7.81	0.12	9.08	1.72	4.67	6.39	1.08	7.47	0.94	2.34	78.56
Oxides of Nitrogen Emissions																				
Run Exh	0.10	1.91	0.01	2.03	0.19	2.61	0.06	2.85	0.06	0.99	0.42	1.46	0.03	0.62	0.64	4.43	5.07	0.60	0.09	12.10
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	0.30	0.30	0.00	0.00	0.31
Start Ex	0.02	0.62	0.00	0.63	0.01	0.62	0.00	0.63	0.00	0.48	0.00	0.48	0.01	0.27	0.29	0.00	0.29	0.00	0.00	2.04
Total Ex	0.12	2.52	0.01	2.66	0.20	3.23	0.06	3.48	0.06	1.47	0.42	1.95	0.04	0.89	0.93	4.73	5.66	0.60	0.09	14.45
Carbon Dioxide Emissions (000)																				
Run Exh	0.01	2.43	0.00	2.45	0.02	1.79	0.01	1.83	0.01	0.80	0.05	0.86	0.00	0.09	0.09	0.96	1.06	0.07	0.01	6.27
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	0.02
Start Ex	0.00	0.10	0.00	0.10	0.00	0.08	0.00	0.08	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	0.01	2.53	0.00	2.55	0.02	1.87	0.01	1.91	0.01	0.83	0.05	0.89	0.01	0.09	0.10	0.98	1.08	0.07	0.01	6.51
PM10 Emissions																				
Run Exh	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.03	0.01	0.03	0.00	0.00	0.00	0.11	0.11	0.01	0.00	0.32
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	0.00	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	0.09	0.00	0.09	0.00	0.09	0.00	0.09	0.00	0.03	0.01	0.04	0.00	0.00	0.00	0.11	0.11	0.01	0.00	0.35
TireWear	0.00	0.05	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.11
BrakeWr	0.00	0.08	0.00	0.08	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	0.16
Total	0.00	0.22	0.00	0.22	0.00	0.17	0.00	0.17	0.00	0.06	0.01	0.06	0.00	0.00	0.00	0.13	0.14	0.01	0.00	0.61
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	1.77	263.95	0.00	265.72	2.94	196.84	0.00	199.78	0.83	86.58	0.00	87.41	0.86	10.11	10.97	0.00	10.97	1.69	1.44	567.02
Diesel	0.00	0.00	0.32	0.32	0.00	0.00	1.28	1.28	0.00	0.00	4.59	4.59	0.00	0.00	0.00	88.17	88.17	5.40	0.00	99.77

Title : South Central Coast 2015 Summer 2004 CAP  
Version : Emfac2002 V2.2 Apr 23 2003 \*\* WIS Enabled \*\*  
Run Date : 03/16/04 08:33:40  
Scen Year: 2015 -- Model Years: 1970 to 2015  
Season : Summer  
Area : Santa Barbara (SCC)  
I/M Stat : I and M program in effect  
Emissions: Tons Per Day

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty 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	Diesel Trucks	Total Trucks			
Vehicles	674.	187827.	260.	188761.	680.	115995.	890.	117565.	181.	30322.	1851.	32354.	140.	5720.	5860.	5214.	11074.	313.	7483.	357550.
VMT/1000	5.	6274.	4.	6284.	14.	3757.	24.	3794.	4.	1054.	88.	1146.	2.	116.	118.	522.	640.	40.	64.	11968.
Trips	2901.	1303330.	1420.	1307650.	3127.	843994.	6008.	853129.	1199.	337365.	22326.	360889.	2860.	47530.	50390.	80220.	130610.	1251.	10016.	2663540.
Reactive Organic Gas Emissions																				
Run Exh	0.03	0.36	0.00	0.40	0.09	0.49	0.00	0.58	0.03	0.18	0.03	0.23	0.01	0.08	0.09	0.16	0.25	0.12	0.19	1.78
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	0.02	0.51	0.00	0.53	0.02	0.47	0.00	0.49	0.01	0.22	0.00	0.23	0.03	0.10	0.13	0.00	0.13	0.00	0.02	1.40
Total Ex	0.05	0.87	0.00	0.92	0.11	0.96	0.00	1.07	0.04	0.40	0.03	0.47	0.04	0.18	0.23	0.18	0.40	0.13	0.22	3.21
Diurnal	0.00	0.13	0.00	0.13	0.00	0.11	0.00	0.11	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.28
Hot Soak	0.01	0.10	0.00	0.10	0.01	0.09	0.00	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Running	0.04	0.54	0.00	0.58	0.02	0.88	0.00	0.90	0.01	0.33	0.00	0.34	0.01	0.16	0.17	0.00	0.17	0.00	0.01	2.01
Resting	0.00	0.09	0.00	0.09	0.00	0.07	0.00	0.08	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
Total	0.11	1.72	0.00	1.83	0.14	2.12	0.00	2.26	0.05	0.80	0.03	0.88	0.06	0.35	0.40	0.18	0.58	0.13	0.25	5.93
Carbon Monoxide Emissions																				
Run Exh	0.41	10.87	0.00	11.28	1.12	13.84	0.02	14.99	0.49	3.70	0.11	4.30	0.31	1.45	1.76	0.84	2.60	0.75	1.83	35.74
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.02	0.02	0.11	0.13	0.00	0.00	0.17
Start Ex	0.09	6.22	0.00	6.31	0.11	5.97	0.00	6.07	0.06	2.25	0.00	2.32	0.30	1.47	1.78	0.00	1.78	0.05	0.11	16.63
Total Ex	0.50	17.08	0.00	17.58	1.23	19.81	0.02	21.06	0.55	5.99	0.11	6.65	0.61	2.94	3.55	0.95	4.50	0.80	1.94	52.54
Oxides of Nitrogen Emissions																				
Run Exh	0.03	1.16	0.01	1.20	0.07	1.85	0.04	1.96	0.03	0.72	0.27	1.02	0.01	0.33	0.34	2.70	3.04	0.57	0.09	7.87
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.34	0.34	0.00	0.00	0.35
Start Ex	0.00	0.41	0.00	0.42	0.00	0.46	0.00	0.46	0.00	0.45	0.00	0.45	0.00	0.20	0.20	0.00	0.20	0.00	0.00	1.54
Total Ex	0.03	1.58	0.01	1.62	0.07	2.31	0.04	2.42	0.03	1.18	0.27	1.48	0.01	0.53	0.54	3.05	3.59	0.58	0.09	9.76
Carbon Dioxide Emissions (000)																				
Run Exh	0.00	2.57	0.00	2.57	0.01	1.93	0.01	1.95	0.00	0.83	0.05	0.88	0.00	0.09	0.09	1.13	1.22	0.08	0.01	6.71
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	0.02
Start Ex	0.00	0.10	0.00	0.10	0.00	0.08	0.00	0.08	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	0.00	2.67	0.00	2.68	0.01	2.02	0.01	2.03	0.00	0.86	0.05	0.91	0.00	0.09	0.09	1.15	1.24	0.08	0.01	6.95
PM10 Emissions																				
Run Exh	0.00	0.09	0.00	0.09	0.00	0.09	0.00	0.09	0.00	0.03	0.00	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	0.01	0.01	0.00	0.00	0.01
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	0.10	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	0.09	0.09	0.01	0.00	0.34
TireWear	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.12
BrakeWr	0.00	0.09	0.00	0.09	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	0.17
Total	0.00	0.24	0.00	0.24	0.00	0.19	0.00	0.19	0.00	0.06	0.01	0.07	0.00	0.00	0.00	0.11	0.11	0.01	0.00	0.62
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	0.47	276.60	0.00	277.07	1.11	209.93	0.00	211.04	0.38	89.31	0.00	89.70	0.31	9.65	9.96	0.00	9.96	1.74	1.58	591.09
Diesel	0.00	0.00	0.14	0.14	0.00	0.00	0.83	0.83	0.00	0.00	4.36	4.36	0.00	0.00	0.00	103.46	103.46	5.57	0.00	114.36

Title : South Central Coast Air Basin Subarea 2020 Summer Default Title  
Version : Emfac2002 V2.2 Apr 23 2003 \*\* WIS Enabled \*\*  
Run Date : 02/24/04 10:10:04  
Scen Year: 2020 -- Model Years: 1975 to 2020  
Season : Summer  
Area : Santa Barbara (SCC)  
I/M Stat : I and M program in effect  
Emissions: Tons Per Day

	- - - Light Duty Passenger Cars - - -				- - - - Light Duty Trucks - - - -				- - - - Medium Duty Trucks - - - -				- - - - Heavy Duty 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	Diesel	Total				
Vehicles	44.	197209.	120.	197373.	70.	122050.	554.	122675.	44.	31908.	1806.	33758.	12.	5892.	5904.	5655.	11559.	327.	7805.	373497.
VMT/1000	0.	6511.	2.	6513.	1.	3922.	14.	3937.	1.	1083.	82.	1167.	0.	115.	115.	552.	667.	42.	66.	12392.
Trips	187.	1359070.	635.	1359890.	319.	879177.	3549.	883045.	217.	351202.	22512.	373931.	220.	44772.	44993.	86362.	131355.	1308.	10428.	2759960.
Reactive Organic Gas Emissions																				
Run Exh	0.00	0.19	0.00	0.19	0.00	0.29	0.00	0.29	0.01	0.11	0.02	0.14	0.00	0.04	0.04	0.13	0.17	0.12	0.19	1.10
Idle Exh	0.00	0.03	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	0.32	0.00	0.32	0.00	0.32	0.00	0.32	0.00	0.16	0.00	0.16	0.00	0.07	0.07	0.00	0.07	0.00	0.02	0.90
Total Ex	0.00	0.51	0.00	0.51	0.00	0.61	0.00	0.61	0.01	0.28	0.02	0.31	0.00	0.11	0.12	0.15	0.27	0.12	0.21	2.03
Diurnal	0.00	0.11	0.00	0.11	0.00	0.10	0.00	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.25
Hot Soak	0.00	0.08	0.00	0.08	0.00	0.09	0.00	0.09	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Running	0.00	0.42	0.00	0.43	0.00	0.77	0.00	0.77	0.00	0.33	0.00	0.33	0.00	0.15	0.15	0.00	0.15	0.00	0.01	1.69
Resting	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.18
Total	0.00	1.20	0.00	1.21	0.01	1.64	0.00	1.64	0.01	0.68	0.02	0.71	0.00	0.27	0.27	0.15	0.42	0.13	0.24	4.35
Carbon Monoxide Emissions																				
Run Exh	0.02	6.87	0.00	6.89	0.12	9.50	0.01	9.62	0.17	2.66	0.10	2.92	0.03	0.75	0.78	0.78	1.55	0.55	1.67	23.21
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.01	0.01	0.12	0.14	0.00	0.00	0.18
Start Ex	0.00	4.09	0.00	4.09	0.01	4.20	0.00	4.21	0.02	1.74	0.00	1.75	0.03	1.07	1.10	0.00	1.10	0.05	0.11	11.31
Total Ex	0.02	10.96	0.00	10.99	0.13	13.69	0.01	13.83	0.18	4.43	0.10	4.72	0.05	1.83	1.89	0.90	2.78	0.59	1.78	34.70
Oxides of Nitrogen Emissions																				
Run Exh	0.00	0.72	0.00	0.72	0.01	1.27	0.02	1.30	0.01	0.50	0.18	0.69	0.00	0.18	0.18	1.66	1.84	0.52	0.09	5.15
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	0.37	0.37	0.00	0.00	0.38
Start Ex	0.00	0.26	0.00	0.26	0.00	0.32	0.00	0.32	0.00	0.41	0.00	0.41	0.00	0.14	0.14	0.00	0.14	0.01	0.00	1.14
Total Ex	0.00	0.98	0.00	0.98	0.01	1.59	0.02	1.62	0.01	0.91	0.18	1.10	0.00	0.32	0.32	2.03	2.35	0.53	0.09	6.67
Carbon Dioxide Emissions (000)																				
Run Exh	0.00	2.46	0.00	2.46	0.00	1.88	0.01	1.88	0.00	0.80	0.05	0.85	0.00	0.09	0.09	1.20	1.28	0.08	0.01	6.57
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	0.02
Start Ex	0.00	0.11	0.00	0.11	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	0.23
Total Ex	0.00	2.57	0.00	2.57	0.00	1.96	0.01	1.97	0.00	0.84	0.05	0.88	0.00	0.09	0.09	1.22	1.30	0.08	0.01	6.82
PM10 Emissions																				
Run Exh	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.06	0.07	0.01	0.00	0.27
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	0.00	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	0.09	0.00	0.09	0.00	0.09	0.00	0.09	0.00	0.03	0.00	0.04	0.00	0.00	0.00	0.07	0.07	0.01	0.00	0.30
TireWear	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.12
BrakeWear	0.00	0.09	0.00	0.09	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	0.17
Total	0.00	0.23	0.00	0.24	0.00	0.18	0.00	0.18	0.00	0.06	0.01	0.07	0.00	0.00	0.00	0.09	0.10	0.01	0.00	0.60
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	0.07
Fuel Consumption (000 gallons)																				
Gasoline	0.03	264.76	0.00	264.79	0.11	203.36	0.00	203.47	0.11	86.54	0.00	86.65	0.03	9.41	9.44	0.00	9.44	1.80	1.62	567.76
Diesel	0.00	0.00	0.06	0.06	0.00	0.48	0.00	0.48	0.00	0.00	4.13	4.13	0.00	0.00	0.00	109.45	109.45	5.64	0.00	119.77

## **CHAPTER 6**

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### **EMISSION FORECASTING**

**Introduction**

**Emission Forecast**

**Emission Inventories**

**Impacts of Marine Shipping Emissions**

**Conclusions**

## **6. EMISSION FORECASTING**

### **6.1 INTRODUCTION**

This chapter presents the four emission inventory forecasts used in the development of this 2004 Plan. These inventories are the 2005, 2010, 2015 and 2020 Planning Emission Inventory forecasts of reactive organic compounds (ROC) and oxides of nitrogen (NO<sub>x</sub>) emissions in Santa Barbara County and the Outer Continental Shelf (OCS), offshore of Santa Barbara County.

The 2005, 2010, 2015 and 2020 Planning Emission Inventory forecasts are based on the 2000 Planning Emission Inventory, which is described in Chapter 3, Emission Inventory. This 2000 Planning Emission Inventory is the base year for emission forecasting and was developed by modifying the 2000 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 1-hour 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 2000 Planning Emission Inventory is used to forecast emissions in order to determine whether the emission control measures described in Chapters 4 and 5 of the 2004 Plan will reduce enough emissions in order to attain the State 1-hour ozone standard, while accounting for the growth that is

expected 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 APCD is not able to provide modeling analyses for this 2004 Plan.

To forecast future year emissions, estimates of the changes in the level of pollution producing activities, known as “activity indicators”, are used to grow the 2000 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 2000 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 2<sup>nd</sup> quarter of 2004. 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 2<sup>nd</sup> quarter of 2004, were 0.2504 tons per day of ROC and 0.4191 tons per day of NO<sub>x</sub>. 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**

<b>SANTA BARBARA COUNTY SOURCE REGISTER ERC's</b> <b>(As of 2<sup>nd</sup> Quarter 2004) (Tons per day)</b>		
	<b>ROC</b>	<b>NOx</b>
<b>Arguello, Inc.</b>	0.1039	0.0011
<b>Chevron-Texaco</b>	0.0194	0.0000
<b>Nuevo Energy Company</b>	0.0525	0.0140
<b>POPCO</b>	0.0004	0.0005
<b>Southern California Gas Company</b>	0.0301	0.0003
<b>US Air Force – VAFB*</b>	0.0441	0.4031
<b>TOTAL SOURCE REGISTER ERC's</b>	<b>0.2504</b>	<b>0.4191</b>

#### 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 2005, 2010, 2015 and 2020 forecast levels of activity to the 2000 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 2000 value. Table 6-7 provides the 2000 level of activity, the predicted 2005, 2010, 2015 and 2020 levels of activity, the activity factors, and the source of the forecast for each of the activity indicators.

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

Note that the activity indicator for OCS Oil and Gas Production has been set to 1.0 or “no-growth.” The recommendation to use a no-growth activity factor came from the Santa Barbara County Air Pollution Control District Community Advisory Council after deliberation of what the future projection of the OCS Production should be. The Community Advisory Council considered potential OCS growth scenarios identified in the federal Minerals Management Service’s California Offshore Oil and Gas Energy Resources (COOGER) study. The COOGER study presents several scenarios of future growth for the OCS, including a “future baseline” scenario that projects existing OCS platforms to decline steeply in production over the next fifteen years. The COOGER study also presents scenarios that project substantial growth and development of future platforms from existing undeveloped leases. The Council noted that, since any future oil and gas production on the OCS will be required to be permitted under New Source Review/Prevention of Significant Deterioration process, any potential increase in emissions must be offset to provide a net emission benefit from the new OCS production activity. This would also ensure consistency of these future projects with this Plan. Therefore, the Council recommended that the activity indicator for OCS Production should be set to no-growth as a reasonable assumption of future oil and gas production emissions on the OCS.

An activity indicator was assigned to each Stationary Source and Area-Wide Source category described in Chapter 3, with the exception of categories of On-Road Motor Vehicles and Other Mobile Sources, Consumer Products and Architectural Coatings, which are derived from ARB’s EMFAC2000 and OFFROAD Models, respectively. The ARB has provided the APCD with emission forecasts for all of these source categories.

## 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 were 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 2004 Plan as this Plan addresses only State planning requirements, projected ABL emissions are presented in this Plan so that the inventory for VAFB is consistent with the 2001 Plan. 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 Tables 6-3 and 6-5.

**TABLE 6 - 2**

<b>VANDENBERG AIR FORCE BASE (VAFB) AIRBORNE LASER (ABL) MISSION*</b>		
	<b>ROC</b>	<b>NO<sub>x</sub></b>
	<i>(Tons per day)</i>	<i>(Tons per day)</i>
<b>Projected 2005 Emissions for the ABL Mission by VAFB</b>	0.0552	0.0634
<b>Projected 2010 Emissions for the ABL Mission by VAFB</b>	0.0656	0.4867
<b>Projected 2015 Emissions for the ABL Mission by VAFB</b>	0.0656	0.4867
<b>Projected 2020 Emissions for the ABL Mission by VAFB</b>	0.0656	0.4867
<b>Source Register ERC's required to offset the ABL Mission</b>	0.0000	0.1265
<b>2005 Emissions added to the 2004 Plan for the ABL</b>	0.0552	0.0000
<b>2010 Emissions added to the 2004 Plan for the ABL</b>	0.0656	0.3602
<b>2015 Emissions added to the 2004 Plan for the ABL</b>	0.0656	0.3602
<b>2020 Emissions added to the 2004 Plan for the ABL</b>	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 FORECASTED EMISSION INVENTORIES**

Planning emission inventory forecasts for 2005, 2010, 2015 and 2020 for both Santa Barbara County and the OCS are presented in Tables 6-3 through 6-6 and Figures 6-1 through 6-12, located at the end of the chapter. Tables 6-3 through 6-6 provide a detailed summary of both ROC and NO<sub>x</sub> emissions for each emission source category and for each forecast year. These tables also include base year (2000) estimates for each source category for ease of comparison with forecasted emissions. Table 6-7 presents activity data that were utilized to grow base year emissions data. Figures 6-1 and 6-2 present a graphical time series representation of ROC and NO<sub>x</sub> emissions for both Santa Barbara County and the OCS. Figures 6-3 through 6-10 categorize Santa Barbara County and OCS emissions for both ROC and NO<sub>x</sub> by major emission category (stationary, area and mobile sources). Figure 6-11 shows total NO<sub>x</sub> emissions from both Santa Barbara County and the OCS, while Figure 6-12 shows combined Santa Barbara County and OCS NO<sub>x</sub> emissions, but does not include emissions from marine shipping.

The bar graph presented in Figure 6-1 shows that Santa Barbara County onshore NOx and ROC emissions are expected to decrease continually through 2020. Total onshore ROC emissions are forecasted to decrease from 41.84 tons per day in 2000 to 29.69 tons per day in 2020 representing a 29 percent decrease in emissions. Total onshore NOx emissions are projected to decrease from 43.89 tons per day in 2000 to 21.66 tons per day by 2020, about a 51 percent decrease in emissions.

On a source category basis, ROC emissions from onshore stationary sources are forecasted to increase from 10.06 tons per day in 2000 to 11.49 tons per day in 2020 while NOx emissions from onshore stationary sources are expected to increase from 5.57 tons per day in 2000 to 6.74 tons per day in 2020. ROC emissions from area-wide sources are forecasted to increase from 7.94 tons per day in 2000 to 10.16 tons per day in 2020. Area-wide NOx emissions are predicted to increase from 0.48 tons per day in 2000 to 1.23 tons per day by 2020.

The largest decreases in both onshore NOx and ROC emissions are attributable to decreased emissions from on-road mobile sources. ROC emissions from onshore mobile sources are projected to decrease from 23.85 tons per day in 2000 to 8.03 tons per day in 2020 (66 percent decrease), while NOx emissions from on-road mobile sources are expected to decrease to 13.69 tons per day by 2020 from 37.83 tons per day in 2000 (64 percent decrease).

Figure 6-2 presents forecasts for OCS ROC and NOx emissions. The figure shows that total offshore ROC emissions are predicted to increase from 2.92 tons per day in 2000 to 3.36 tons per day in 2020. Total offshore NOx emissions are anticipated to increase from 33.37 tons per day in 2000 to 65.59 tons per day in 2020. Mobile sources on the OCS, predominately marine shipping, account for all of the anticipated growth in OCS ROC and NOx emissions. ROC emissions from OCS mobile sources are expected to increase from 1.77 tons per day in 2000 to 2.22 tons per day in 2020, while OCS mobile source NOx emissions are forecasted to increase from 32.55 tons per day in 2000 to 64.77 tons per day in 2020.

As shown in Figure 6-3, mobile sources (on-road and other mobile sources) are forecasted to account for 50 percent of total onshore ROC emissions and 81 percent of the onshore NOx emissions in 2005. By 2020, mobile sources are predicted to account for 30 percent of the onshore ROC emissions and 63 percent of the onshore NOx emissions as presented in Figure 6-9.

Although total onshore emissions of ROC and NOx from stationary and area sources increase only slightly from 2005 to 2020, their relative contributions to overall onshore emissions increase considerably due to significant reductions of both ROG and NOx emissions from on-road mobile sources through the planning horizon. As displayed in figures 6-3 and 6-9, the relative percentage of total ROC emissions from onshore stationary sources increases from 23 percent in 2005 to 31 percent in 2020, while NOx emissions from onshore stationary sources increases from 16 percent in 2005 to 31 percent of overall onshore inventory in 2020. Area wide ROC emissions are forecasted to increase from 27 percent of total onshore emissions in 2005 to 39 percent of the total onshore inventory by 2020. The projected contribution from area-wide NOx emissions increases from 3 percent in 2005 to 6 percent of the NOx inventory by 2020.

#### **6.4 IMPACTS OF MARINE SHIPPING EMISSIONS**

As discussed in the previous section, onshore Santa Barbara County emissions of ROC and NOx are expected to decrease significantly by 2020, primarily from reductions in on-road mobile emissions and through the implementation of the State Act's every feasible measure requirements. While Santa Barbara County onshore emissions are forecasted to substantially decrease during the planning horizon, OCS NOx emissions are expected to dramatically increase from base year levels. These increases in NOx emissions are the result of projected growth in marine shipping activities, which are estimated to double from 2000 levels by 2020.

Figure 6-11 presents combined OCS and onshore NOx forecasts out to 2020. This figure clearly illustrates that increases in NOx emissions from marine vessels will overwhelm stationary source NOx reductions that will be achieved by implementing every feasible measure strategies and by significant decreases in NOx from on-road mobile sources. Combined NOx emissions from onshore

and OCS sources are anticipated to grow from 77.25 tons per day in 2000 to 78.49 tons per day by 2005. By 2020, combined NOx emissions are anticipated to increase to 87.14 tons per day, about 13 percent higher than base year estimates.

NOx emissions from marine shipping alone (excluding commercial and recreational boats) are expected to grow to 38.1 tons per day by 2005 from base year estimates of 32.1 tons per day, about a 19 percent increase. By 2020, marine vessel NOx emissions are forecasted to reach 64.2 tons per day, representing a two-fold increase from base year levels. At these growth rates, marine vessel NOx emissions will account for about 48 percent of the overall (onshore and OCS) NOx inventory by 2005, increasing to approximately 74 percent of the total NOx inventory by 2020.

Figure 6-12 presents total onshore and OCS NOx 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 NOx emissions below baseline levels. Excluding marine shipping emissions, total onshore and OCS NOx emissions are predicted to be reduced from 44.4 tons per day in 2000 to 22.2 tons per day by 2020, which represents a 50 percent decrease in NOx emissions over the planning horizon. These data are presented because while onshore control strategies provide significant reductions in NOx 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.

It is important to note that increases in NOx 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<sub>x</sub>), 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 the ARB.

## **6.5 CONCLUSIONS**

This chapter presents the 2005, 2010, 2015 and 2020 Planning Emission Inventory Forecasts. The 2000 Planning Emission Inventory is used as the basis to calculate the 2005, 2010, 2015 and 2020 forecasts.

ROC emissions from onshore stationary and area-wide sources are forecasted to increase over base year levels by about 1.43 and 2.22 tons per day, respectively, by 2020. NO<sub>x</sub> emissions from onshore stationary sources are anticipated to increase from base year levels by 1.17 tons per day by 2020, while NO<sub>x</sub> increases over base year estimates are expected to be about 0.75 tons per day by 2020 for onshore area-wide sources.

These small increases in ROC and NO<sub>x</sub> 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 16 tons per day by 2020, while baseline NO<sub>x</sub> emissions are anticipated to decrease by about 24 tons per day by 2020. Mobile sources account for the highest percentage of overall onshore ROC emissions until 2015, when area-wide sources comprise the largest percentage contribution to the overall ROC onshore inventory. Although there are substantial reductions of NO<sub>x</sub> emissions from mobile sources through 2020, mobile sources are anticipated to comprise the largest portion of the total onshore NO<sub>x</sub> inventory for each of the planning years.

While reductions of onshore ROC and NOx 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 NOx and ROC emissions in the OCS are exclusively from significant growth that is forecasted for marine shipping. Marine shipping NOx emissions are expected to double between 2000 and 2020. The increases in marine vessel NOx emissions that are expected to occur will eliminate anticipated NOx emission reductions from onshore sources. Without the contributions from this large uncontrolled source of emissions, air quality in Santa Barbara County would clearly be improving. Further action from the federal government, USEPA and the ARB will be required to reduce emissions from marine shipping.

**TABLE 6 – 3****ROC Emission Inventory - Santa Barbara County***(Tons per day)*

	2000	2005	2010	2015	2020
<b>STATIONARY SOURCES</b>					
010 Electric Utilities	0.0109	0.0109	0.0109	0.0109	0.0109
020 Cogeneration	0.0349	0.0312	0.0290	0.0267	0.0246
030 Oil and Gas Production (Combustion)	0.5085	0.6348	0.5878	0.5402	0.4973
040 Petroleum Refining (Combustion)	0.0024	0.0034	0.0032	0.0029	0.0027
050 Manufacturing and Industrial	0.0999	0.1196	0.1348	0.1499	0.1650
052 Food and Agricultural Processing	0.1113	0.1063	0.1042	0.1020	0.0999
060 Service and Commercial	0.0427	0.1108	0.1143	0.1179	0.1211
099 Other (Fuel Combustion)	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>FUEL COMBUSTION TOTAL</i></b>	<b>0.8106</b>	<b>1.0171</b>	<b>0.9841</b>	<b>0.9505</b>	<b>0.9216</b>
<b>WASTE DISPOSAL</b>					
110 Sewage Treatment	0.0003	0.0003	0.0003	0.0003	0.0003
120 Landfills	0.8450	0.5532	0.6219	0.6970	0.7527
130 Incinerators	0.0013	0.0014	0.0015	0.0015	0.0015
140 Soil Remediation	0.0000	0.0000	0.0000	0.0000	0.0000
199 Other (Waste Disposal)	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>WASTE DISPOSAL TOTAL</i></b>	<b>0.8466</b>	<b>0.5549</b>	<b>0.6237</b>	<b>0.6988</b>	<b>0.7545</b>
<b>CLEANING AND SURFACE COATINGS</b>					
210 Laundering	0.0015	0.0442	0.0468	0.0495	0.0512
220 Degreasing	2.4343	2.5071	2.7814	3.0474	3.3134
230 Coatings and Related Process Solvents	1.5949	1.8494	2.0272	2.2422	2.4574
240 Printing	0.4376	0.4778	0.4680	0.4943	0.5116
250 Adhesives and Sealants	0.8042	0.9436	1.0630	1.1822	1.3016
299 Other (Cleaning and Surface Coatings)	0.0901	0.1057	0.1103	0.1266	0.1350
<b><i>CLEANING AND SURFACE COATINGS TOTAL</i></b>	<b>5.3626</b>	<b>5.9278</b>	<b>6.4967</b>	<b>7.1383</b>	<b>7.7702</b>
<b>PETROLEUM PRODUCTION AND MARKETING</b>					
310 Oil and Gas Production	2.2796	1.8964	1.5766	1.2270	0.8854
320 Petroleum Refining	0.0451	0.0403	0.0374	0.0344	0.0317
330 Petroleum Marketing	0.5202	0.5419	0.5680	0.5941	0.6117
<b><i>PETROLEUM PRODUCTION AND MARKETING TOTAL</i></b>	<b>2.8449</b>	<b>2.4786</b>	<b>2.1821</b>	<b>1.8555</b>	<b>1.5289</b>

**TABLE 6 – 3**

**ROC Emission Inventory - Santa Barbara County**  
*(Tons per day)*

	2000	2005	2010	2015	2020
<b><i>INDUSTRIAL PROCESSES</i></b>					
410 Chemical	0.0183	0.0205	0.0231	0.0257	0.0283
420 Food and Agriculture	0.1210	0.1298	0.1385	0.1473	0.1561
430 Mineral Processes	0.0087	0.0102	0.0115	0.0128	0.0141
440 Metal Processes	NA	NA	NA	NA	NA
450 Wood and Paper	NA	NA	NA	NA	NA
470 Electronics	0.0001	0.0002	0.0003	0.0002	0.0002
499 Other (Industrial Processes)	0.0423	0.0489	0.1147	0.0681	0.0681
<b><i>INDUSTRIAL PROCESSES TOTAL</i></b>	<b>0.1904</b>	<b>0.2096</b>	<b>0.2881</b>	<b>0.2540</b>	<b>0.2667</b>
<b>STATIONARY SOURCES TOTAL</b>	<b>10.0551</b>	<b>10.1880</b>	<b>10.6884</b>	<b>10.8972</b>	<b>11.2418</b>
<b>AREA-WIDE SOURCES</b>					
<b><i>SOLVENT EVAPORATION</i></b>					
510 Consumer Products	3.7150	3.4570	3.6970	3.9630	4.3060
520 Architectural Coatings and Related Process Solvents	1.8100	1.6530	1.7030	1.7570	1.8100
530 Pesticides/Fertilizers	1.9710	1.8839	1.8479	1.8113	1.7756
540 Asphalt Paving/Roofing	0.2337	0.2742	0.3089	0.3436	0.3783
<b><i>SOLVENT EVAPORATION TOTAL</i></b>	<b>7.7297</b>	<b>7.2682</b>	<b>7.5568</b>	<b>7.8749</b>	<b>8.2698</b>
<b><i>MISCELLANEOUS</i></b>					
610 Residential Fuel Combustion	0.1242	0.1334	0.1401	0.1462	0.1497
620 Farming Operations	0.0000	0.0000	0.0000	0.0000	0.0000
630 Construction and Demolition	0.0000	0.0000	0.0000	0.0000	0.0000
640 Paved Road Dust	0.0000	0.0000	0.0000	0.0000	0.0000
645 Unpaved Road Dust	0.0000	0.0000	0.0000	0.0000	0.0000
650 Fugitive Windblown Dust	0.0000	0.0000	0.0000	0.0000	0.0000
660 Fires	0.0034	0.0036	0.0038	0.0040	0.0041
670 Waste Burning and Disposal	0.0478	1.7000	1.6996	1.6992	1.6988
690 Cooking	0.0317	0.0340	0.0363	0.0386	0.0409
699 Other (Miscellaneous Processes)	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>MISCELLANEOUS TOTAL</i></b>	<b>0.2071</b>	<b>1.8710</b>	<b>1.8799</b>	<b>1.8880</b>	<b>1.8936</b>
<b>AREA-WIDE SOURCES TOTAL</b>	<b>7.9368</b>	<b>9.1392</b>	<b>9.4367</b>	<b>9.7629</b>	<b>10.1634</b>

**TABLE 6 – 3**

**ROC Emission Inventory - Santa Barbara County**  
*(Tons per day)*

	2000	2005	2010	2015	2020
<b>MOBILE SOURCES</b>					
<b><i>ON-ROAD MOTOR VEHICLES</i></b>					
710 Light Duty Passenger (LDA)	7.8343	4.9529	2.9669	1.8468	1.2223
722 Light Duty Trucks - 1 (LDT1)	2.9786	2.2504	1.6098	1.1755	0.8422
723 Light Duty Trucks - 2 (LDT2)	2.1553	1.7817	1.4321	1.0777	0.8063
724 Medium Duty Trucks (MDV)	1.1997	0.9784	0.7882	0.6171	0.4632
732 Light Heavy Duty Gas Trucks - 1 (LHDV1)	0.6420	0.2449	0.1589	0.1499	0.1654
733 Light Heavy Duty Gas Trucks - 2 (LHDV2)	0.1179	0.1035	0.0903	0.0278	0.0571
734 Medium Heavy Duty Gas Trucks (MHDV)	0.5031	0.3591	0.2516	0.1723	0.1173
736 Heavy Heavy Duty Gas Trucks (HHDV)	0.4154	0.3698	0.2694	0.1795	0.1282
742 Light Heavy Duty Diesel Trucks - 1 (LHDV1)	0.0090	0.0200	0.0190	0.0150	0.0120
743 Light Heavy Duty Diesel Trucks- 2 (LHDV1)	0.0160	0.0190	0.0170	0.0130	0.0100
744 Medium Heavy Duty Diesel Trucks (MHDV)	0.0500	0.0530	0.0480	0.0410	0.0350
746 Heavy Heavy Duty Diesel Trucks (HHDV)	0.2520	0.2310	0.1910	0.1470	0.1250
750 Motorcycles (MCY)	0.3197	0.2990	0.2593	0.2366	0.2272
760 Heavy Duty Diesel Urban Buses (UB)	0.0240	0.0250	0.0250	0.0230	0.0210
762 Heavy Duty Gas Urban Buses (UB)	0.1006	0.0973	0.0896	0.8097	0.0897
770 School Buses (SB)	0.0279	0.0240	0.0210	0.0204	0.0205
780 Motor Homes (MH)	0.1265	0.1011	0.0561	0.0283	0.0120
<b><i>ON-ROAD MOTOR VEHICLES TOTAL</i></b>	<b>16.7720</b>	<b>11.9101</b>	<b>8.2933</b>	<b>5.9057</b>	<b>4.3545</b>
<b><i>OTHER MOBILE SOURCES</i></b>					
810 Aircraft	0.6996	0.7603	0.8208	0.8805	0.9400
820 Trains	0.0738	0.0984	0.1230	0.1275	0.1320
830 Ships and Commercial Boats	0.1122	0.1195	0.1267	0.1339	0.1411
840 Recreational Boats	0.6845	0.5065	0.3300	0.2115	0.1635
850 Off-Road Recreational Vehicles	0.4734	0.3967	0.4037	0.4117	0.4187
860 Off-Road Equipment	3.3080	2.3430	1.7410	1.4840	1.2860
870 Farm Equipment	0.6290	0.5410	0.4210	0.2960	0.2150
890 Fuel Storage and Handling	1.0940	0.3600	0.3010	0.3090	0.3170
<b><i>OTHER MOBILE SOURCES TOTAL</i></b>	<b>7.0745</b>	<b>5.1254</b>	<b>4.2672</b>	<b>3.8540</b>	<b>3.6132</b>
<b>MOBILE SOURCES TOTAL</b>	<b>23.8465</b>	<b>17.0355</b>	<b>12.5605</b>	<b>9.7597</b>	<b>7.9677</b>
Vandenberg Air Force Airborne Laser (ABL) Mission	NA	0.0552	0.0656	0.0656	0.0656
Source Register Emission Reduction Credits	NA	0.2504	0.2504	0.2504	0.2504
<b>SANTA BARBARA COUNTY</b>					
<b>ROC EMISSION INVENTORY TOTAL</b>	<b>41.8384</b>	<b>36.6653</b>	<b>33.0016</b>	<b>30.7358</b>	<b>29.6890</b>

**TABLE 6 – 4**  
**ROC Emission Inventory**  
**Outer Continental Shelf**  
*(Tons per day)*

	2000	2005	2010	2015	2020
<b>STATIONARY SOURCES</b>					
<b><i>FUEL COMBUSTION</i></b>					
030 Oil and Gas Production (Combustion)	0.0898	0.0907	0.0908	0.0908	0.0908
<b><i>FUEL COMBUSTION TOTAL</i></b>	<b>0.0898</b>	<b>0.0907</b>	<b>0.0908</b>	<b>0.0908</b>	<b>0.0908</b>
<b><i>CLEANING AND SURFACE COATINGS</i></b>					
230 Coatings and Related Process Solvents	0.1004	0.1004	0.0990	0.0990	0.0990
<b><i>CLEANING AND SURFACE COATINGS TOTAL</i></b>	<b>0.1004</b>	<b>0.1004</b>	<b>0.0990</b>	<b>0.0990</b>	<b>0.0990</b>
<b><i>PETROLEUM PRODUCTION AND MARKETING</i></b>					
310 Oil and Gas Production	0.9511	0.9511	0.9511	0.9511	0.9511
<b><i>PETROLEUM PRODUCTION AND MARKETING TOTAL</i></b>	<b>0.9511</b>	<b>0.9511</b>	<b>0.9511</b>	<b>0.9511</b>	<b>0.9511</b>
<b><i>INDUSTRIAL PROCESSES</i></b>					
430 Mineral Processes	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>INDUSTRIAL PROCESSES TOTAL</i></b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>
<b>STATIONARY SOURCES TOTAL</b>	<b>1.1413</b>	<b>1.1422</b>	<b>1.1409</b>	<b>1.1409</b>	<b>1.1409</b>
<b>MOBILE SOURCES</b>					
<b><i>OTHER MOBILE SOURCES</i></b>					
810 Aircraft	0.0203	0.0203	0.0203	0.0203	0.0203
830 Ships and Commercial Boats	1.0678	1.2493	1.4227	1.7208	2.0319
840 Recreational Boats	0.6845	0.5065	0.3300	0.2115	0.1635
<b><i>OTHER MOBILE SOURCES TOTAL</i></b>	<b>1.7726</b>	<b>1.7761</b>	<b>1.7730</b>	<b>1.9526</b>	<b>2.2157</b>
<b>MOBILE SOURCES TOTAL</b>	<b>1.7726</b>	<b>1.7761</b>	<b>1.7730</b>	<b>1.9526</b>	<b>2.2157</b>
<b>OUTER CONTINENTAL SHELF</b>					
<b>ROC EMISSION INVENTORY TOTAL</b>	<b>2.9139</b>	<b>2.9183</b>	<b>2.9139</b>	<b>3.0935</b>	<b>3.3565</b>

**TABLE 6 – 5**

NOx Emission Inventory – Santa Barbara County

*(Tons per day)*

	2000	2005	2010	2015	2020
<b>STATIONARY SOURCES</b>					
010 Electric Utilities	0.0269	0.0269	0.0269	0.0269	0.0269
020 Cogeneration	0.1113	0.1000	0.0932	0.0862	0.0799
030 Oil and Gas Production (Combustion)	2.0129	1.4679	1.3335	1.2202	1.1179
040 Petroleum Refining (Combustion)	0.0498	0.0455	0.0422	0.0380	0.0343
050 Manufacturing and Industrial	1.3889	2.0356	2.2900	2.5464	2.8025
052 Food and Agricultural Processing	1.2516	1.1953	1.1715	1.1476	1.1238
060 Service and Commercial	0.4918	0.7124	0.7390	0.7655	0.7880
099 Other (Fuel Combustion)	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>FUEL COMBUSTION TOTAL</i></b>	<b>5.3332</b>	<b>5.5835</b>	<b>5.6963</b>	<b>5.8307</b>	<b>5.9732</b>
<b>WASTE DISPOSAL</b>					
110 Sewage Treatment	0.0093	0.0098	0.0101	0.0104	0.0107
120 Landfills	0.0152	0.0177	0.0199	0.0223	0.0241
130 Incinerators	0.0126	0.0132	0.0135	0.0138	0.0141
140 Soil Remediation	0.0000	0.0000	0.0000	0.0000	0.0000
199 Other (Waste Disposal)	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>WASTE DISPOSAL TOTAL</i></b>	<b>0.0371</b>	<b>0.0407</b>	<b>0.0435</b>	<b>0.0465</b>	<b>0.0489</b>
<b>CLEANING AND SURFACE COATINGS</b>					
210 Laundering	0.0000	0.0000	0.0000	0.0000	0.0000
220 Degreasing	0.0000	0.0000	0.0000	0.0000	0.0000
230 Coatings and Related Process Solvents	0.0000	0.0000	0.0000	0.0000	0.0000
240 Printing	0.0000	0.0000	0.0000	0.0000	0.0000
250 Adhesives and Sealants	0.0000	0.0000	0.0000	0.0000	0.0000
299 Other (Cleaning and Surface Coatings)	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>CLEANING AND SURFACE COATINGS TOTAL</i></b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>
<b>PETROLEUM PRODUCTION AND MARKETING</b>					
310 Oil and Gas Production	0.0614	0.0508	0.0425	0.0335	0.0247
320 Petroleum Refining	0.0001	0.0001	0.0001	0.0001	0.0001
330 Petroleum Marketing	0.0005	0.0006	0.0006	0.0006	0.0007
<b><i>PETROLEUM PRODUCTION AND MARKETING TOTAL</i></b>	<b>0.0620</b>	<b>0.0514</b>	<b>0.0432</b>	<b>0.0342</b>	<b>0.0255</b>

**TABLE 6 – 5**

NOx Emission Inventory – Santa Barbara County

*(Tons per day)*

	2000	2005	2010	2015	2020
<b><i>INDUSTRIAL PROCESSES</i></b>					
410 Chemical	0.0000	0.0000	0.0000	0.0000	0.0000
420 Food and Agriculture	0.0000	0.0000	0.0000	0.0000	0.0000
430 Mineral Processes	0.0532	0.0624	0.0703	0.0782	0.0861
440 Metal Processes	NA	NA	NA	NA	NA
450 Wood and Paper	NA	NA	NA	NA	NA
470 Electronics	0.0000	0.0000	0.0000	0.0000	0.0000
499 Other (Industrial Processes)	0.0839	0.1612	0.2740	0.1918	0.1918
<b><i>INDUSTRIAL PROCESSES TOTAL</i></b>	<b>0.1371</b>	<b>0.2236</b>	<b>0.3444</b>	<b>0.2700</b>	<b>0.2779</b>
<b>STATIONARY SOURCES TOTAL</b>	<b>5.5694</b>	<b>5.8992</b>	<b>6.1273</b>	<b>6.1815</b>	<b>6.3256</b>
<b>AREA-WIDE SOURCES</b>					
<b><i>SOLVENT EVAPORATION</i></b>					
510 Consumer Products	0.0000	0.0000	0.0000	0.0000	0.0000
520 Architectural Coatings and Related Process Solvents	0.0000	0.0000	0.0000	0.0000	0.0000
530 Pesticides/Fertilizers	0.0000	0.0000	0.0000	0.0000	0.0000
540 Asphalt Paving/Roofing	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>SOLVENT EVAPORATION TOTAL</i></b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>
<b><i>MISCELLANEOUS</i></b>					
610 Residential Fuel Combustion	0.4675	0.5099	0.5373	0.5529	0.5417
620 Farming Operations	0.0000	0.0000	0.0000	0.0000	0.0000
630 Construction and Demolition	0.0000	0.0000	0.0000	0.0000	0.0000
640 Paved Road Dust	0.0000	0.0000	0.0000	0.0000	0.0000
645 Unpaved Road Dust	0.0000	0.0000	0.0000	0.0000	0.0000
650 Fugitive Windblown Dust	0.0000	0.0000	0.0000	0.0000	0.0000
660 Fires	0.0012	0.0012	0.0013	0.0014	0.0014
670 Waste Burning and Disposal	0.0130	0.6877	0.6877	0.6877	0.6877
690 Cooking	0.0000	0.0000	0.0000	0.0000	0.0000
699 Other (Miscellaneous Processes)	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>MISCELLANEOUS TOTAL</i></b>	<b>0.4817</b>	<b>1.1988</b>	<b>1.2263</b>	<b>1.2420</b>	<b>1.2308</b>
<b>AREA-WIDE SOURCES TOTAL</b>	<b>0.4817</b>	<b>1.1988</b>	<b>1.2263</b>	<b>1.2420</b>	<b>1.2308</b>

**TABLE 6 – 5**

NOx Emission Inventory – Santa Barbara County

*(Tons per day)*

	2000	2005	2010	2015	2020
<b>MOBILE SOURCES</b>					
<b>ON-ROAD MOTOR VEHICLES</b>					
710 Light Duty Passenger (LDA)	6.4570	4.2820	2.6600	1.6150	0.9820
722 Light Duty Trucks - 1 (LDT1)	3.1080	2.2650	1.5650	1.0730	0.7130
723 Light Duty Trucks - 2 (LDT2)	3.0690	2.4780	1.9180	1.3420	0.9050
724 Medium Duty Trucks (MDV)	1.8080	1.4750	1.1660	0.8520	0.5840
732 Light Heavy Duty Gas Trucks - 1 (LHDV1)	0.3490	0.2610	0.2930	0.2920	0.2800
733 Light Heavy Duty Gas Trucks - 2 (LHDV2)	0.1410	0.1110	0.0970	0.0810	0.0670
734 Medium Heavy Duty Gas Trucks (MHDV)	0.3640	0.2900	0.2160	0.1470	0.0970
736 Heavy Heavy Duty Gas Trucks (HHDV)	1.2410	0.9230	0.5540	0.2920	0.1620
742 Light Heavy Duty Diesel Trucks - 1 (LHDV1)	0.1880	0.3000	0.2220	0.1400	0.0960
743 Light Heavy Duty Diesel Trucks- 2 (LHDV1)	0.2300	0.2230	0.1720	0.1130	0.0720
744 Medium Heavy Duty Diesel Trucks (MHDV)	1.5790	1.5200	1.1770	0.7650	0.4870
746 Heavy Heavy Duty Diesel Trucks (HHDV)	4.6470	4.2910	3.3090	2.0450	1.3350
750 Motorcycles (MCY)	0.0690	0.0830	0.0890	0.0900	0.0930
760 Heavy Duty Diesel Urban Buses (UB)	0.4930	0.4980	0.4840	0.4520	0.4040
762 Heavy Duty Gas Urban Buses (UB)	0.1160	0.1200	0.1200	0.1240	0.1230
770 School Buses (SB)	0.2040	0.2230	0.2240	0.2150	0.1940
780 Motor Homes (MH)	0.2940	0.2540	0.1840	0.1210	0.0750
<b>ON-ROAD MOTOR VEHICLES TOTAL</b>	<b>24.3570</b>	<b>19.5970</b>	<b>14.4500</b>	<b>9.7590</b>	<b>6.6690</b>
<b>OTHER MOBILE SOURCES</b>					
810 Aircraft	0.0833	0.0945	0.1016	0.1086	0.1155
820 Trains	2.2083	2.1345	2.1788	1.4151	1.4647
830 Ships and Commercial Boats	0.6622	0.6997	0.7370	0.7745	0.8119
840 Recreational Boats	0.0375	0.0800	0.0850	0.0745	0.0690
850 Off-Road Recreational Vehicles	0.0509	0.0529	0.0559	0.0579	0.0599
860 Off-Road Equipment	6.3700	5.5430	4.2730	3.1320	2.5830
870 Farm Equipment	4.0650	3.3830	2.7170	2.0140	1.5550
890 Fuel Storage and Handling	0.0000	0.0000	0.0000	0.0000	0.0000
<b>OTHER MOBILE SOURCES TOTAL</b>	<b>13.4772</b>	<b>11.9875</b>	<b>10.1483</b>	<b>7.5764</b>	<b>6.6590</b>
<b>MOBILE SOURCES TOTAL</b>	<b>37.8342</b>	<b>31.5845</b>	<b>24.5983</b>	<b>17.3354</b>	<b>13.3280</b>
Vandenberg Air Force Airborne Laser (ABL) Mission	NA	0.0000	0.3602	0.3602	0.3602
Source Register Emission Reduction Credits	NA	0.4191	0.4191	0.4191	0.4191
<b>SANTA BARBARA COUNTY</b>					
<b>NOx EMISSION INVENTORY TOTAL</b>	<b>43.8853</b>	<b>39.1017</b>	<b>32.7311</b>	<b>25.5382</b>	<b>21.6637</b>

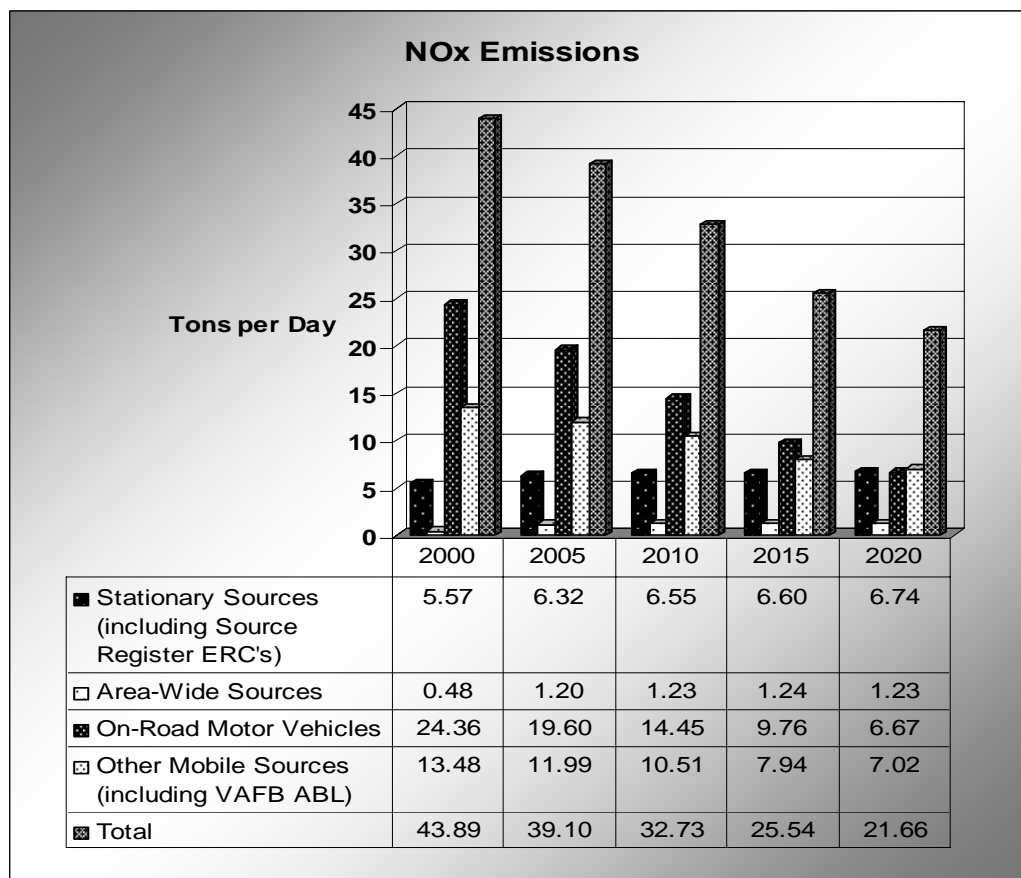
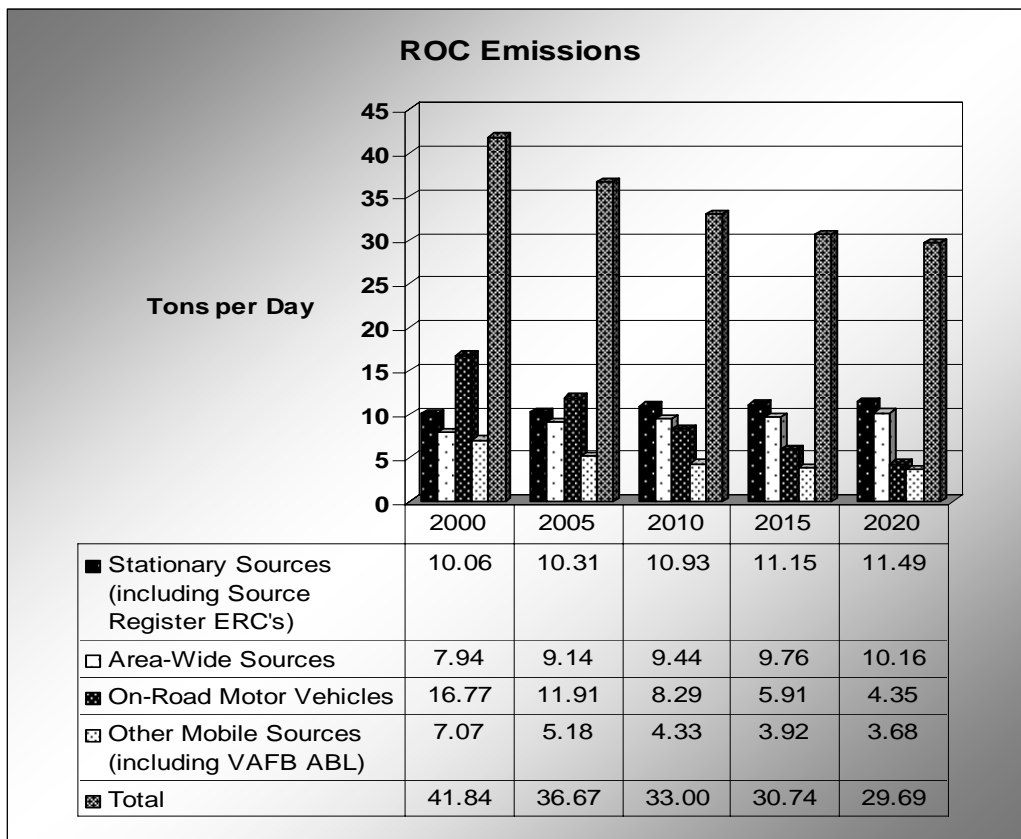
**TABLE 6 – 6**  
**NO<sub>x</sub> Emission Inventory**  
**Outer Continental Shelf**  
*(Tons per day)*

	2000	2005	2010	2015	2020
<b>STATIONARY SOURCES</b>					
<b><i>FUEL COMBUSTION</i></b>					
030 Oil and Gas Production (Combustion)	0.7896	0.7901	0.7894	0.7894	0.7893
<b><i>FUEL COMBUSTION TOTAL</i></b>	<b>0.7896</b>	<b>0.7901</b>	<b>0.7894</b>	<b>0.7894</b>	<b>0.7893</b>
<b><i>CLEANING AND SURFACE COATINGS</i></b>					
230 Coatings and Related Process Solvents	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>CLEANING AND SURFACE COATINGS TOTAL</i></b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>
<b><i>PETROLEUM PRODUCTION AND MARKETING</i></b>					
310 Oil and Gas Production	0.0278	0.0278	0.0278	0.0278	0.0278
<b><i>PETROLEUM PRODUCTION AND MARKETING TOTAL</i></b>	<b>0.0278</b>	<b>0.0278</b>	<b>0.0278</b>	<b>0.0278</b>	<b>0.0278</b>
<b><i>INDUSTRIAL PROCESSES</i></b>					
430 Mineral Processes	0.0000	0.0000	0.0000	0.0000	0.0000
<b><i>INDUSTRIAL PROCESSES TOTAL</i></b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>
<b>STATIONARY SOURCES TOTAL</b>	<b>0.8174</b>	<b>0.8179</b>	<b>0.8172</b>	<b>0.8172</b>	<b>0.8172</b>
<b>MOBILE SOURCES</b>					
<b><i>OTHER MOBILE SOURCES</i></b>					
810 Aircraft	0.0189	0.0189	0.0189	0.0189	0.0189
830 Ships and Commercial Boats	32.4936	38.5523	44.3429	54.2967	64.6826
840 Recreational Boats	0.0375	0.0800	0.0850	0.0745	0.0690
<b><i>OTHER MOBILE SOURCES TOTAL</i></b>	<b>32.5500</b>	<b>38.6512</b>	<b>44.4468</b>	<b>54.3901</b>	<b>64.7705</b>
<b>MOBILE SOURCES TOTAL</b>	<b>32.5500</b>	<b>38.6512</b>	<b>44.4468</b>	<b>54.3901</b>	<b>64.7705</b>
<b>OUTER CONTINENTAL SHELF</b>					
<b>NO<sub>x</sub> EMISSION INVENTORY TOTAL</b>	<b>33.3674</b>	<b>39.4691</b>	<b>45.2640</b>	<b>55.2073</b>	<b>65.5877</b>

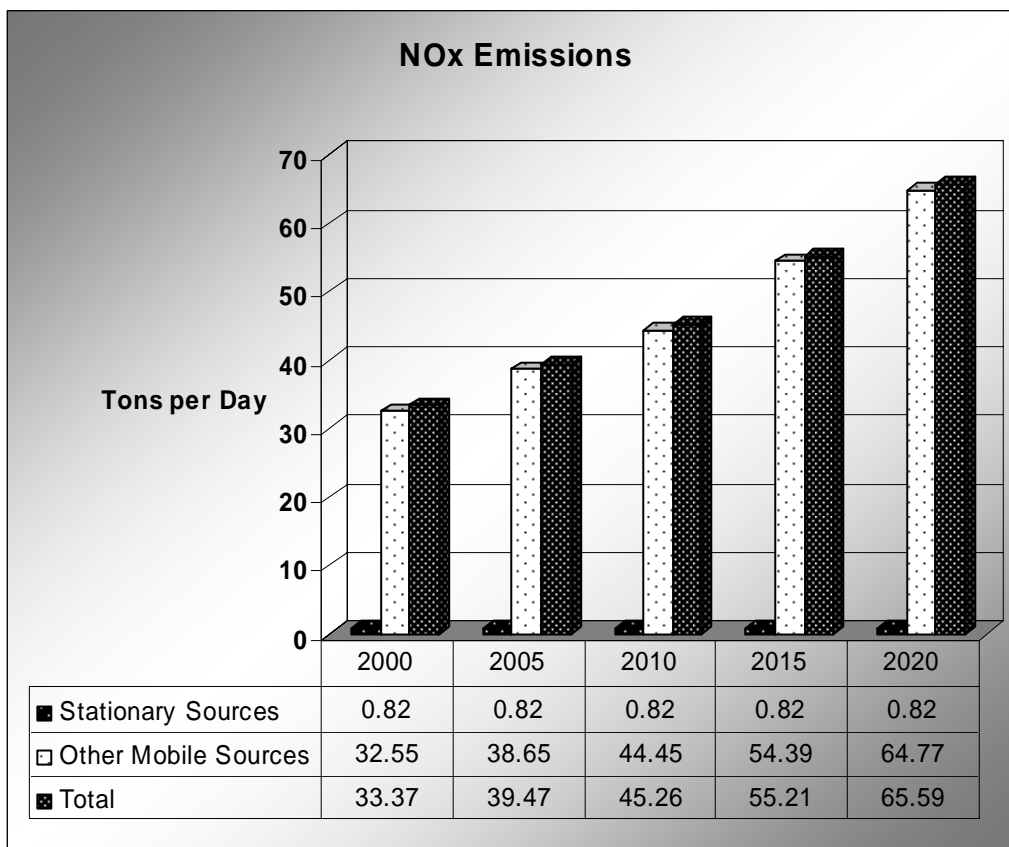
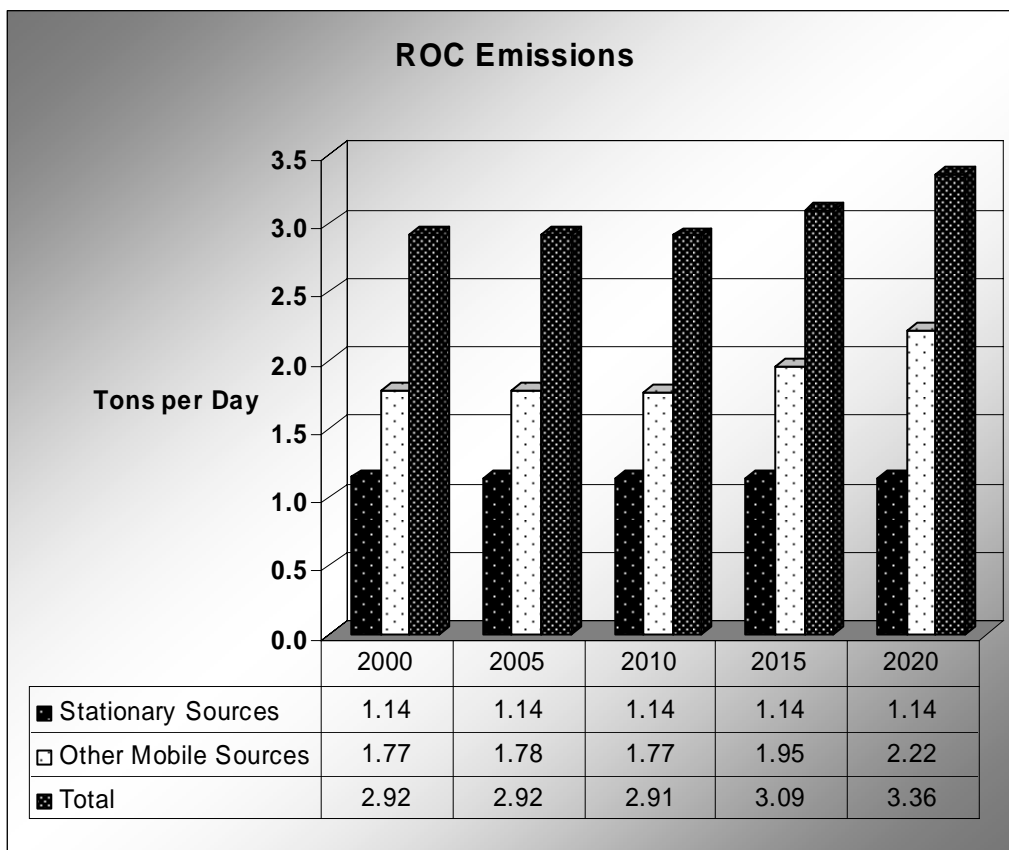
**TABLE 6 – 7****2004 CLEAN AIR PLAN ACTIVITY INDICATORS AND FACTORS FOR 2005, 2010, 2015 and 2020**

ACTIVITY INDICATOR	UNITS	VALUE					FACTOR				INFORMATION SOURCE
		2000	2005	2010	2015	2020	2005	2010	2015	2020	
Agricultural Acres	Acres	124,840	119,227	116,849	114,472	112,094	0.955	0.936	0.917	0.898	Agricultural Commissioner's Crop Reports
Aircraft Operations	Operations	309,019	355,900	385,300	414,200	443,100	1.152	247	1.340	1.434	Airport Master Plans / SBCAG (Santa Barbara County Association of Governments)
Daily Vehicle Miles	1,000 Miles Traveled	9,575	10,148	10,718	11,288	11,683	1.060	1.119	1.179	1.220	SBCAG Travel Model
EMP. - Commercial	Employees	89,700	96,200	102,700	109,200	115,700	1.072	1.145	1.217	1.290	SBCAG 2002 Regional Growth Forecast
EMP. Industrial	Employees	27,100	31,800	35,820	39,840	43,860	1.173	1.322	1.470	1.618	SBCAG 2002 Regional Growth Forecast
EMP. - Public Services	Employees	38,600	40,800	42,000	43,200	44,400	1.057	1.088	1.119	1.150	SBCAG 2002 Regional Growth Forecast
Housing	Households	136,622	146,663	154,053	160,724	164,641	1.073	1.128	1.176	1.205	SBCAG 2002 Regional Growth Forecast
Landfills	1,000 Tons in Place	15,995	18,638	20,983	23,545	25,443	1.165	1.312	1.472	1.591	Local Solid Waste Agencies
Locomotives	Annual Train Passages	6,023	8,030	10,038	10,403	10,768	1.333	1.667	1.727	1.788	CalTrans / AMTRAK / Union Pacific
No Growth	No Units	1	1	1	1	1	1.000	1.000	1.000	1.000	Santa Barbara County Air Pollution Control District
OCS Production	No Units	1	1	1	1	1	1.000	1.000	1.000	1.000	SBCAPCD Community Advisory Council
Pesticide Use (Structural)	Tons Pesticide Applied	61	63	66	68	72	1.033	1.082	1.115	1.180	CA Air Resources Board
Petroleum Production	1,000 Barrels Oil	3,843	3,435	3,187	2,932	2,702	0.894	0.829	0.763	0.703	CA Division of Oil & Gas
Petroleum Wells	Producing & Inactive Wells	2,404	1,967	1,621	1,244	875	0.818	0.674	0.517	0.364	CA Division of Oil & Gas
Population	Residents	399,300	436,000	462,000	488,000	505,000	1.092	1.157	1.222	1.265	SBCAG 2002 Regional Growth Forecast
Prescribed Fires	Acres	100	6,250	6,250	6,250	6,250	62.500	62.500	62.500	62.500	U.S. Forest Service
Ship Activity	Vessel Transits	6,460	7,701	8,887	10,926	13,053	1.192	1.376	1.691	2.021	Marine Exchange of Port of Los Angeles / Long Beach

**Figure 6-1**  
**Santa Barbara County Onshore ROC & NO<sub>x</sub> Emissions**



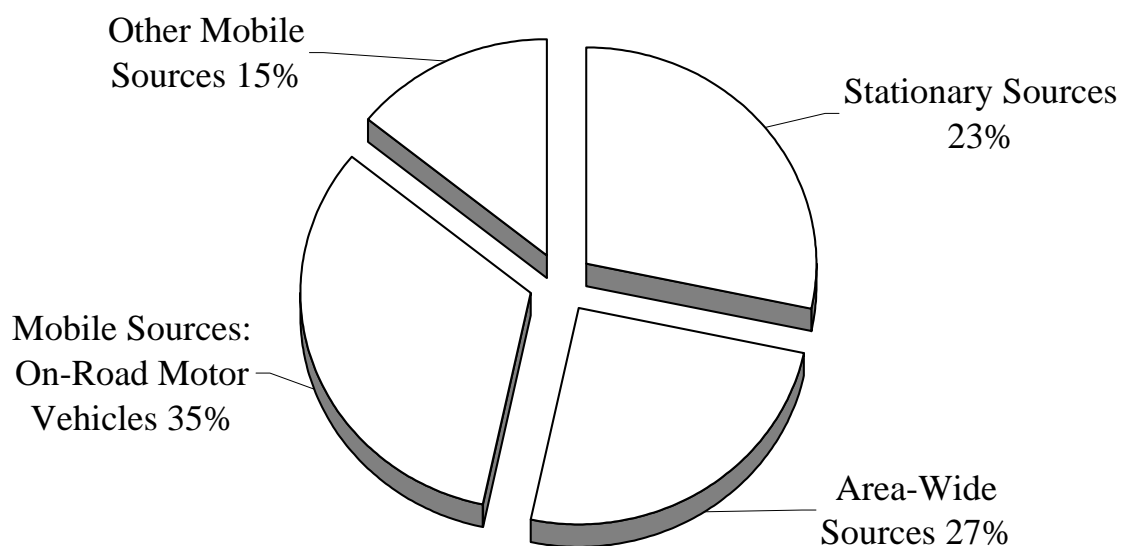
**Figure 6-2  
OCS ROC & NOx Emissions**



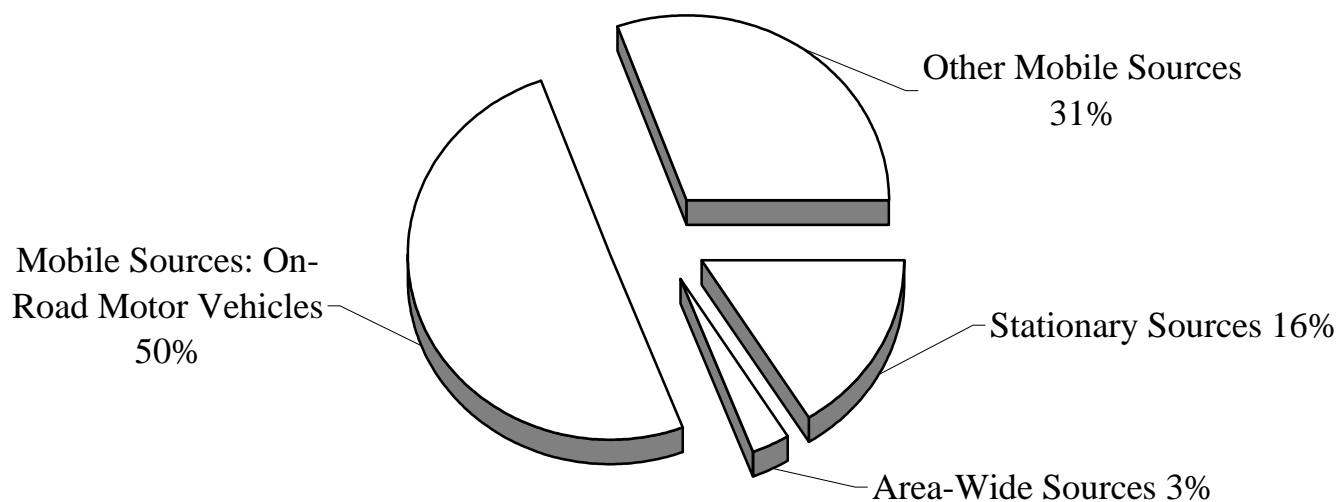
**Figure 6-3**

**2005 Santa Barbara County Planning Emission Inventory**

**ROC: 36.67 tons per day**



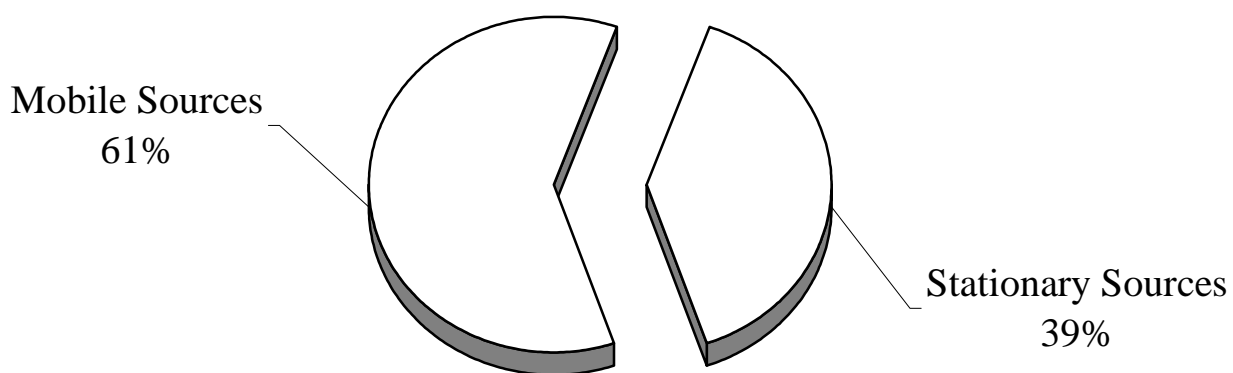
**NOx: 39.10 tons per day**



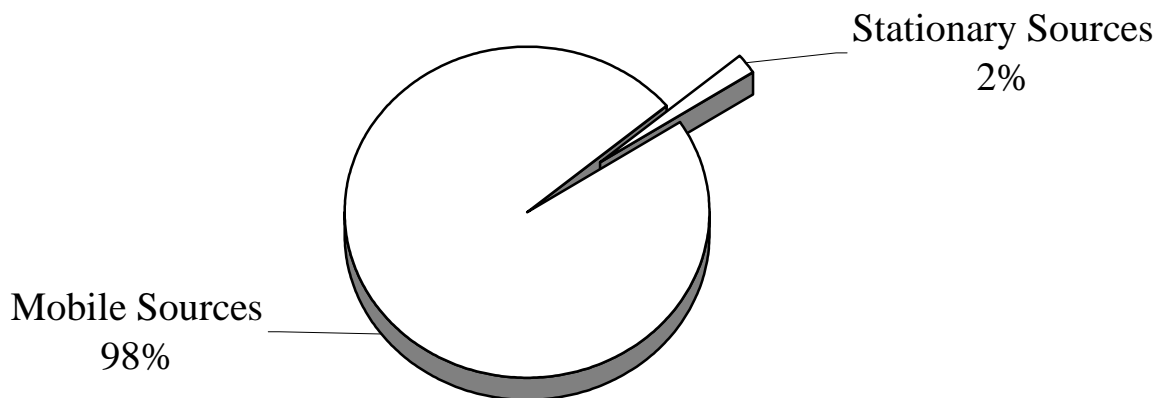
**Figure 6-4**

**2005 OCS Planning Emission Inventory**

**ROC: 2.92 tons per day**



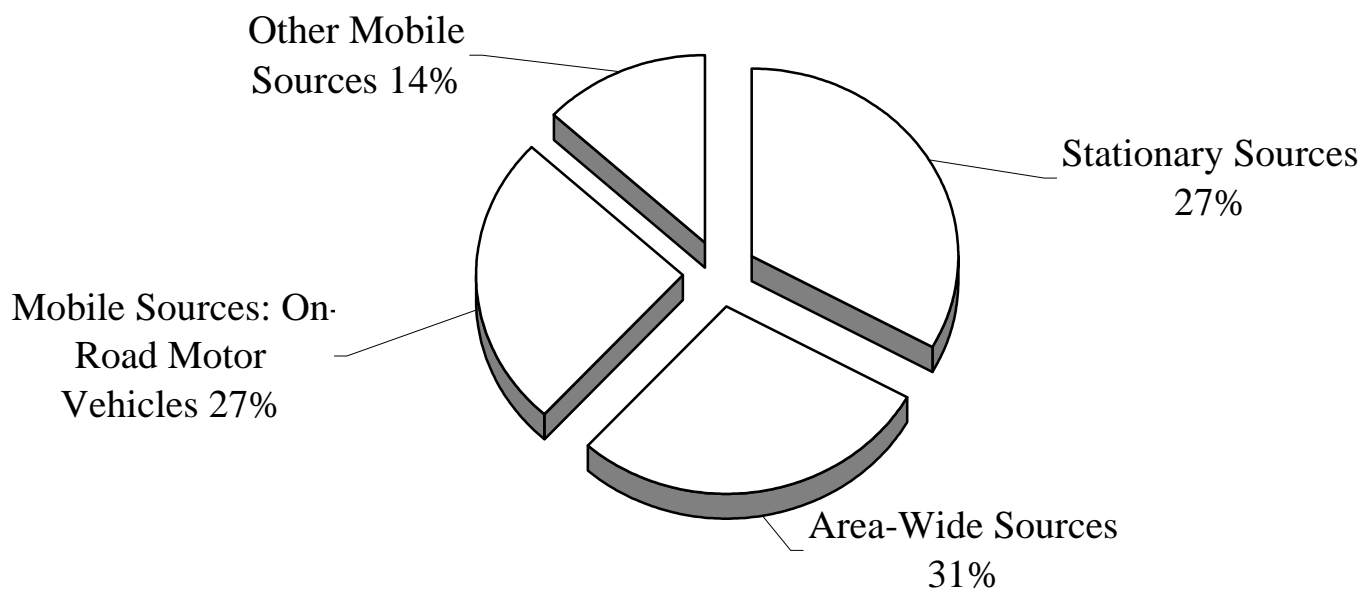
**NO<sub>x</sub>: 39.47 tons per day**



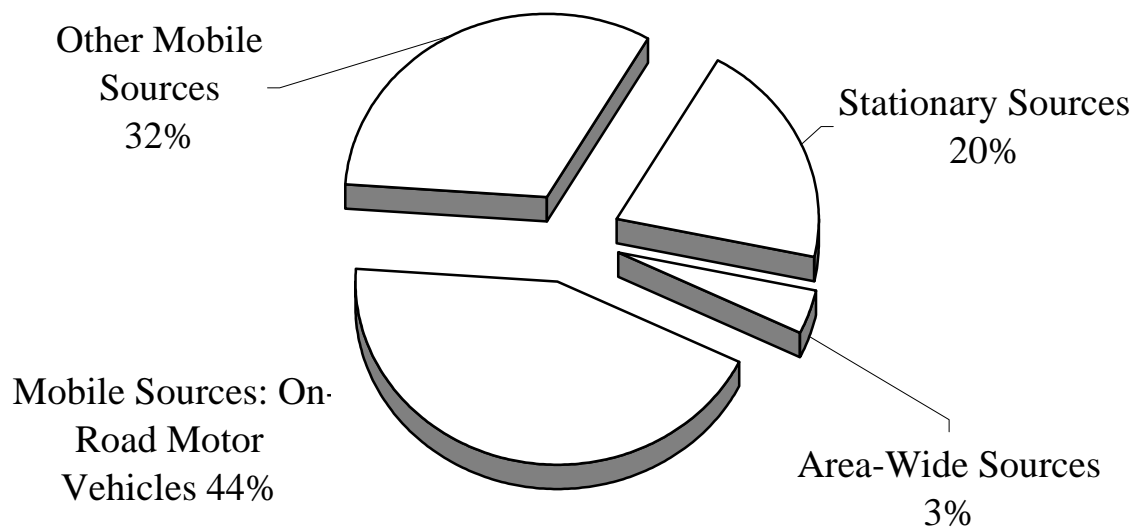
**Figure 6-5**

**2010 Santa Barbara County Planning Emission Inventory**

**ROC: 33.00 tons per day**



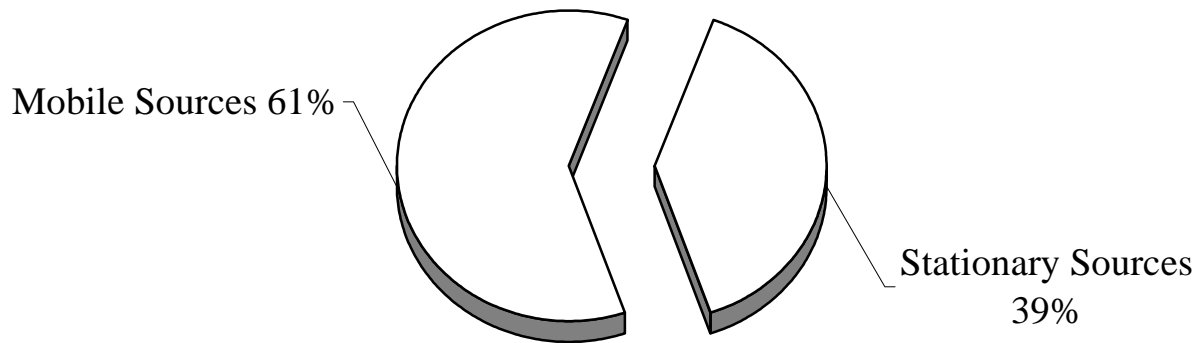
**NOx: 32.73 tons per day**



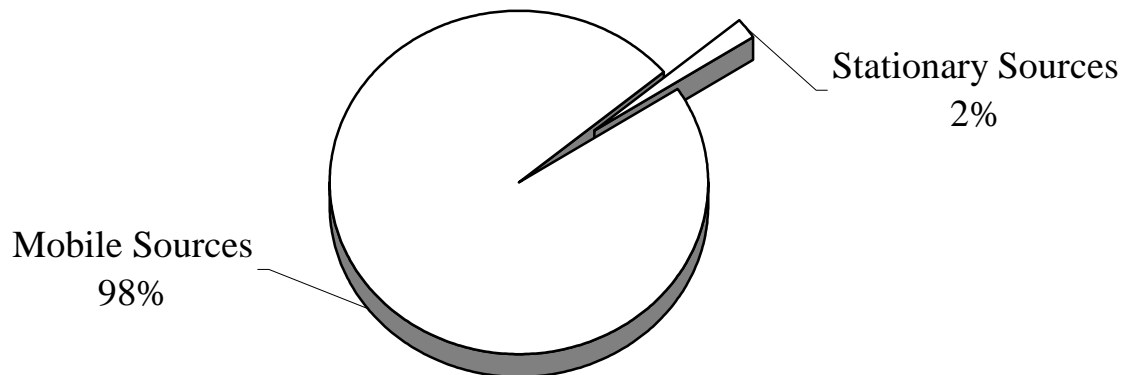
**Figure 6-6**

**2010 OCS Planning Emission Inventory**

**ROC: 2.91 tons per day**



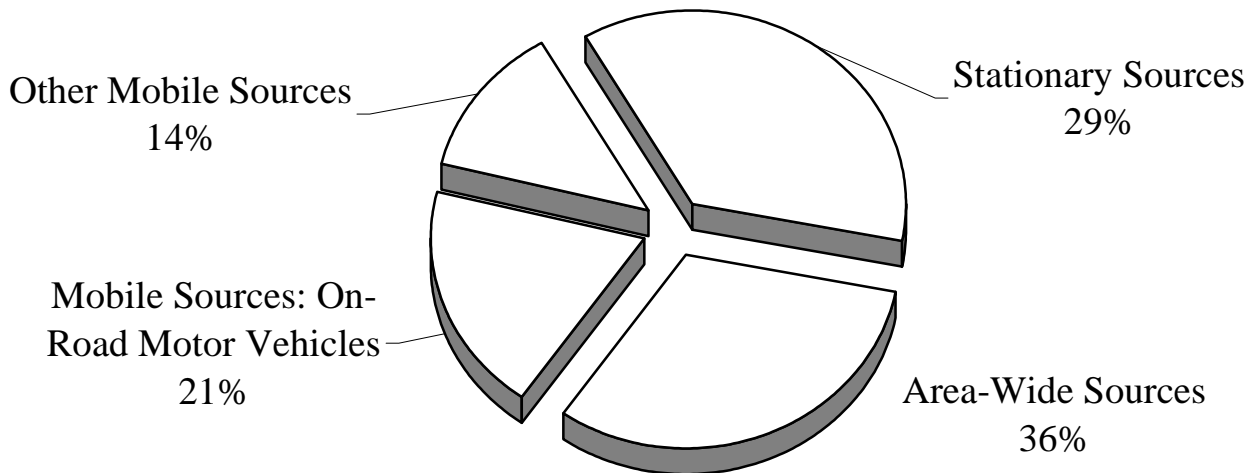
**NOx: 45.26 tons per day**



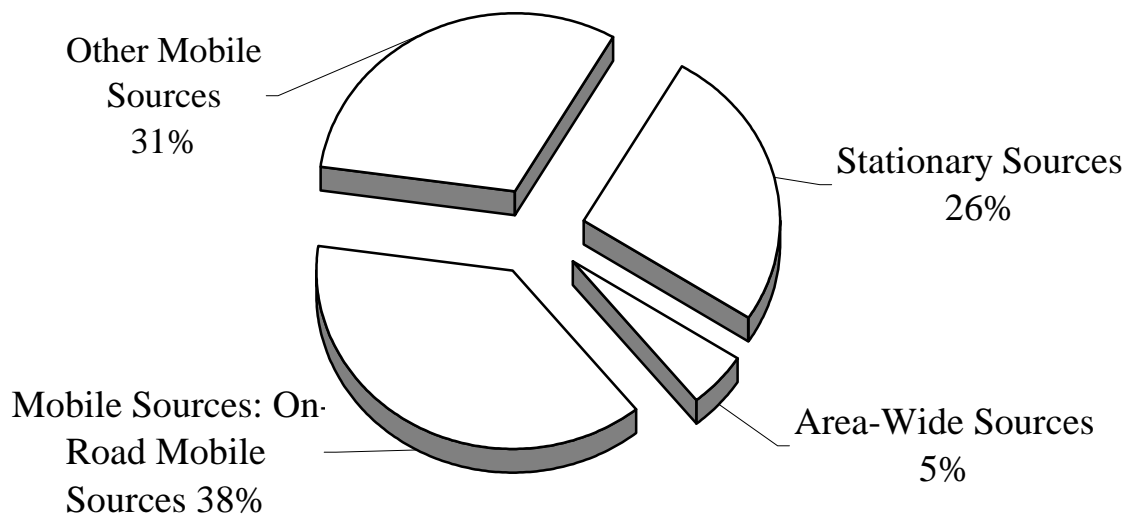
**Figure 6-7**

**2015 Santa Barbara County Planning Emission Inventory**

**ROC: 30.74 tons per day**



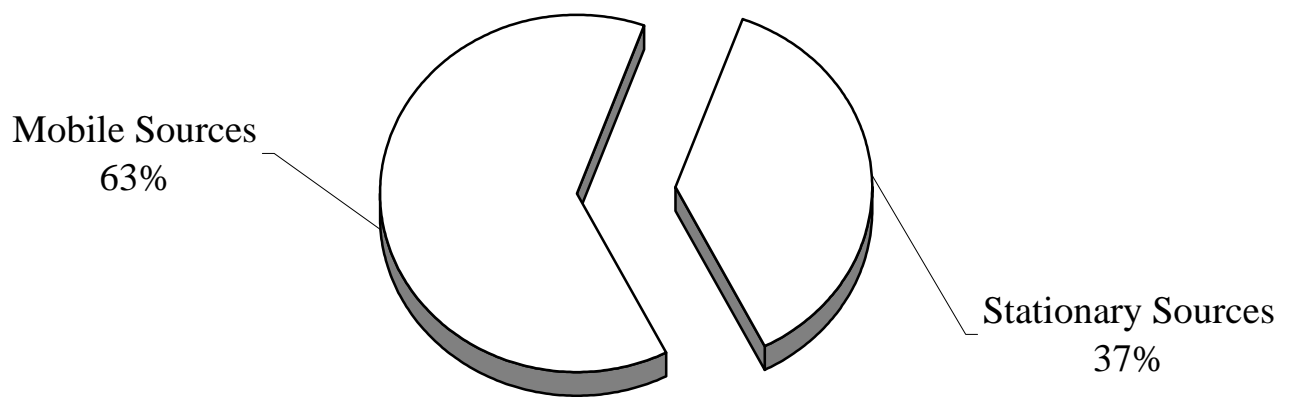
**NO<sub>x</sub>: 25.54 tons per day**



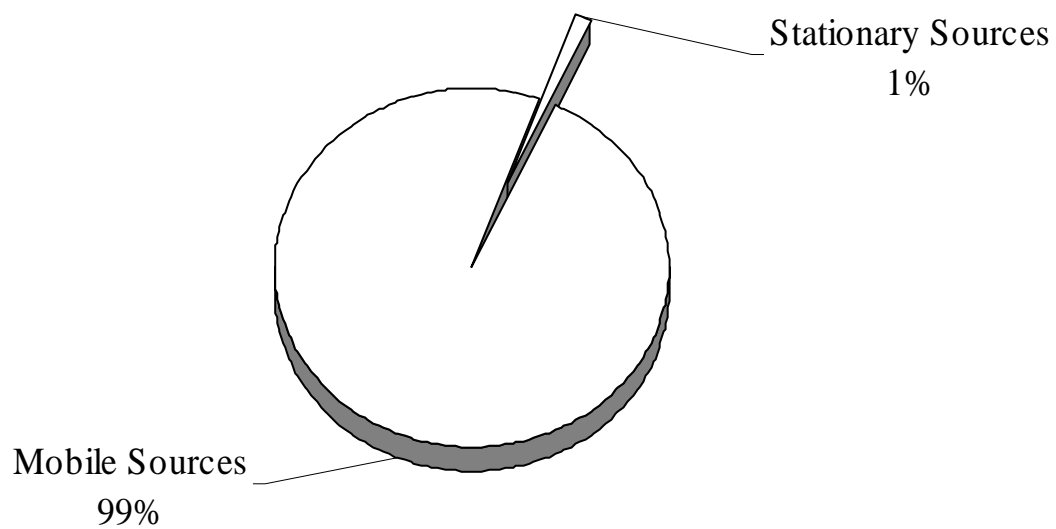
**Figure 6-8**

**2015 OCS Planning Emission Inventory**

**ROC: 3.09 tons per day**



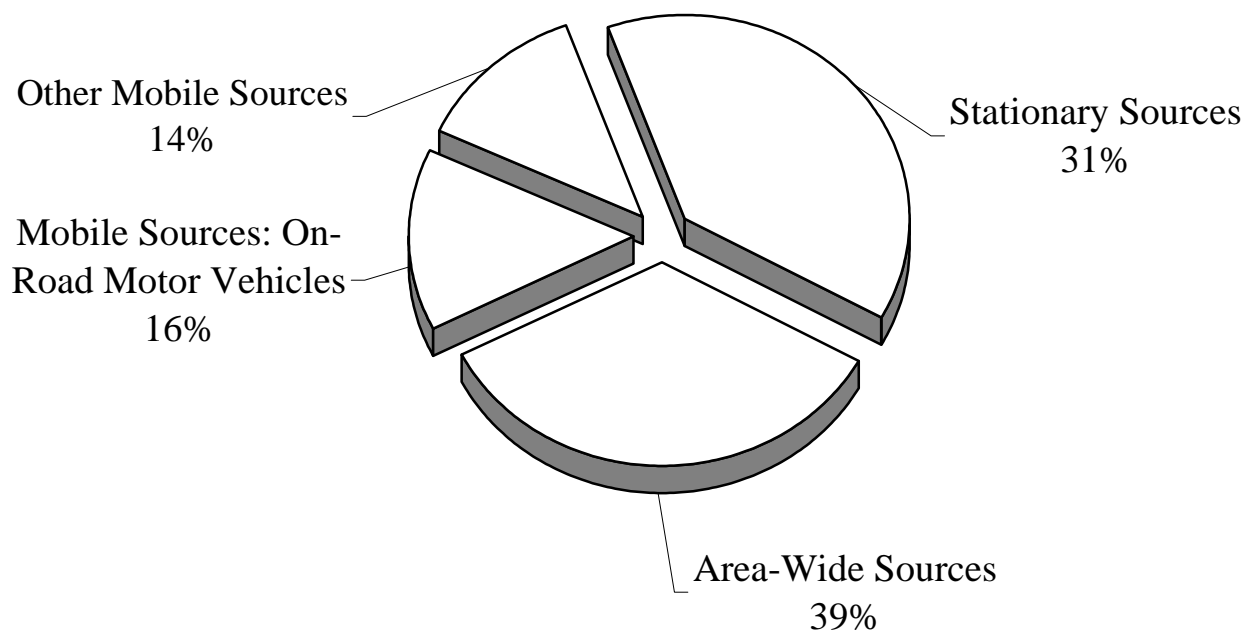
**NO<sub>x</sub>: 55.21 tons per day**



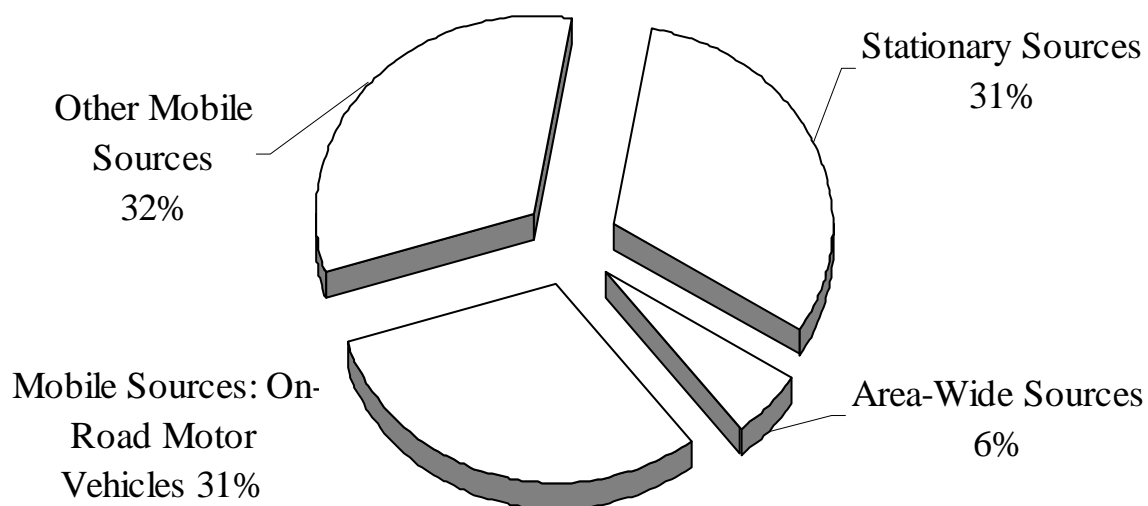
**Figure 6-9**

**2020 Santa Barbara County Planning Emission Inventory**

**ROC: 29.69 tons per day**

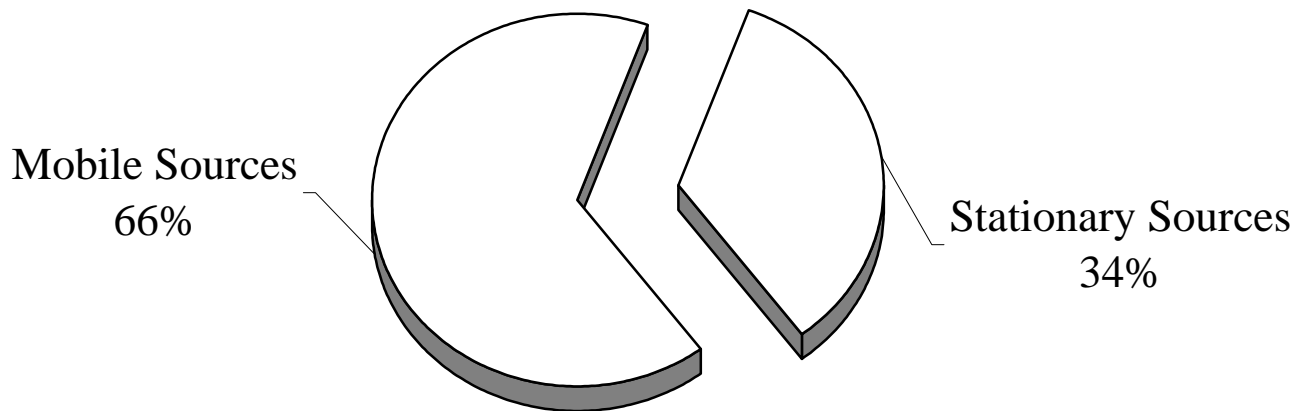


**NOx: 21.66 tons per day**

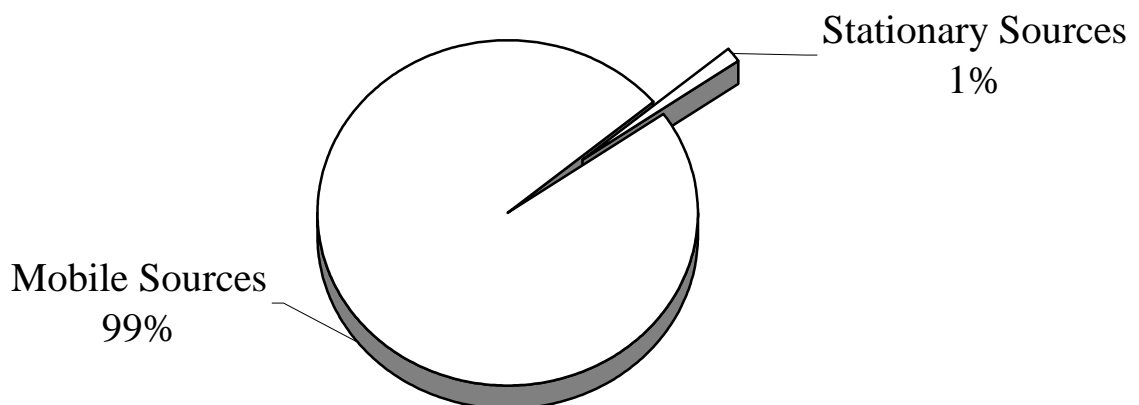


**Figure 6-10**  
**2020 OCS Planning Emission Inventory**

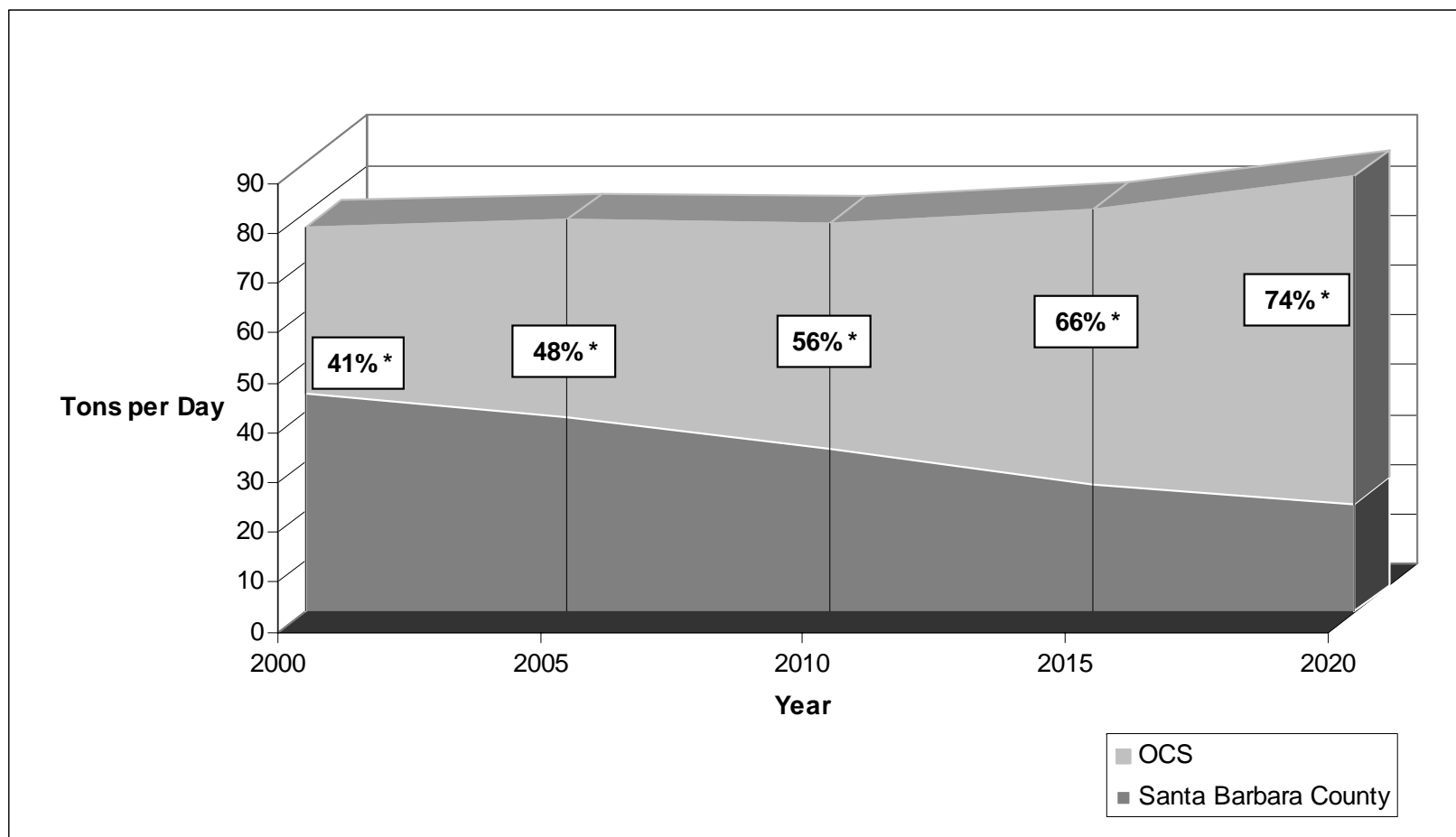
**ROC: 3.36 tons per day**



**NO<sub>x</sub>: 65.59 tons per day**

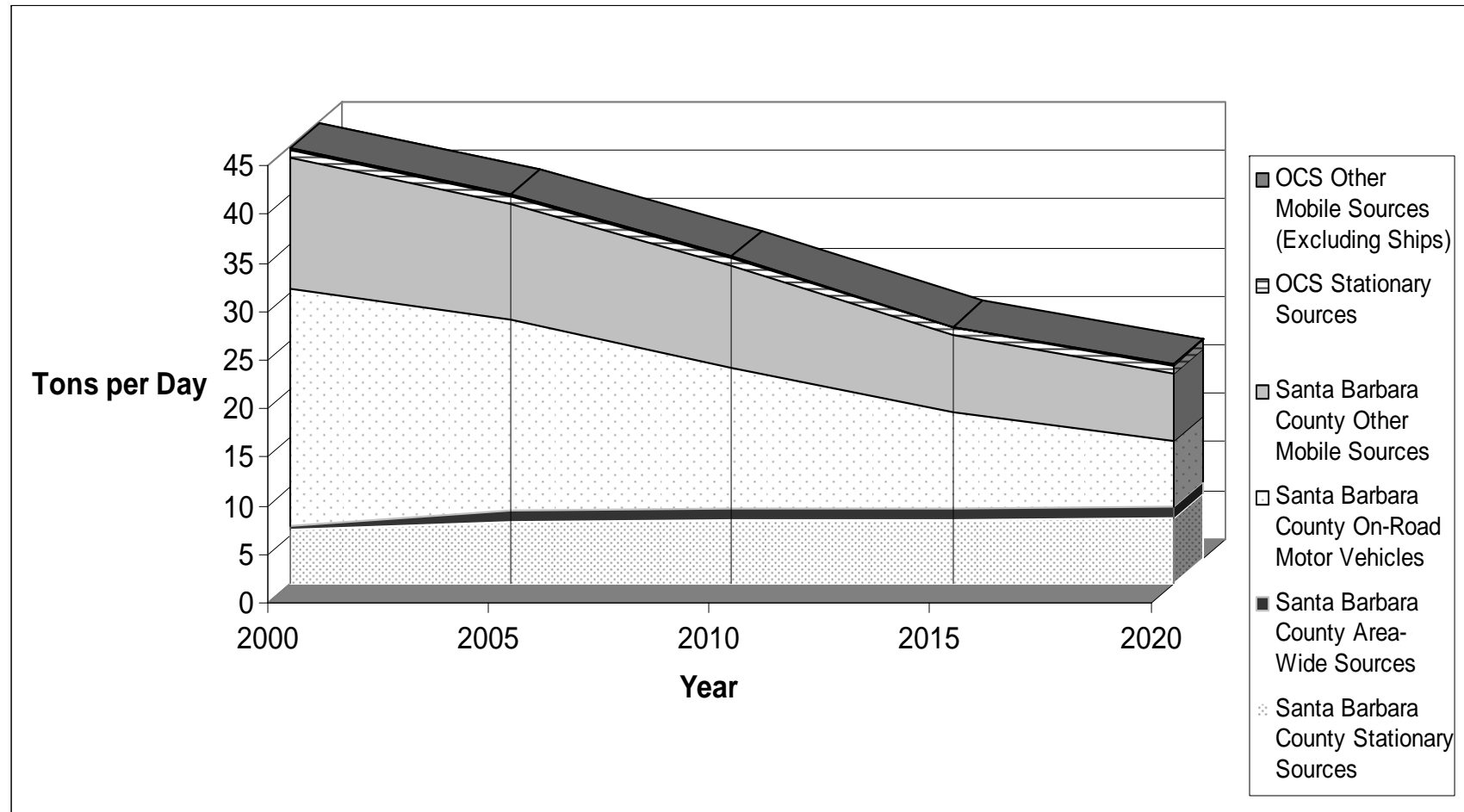


**Figure 6-11**  
**Santa Barbara County and OCS NO<sub>x</sub> Emissions Forecast**  
**Including Marine Vessels**



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

**Figure 6-12**  
**Santa Barbara County and OCS NO<sub>x</sub> Emissions Forecast**  
**Marine Vessels Excluded**



## **CHAPTER 7**

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### **PUBLIC PARTICIPATION**

**Introduction**

**Community Advisory Council Comments**

**2004 Plan Public Workshop**

**Written Comments and Responses on the 2004 Plan**

**ARB Transport Analysis**

## 7. PUBLIC PARTICIPATION

### 7.1 INTRODUCTION

The public participation process used in the development of this 2004 Clean Air Plan (2004 Plan) was implemented to assure that the demands of clean air placed on us by the plan are reasonable and capable of being achieved. Also, it is important that members of the public, the regulated industry, and government agencies, have an opportunity to provide input into shaping our present and future strategies to clean the air.

A specific group of people has been organized to serve the goal of providing input on the development of clean air plans. They are known as the **Community Advisory Council**. On May 24, 1994, the 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 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 7-1 lists all thirteen Board members and each of their appointed CAC representatives.

**Table 7-1**

<b>SANTA BARBARA COUNTY</b> <b>AIR POLLUTION CONTROL DISTRICT BOARD</b> <b><i>BOARD APPOINTED COMMUNITY ADVISORY COUNCIL (CAC) APPOINTEE(S)</i></b>		
<b>Board Member</b>	<b>Title</b>	<b>CAC Appointee(s)</b>
Naomi Schwartz	Supervisor, First District	Bill Peitzke & John Robinson
Susan Rose	Supervisor, Second District	Larry Rennacker & Marc Chytilo
Gail Marshall	Supervisor, Third District	Dave Pierce & Norvell Nelson
Joni Gray	Supervisor, Fourth District	George Croll & Patrice Surmeier
Joe Centeno	Supervisor, Fifth District	John Deacon & Kevin Wright
Bill Traylor	Mayor, City of Buellton	John Gilliland & Jayne Brechwald
Richard Weinberg	Mayor, City of Carpinteria	Tom Banigan & Doug Marsh
Carlos Aguilera	Councilmember, City of Guadalupe	Bob Kober
Dewayne Holmdahl	Councilmember, City of Lompoc	Bea Kephart & Ramzi Chaabane
Dan Secord	Councilmember, City of Santa Barbara	Lee Moldaver
Marty Mariscal	Councilmember, City of Santa Maria	Michael Johnson & Gary Winters
David Smyser	Councilmember, City of Solvang	Laura Kranzler
Cynthia Brock	Mayor, City of Goleta	Dr. Ingeborg Cox

The APCD has specifically sought out input from the CAC on each element of the 2004 Plan as it was being developed over the past year. Starting in January of 2004, APCD staff presented specific portions of the 2004 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 7.2.

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 concepts of the 2004 Plan and the implications of its proposed control measures on the residents and business community of Santa Barbara County. The focus of the public workshops was to allow public commentary on the plan while allowing APCD and 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 7.4. Public notices announcing the date, time, and location of the public workshops were published in area newspapers, including the Santa Barbara News Press, the Santa Maria Times, and the Lompoc Record. A copy of the public notice can be found at the end of this chapter.

The public notice announced that the 2004 Plan was available for public review. The public comment period was from August 25, 2004 to September 24, 2004. A copy of all written comments on the 2004 Plan that have been submitted by the public, along with the written responses to these comments, is provided in Section 7.3.

Public presentations of the 2004 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 7-2.

**Table 7-2**

<b>SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT</b> <b><i>CLEAN AIR PLAN PUBLIC PRESENTATIONS</i></b>		
<b>Presentation</b>	<b>Location</b>	<b>Date</b>
Public Workshop	Days Inn, Buellton	September 15, 2004
APCD Monthly Board Meeting	Board of Supervisors Hearing Room Santa Barbara	October 21, 2004
APCD Monthly Board Meeting	Board of Supervisors Hearing Room Santa Barbara	December 16, 2004

## 7.2 COMMUNITY ADVISORY COUNCIL COMMENTS

This section summarizes the highlights of the CAC meetings pertaining to the 2004 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.

<b>Community Advisory Council Meetings to Discuss 2004 Clean Air Plan</b>	
<b>Meeting Date</b>	<b>Item(s) Presented</b>
January 14, 2004	Chapter 1 (Introduction) & Chapter 2 (Local Air Quality)
March 10, 2004	Chapter 3 (Emission Inventory) & Activity Indicators for Future Year Inventories
April 14, 2004	Chapter 4 (Emission Control Measures) & Chapter 5 (Transportation Control Measures)
May 12, 2004	Chapter 7 (Land Use Strategies)
July 14, 2004	Executive Summary & Chapter 6 (Emission Forecasting)
August 11, 2004	Chapter 7 (Land Use Strategies and Indirect Source Review)
September 15, 2004	Plan Overview/Public Workshop
October 13, 2004	Chapter 8 (Public Participation)
November 10, 2004	Plan Revisions and CAC Approval

January 14, 2004

Chapter 1: Introduction

Chapter 2: Local Air Quality

The APCD presented Chapter 1 (Introduction) and Chapter 2 (Local Air Quality) to the CAC. There were no action items related to Chapter 1. The CAC made the following suggestion for Chapter 2 that was incorporated in the draft Plan:

- The CAC recommended that Figure 2-2, which shows the number of state ozone exceedances since 1988, also include a graphic showing trends in population and vehicle miles traveled. This would provide an indication that while population and vehicle miles are increasing, air quality is continuing to improve. See Figure 2-26 for added graphic.

March 10, 2004

Chapter 3: Emission Inventory

Discussion of Future Year Activity Indicators

The APCD presented the base year emission inventory (Chapter 3) to the CAC. The CAC recommended the following:

- Under emissions summary categories, only present source types that are that are consistent with facilities that we have in our county. The CAC suggested that it is not necessary to provide facility types as examples if those types of businesses do not exist in the county.

In addition, activity data used in emission forecasting were presented to the CAC so that the activity factors could be discussed and refined prior to the development of Chapter 6 (Emission Forecasting). The CAC provided the following comments and suggestions related to the activity indicators:

- The CAC suggested that the activity indicator of irrigated acres is not a good proxy for emission sources tied to agricultural operations. After further research, it was determined that irrigated acres is a reasonable indicator for determining trends in agricultural related activities.
- Two separate trends for the petroleum production indicator were presented to the CAC.

One trend showed a fairly rapid decline in production while the other showed a slower decline in production over time. After some discussion, it was decided that the slower declining trend in oil production represents the best scenario due to current trends in the oil industry.

April 14, 2004

Chapter 4: Emission Control Measures

Chapter 5: Transportation Control Measures

After an overview of both emission and transportation control measures, the CAC asked staff to address the following items:

- Determine the current status on regulatory progress on pesticides and pesticide emissions inventory in Santa Barbara County. In addition, the CAC requested that the APCD determine the effectiveness of the statewide pesticide program.
- As part of a review of the external combustion lime/cement kiln further study measure, the CAC suggested that staff look into work that was done by the state of Texas. Information from the state of Texas was found not to apply to Santa Barbara County. Additionally, staff will continue to research whether any applicable lime or cement kilns are located in Santa Barbara County. If none are found, this further study measures will be removed from consideration.
- Determine whether emission reduction credits from incentive programs such as Carl Moyer are being incorporated in the OFFROAD and EMFAC models. Staff research determined that neither EMFAC nor OFFROAD account for emission reductions from incentive programs - ARB does not incorporate the reductions into these models.
- There should be greater detail in the Plan on the VMT growth rate and how to address growth. In addition, state law requires public input on transportation control measure (TCM) development. It was suggested that the planning process does not allow for public participation of the TCM's that are included in the Plan. SBCAG staff briefed the CAC on 101 in Motion, a project with the objective of developing long-term solutions for improving traffic congestion along the 101 corridor in the south coast of Santa Barbara County. SBCAG suggested that input on TCM's could be provided at 101 in Motion

workshops. The CAC asked staff to return with a report on the overall process for developing the TCM's.

May 12, 2004

Chapter 7: Land Use Strategies

For Chapter 7, the CAC made the following suggestions:

- Add a glossary of terms to the chapter.
- Provide a definition for “traditional neighborhood development.”
- Consider deleting sentence with Centers of Disease Control, which may be controversial.
- The policies of density should also include a discussion that densification requires that there is enforcement of policies and ordinances such as noise and nuisance, and that there is protection of privacy and affordability.
- There should be a more regional approach to the challenges of land use strategies by bringing together representatives from air quality, water quality, agriculture, LAFCO among others.
- There should be a focus on how to enhance implementation of land use concepts. This should be done through collaboration with other planning agencies to incorporate these concepts into their own planning programs.
- It was suggested by the CAC that an Indirect Source Review (ISR) subcommittee be formed to address ISR challenges and build CAC consensus. A five-member CAC subcommittee was formed and will meet with the APCD to discuss ISR issues and to develop conceptual language for discussion with the entire CAC.

July 14, 2004

Executive Summary

Chapter 6: Emission Forecasting

- In the Executive Summary, add a question/answer section that explains how attainment of the state 1-hour ozone standard is determined.

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

- Added a discussion in the Chapter specifying that 90% marine shipping fleet that transited the Santa Barbara coastline in 2000 was foreign flagged.
- The CAC recommended that mobile sources be broken-out in the emissions graphics to show that marine vessels comprise a majority of the emissions.

In addition, the CAC made the following recommendations:

- It was suggested that a representative from Lois Capps' office attend the 2004 Plan adoption hearing to bring more attention to the challenges controlling emissions from marine shipping.
- A recommendation was made that the APCD should look into forming a partnership with UCSB's remote sensing group to investigate the impacts of marine shipping on Santa Barbara County.

August 11, 2004

Chapter 7: Land Use Strategies (ISR Program and Regulation Concept)

- The CAC recommended that the APCD assess and develop as warranted and Indirect Source Review Program/Regulation to minimize and mitigate air pollution from discretionary land use entitlements. A section on Indirect Source Review will be included in Chapter 7. In addition, under the goals of the ISR Program/Regulation, the CAC suggested that the term "Smart Growth" be removed from the text since it is confusing and its deletion would make the text more readable.

September 15, 2004

Plan Overview

A brief overview of the draft Plan was provided at this meeting. Comments received from CAC members during the meeting are provided in the next section.

- *Bill Peitzke*: Asked the APCD to provide more information regarding marine shipping emission estimates.

The APCD will provide an overview of the marine shipping emissions estimation methodology to the CAC.

- *Kevin Wright (Entrix)*: Stated that he is not comfortable with moving Rules 342 and 333 from further study to proposed rules. Kevin suggested that the stringency of the rules are due to the attainment status of both South Coast and San Joaquin Valley where significant reductions are needed and that this level of stringency should not be applicable to Santa Barbara County. Kevin recommended that the entire Chapter 4 be brought back to the CAC for further analysis. He is interested in having the emission reductions for Rule 342 and Rule 333 presented to the CAC.

Staff indicated that Rule 342 will apply to 10 boilers with reductions estimated to be around 5 tons per year and agreed to bring back to the CAC specific analyses for both boilers (342) and IC engines (333).

Staff have refined the preliminary data used at the CAC meeting for revised Rule 342. Currently the analysis indicates that there are approximately 4 tons per year of NO<sub>x</sub> emission reductions for calendar year 2015.

Tables R342 and R333 provide the emission reduction estimates for amended Rule 342 and Rule 333, respectively. As these are long term amendments, calendar year 2015 is the first CAP forecasting year we expect to see reductions.

Table R342. EMISSION REDUCTIONS ANTICIPATED FROM  
MODIFIED RULE 342 ( $\geq 5$  MMBtu/hr, Long-Term)

COMPANY	FACILITY	FID <sup>1</sup>	FDN <sup>1</sup>	DEVICE NAME	2015 NO <sub>x</sub> EMISSION REDUCTIONS (TPY)
ExxonMobil Production Company	Las Flores Canyon	01482	0074	CPP: Cogen: HRSG Only Mode	0.2863
ExxonMobil Production Company	Platform Harmony	08018	0004	Ext Comb: Central Process Heater	0.4698
ExxonMobil Production Company	Platform Heritage	08019	0005	Ext Comb: Central Process Heater	0.2445
ExxonMobil Production Company	POPCO	03170	0002	Boiler: B-801A	0.6734

<sup>1</sup> “FID” stands for *Facility Identification Number* and “FDN” standards for *Facility Device Number*. These are numbers assigned by the APCD for tracking devices in the permitting and inventory programs.

COMPANY	FACILITY	FID <sup>1</sup>	FDN <sup>1</sup>	DEVICE NAME	2015 NOx EMISSION REDUCTIONS (TPY)
ExxonMobil Production Company	POPCO	03170	0003	Boiler: B-801B	0.6385
Nuevo Energy Company	Lompoc Oil and Gas Plant	03095	0026	Heater Treater: (B)	0.1619
The Okonite Company	The Okonite Company	01900	0003	Boiler #3 (#23127)	0.3941
United States Penitentiary	United States Penitentiary (Power House)	02785	0006	Boiler: Hurst #1	0.2286
UNOCAP	Santa Maria Pump Station	03915	0003	Boiler: B-1	0.0819
Venoco, Inc.	Ellwood Onshore Facility	00028	0003	Process Heater (H-204)	0.6809
Total NOx Reductions (TPY)					3.8599
Total NOx Reductions (TPD)					0.0106

Table R333. EMISSION REDUCTIONS ANTICIPATED FROM  
MODIFIED RULE 333 (Long-Term)

COMPANY	FACILITY	FID <sup>1</sup>	FDN <sup>1</sup>	DEVICE NAME	2015 NOx EMISSION REDUCTIONS (TPY)
ExxonMobil Production Company	Platform Harmony	08018	0001	IC Engine: Pedestal Crane East	0.3033
ExxonMobil Production Company	Platform Heritage	08019	0002	IC Engine: Pedestal Crane East	0.6758
ExxonMobil Production Company	Platform Hondo	08009	0001	IC Engine: Pedestal Crane West	0.0234
ExxonMobil Production Company	Platform Hondo	08009	0002	IC Engine: Pedestal Crane East	0.1301
Lash Construction	Lash Construction (110 S. Salsipuedes)	01685	0001	IC Engine	No ERs - already in compliance
Lash Construction	Lash Construction (110 S. Salsipuedes)	01685	0002	IC Engine	No ERs - already in compliance
Plains Exploration & Production Company	Platform A	08003	0002	IC Engine: North Crane	0.0120
Plains Exploration & Production Company	Platform B	08004	0002	IC Engine: North Crane	0.0135
Plains Exploration & Production Company	Platform Habitat	08012	0001	IC Engine: South Crane	0.0094
Plains Exploration & Production Company	Platform Habitat	08012	0002	IC Engine: North Crane	0.0355
Plains Exploration & Production Company	Platform Henry	08007	0002	IC Engine: North Crane	0.0143

COMPANY	FACILITY	FID <sup>1</sup>	FDN <sup>1</sup>	DEVICE NAME	2015 NOx EMISSION REDUCTIONS (TPY)
Plains Exploration & Production Company	Platform Hillhouse	08005	0002	IC Engine: North Crane	0.0172
Plains Exploration & Production Company	Platform Irene	08016	0002	IC Engine: South Crane	0.0100
Purisima Hills LLC	H.P. Boyne Lease	03777	0012	IC Engine: Natural Gas: #68680	0.1310
Purisima Hills LLC	H.P. Boyne Lease	03777	0013	IC Engine: Natural Gas: #87437-12	0.1310
Purisima Hills LLC	H.P. Boyne Lease	03777	0014	IC Engine: Natural Gas: #87437-N	0.1310
Purisima Hills LLC	H.P. Boyne Lease	03777	0015	IC Engine: Natural Gas: #484-U	0.1310
Purisima Hills LLC	H.P. Boyne Lease	03777	0016	IC Engine: Natural Gas: #77560	0.1310
Purisima Hills LLC	H.P. Boyne Lease	03777	0020	IC Engine: Natural Gas:	0.4841
Santa Barbara Sand & Top Soil Corp.	Ellwood Ranch (SB Sand & Top Soil)	03695	0006	IC Engine: Diesel IC Engine	0.0258
Santa Maria Refining Company	Armelin Lease	03736	0014	IC Engine: Mm 283: Well #2	0.8628
Santa Maria Refining Company	Armelin Lease	03736	0015	IC Engine: Mm 403: Well #8	0.8628
Santa Maria Refining Company	Armelin Lease	03736	0016	IC Engine: Mm 605: Well #1	0.8628
The Point Arguello Companies	Platform Harvest	08013	0003	IC Engine: Crane (801)	0.0202
The Point Arguello Companies	Platform Harvest	08013	0001	IC Engine: Crane (800a)	0.3053
The Point Arguello Companies	Platform Harvest	08013	0002	IC Engine: Crane (800b)	0.3229
The Point Arguello Companies	Platform Hermosa	08014	0002	IC Engine: East Crane	0.3472
The Point Arguello Companies	Platform Hermosa	08014	0001	IC Engine: West Crane	0.3712
The Point Arguello Companies	Platform Hidalgo	08015	0002	IC Engine: East Crane	0.1882
The Point Arguello Companies	Platform Hidalgo	08015	0001	IC Engine: West Crane	0.3335
Total NOx Reductions (TPY)					6.8865
Total NOx Reductions (TPD)					0.0189

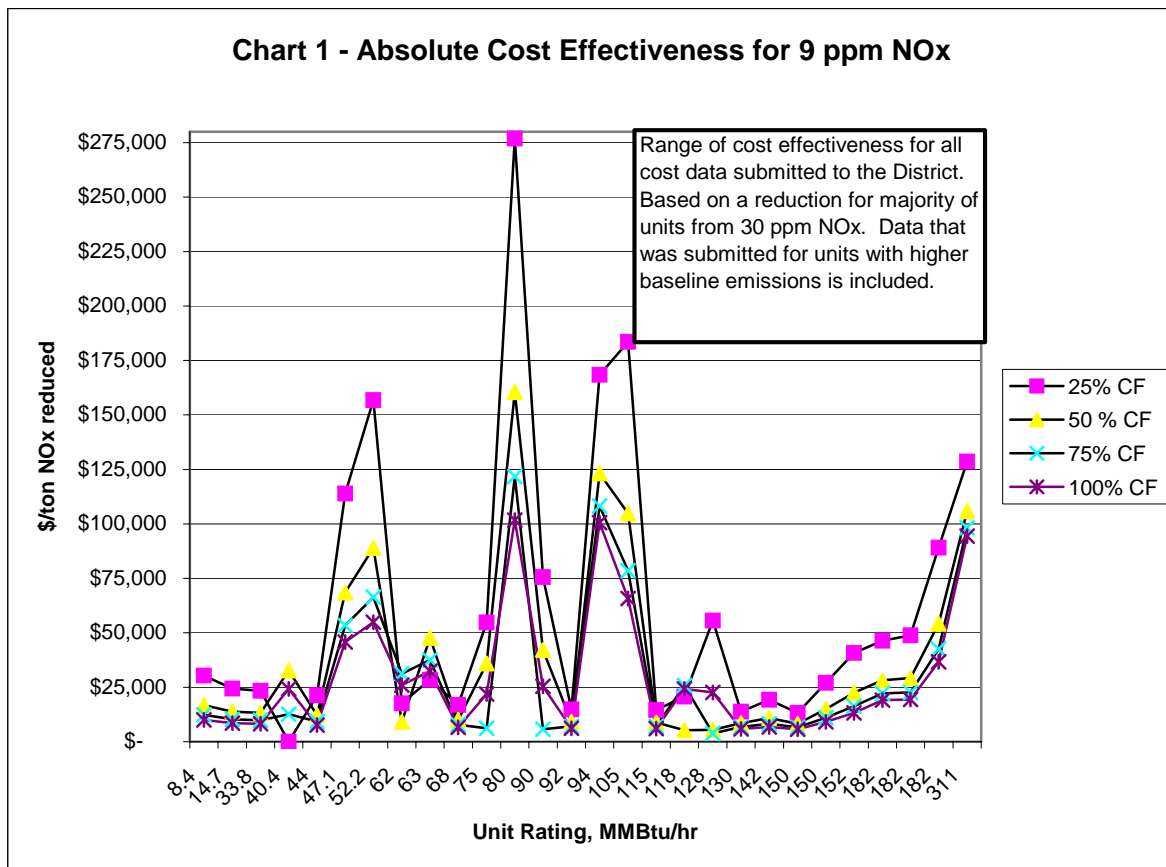
There may be additional emission reductions from rich-burn engines currently limited to 50 ppmv being required to meet 25 ppmv NOx at 15 percent oxygen under the revised rule. Similarly, there may be additional emission reductions from lean-burn engines currently limited to 125 ppmv being required to meet 65 ppmv NOx at 15 percent oxygen under the revised rule.

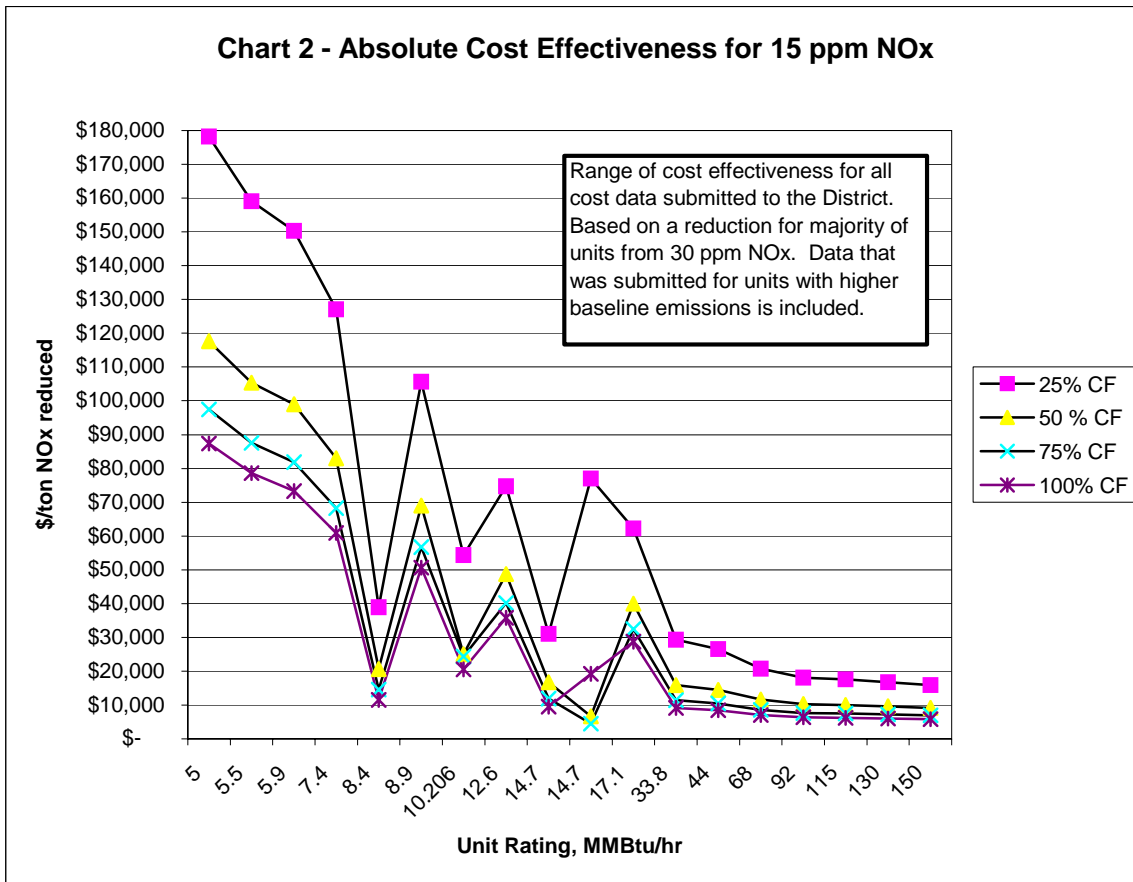
### **Rule 342 Control Measure Cost-Effectiveness:**

The San Joaquin Valley Unified APCD September 18, 2003 Final Draft Staff Report for Rule 4305 (Boilers, Steam Generators, and Process Heaters – Phase 2) and Rule 4351 (Boilers, Steam Generators, and Process Heaters – Phase 2) New Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3) included, in part, the following cost effectiveness data:

Absolute cost effectiveness of a control option is the added annual cost (in \$/year) of a control technology or technique, divided by the emission reduction achieved (in tons reduced/year). The costs include capital equipment costs, engineering design costs, labor and maintenance costs.

The analysis shows that the cost effectiveness values improve for larger units, higher operating capacity factor, and more restrictive NOx limits relative to the current 30 ppmv limit. A summary of the analyses is shown in Charts 1 to 2.





### **Rule 333 Control Measure Cost-Effectiveness:**

According to the San Joaquin Valley Unified APCD August 21, 2003 Staff Report for Proposed Amendments to Rule 4701 (Internal Combustion Engines – Phase 1) and Rule 4702 (Internal Combustion Engines – Phase 2), the cost-effectiveness is as follows:

1. 6,901 dollars per ton of NOx reduction for rich-burn cyclic engines retrofitted with non-selective catalytic reduction systems, in the lower brake horsepower range and operating seventy-five percent of the time (6,570 hours per year).
2. 267 to 8,415 dollars per ton of NOx reduction for rich-burn non-cyclic engines retrofitted with non-selective catalytic reduction systems.
3. 497 to 14,470 dollars per ton of NOx reduction for rich-burn non-cyclic engines with upgraded non-selective catalytic reduction systems.
4. 1,467 to 24,593 dollars per ton of NOx reduction for lean-burn engines retrofitted with a selective catalytic reduction system.
5. 2,093 to 40,494 dollars per ton of NOx reduction for lean-burn engines with upgraded selective catalytic reduction systems.

The San Joaquin Valley Unified APCD July 31, 1996 Cost Effectiveness Analyses of the Proposed Amendments to Rule 4701 (Internal Combustion Engines) indicates the cost effectiveness range for diesel engines meeting the 600 ppmv NOx at 15 percent oxygen limit is 330 to 6,001 dollars per ton of NOx reduction.

- *George Croll (VAFB)*: Asked the APCD to break the reduction analysis for Rule 342 down by boiler size and determine the reductions if the exemption is from 5MMBtu to 2MMBtu.

For a breakdown on the reductions anticipated from modifying Rule 342, see the previous response, Table R342. The question mentions combustion units in the 2 to 5 MMBtu/hr range. Rule 342 covers boilers that are 5 million British thermal units per hour (MMBtu/hr) and greater. Proposed Rule 361 will regulate combustion equipment rated greater than ( $>$ ) 2 but less than ( $<$ ) 5 MM Btu/hr. Therefore, it appears that the request may have been meant to apply to Rule 361. Before presenting the breakdown for Rule 361, a quick summary of the combustion rules may be helpful.

Combustion units are, or will be, governed by the following APCD Rules based on the combustion equipment heat input rating:

- Rule 352: Below 75,000 Btu/hr
- Rule 360: 75,000 Btu/hr up to and including 2 MMBtu/hr
- Rule 361:  $> 2$  MMBtu/hr to  $< 5$  MMBtu/hr
- Rule 342: 5 MMBtu/hr and greater

The APCD rules currently have a gap for combustion units  $> 2$  MMBtu/hr and  $< 5$  MMBtu/hr. Rule 361 is intended to close this gap so there will be regulations for combustion units in all size ranges.

Table R361 provides a breakdown of the point source inventory combustion units in the range of 2 to 5 MMBtu/hr. The rule is scheduled for adoption in the mid-term (2007 – 2009). Using a conservative approach, assuming the rule is adopted late 2009 with a one-year compliance deadline, calendar year 2015 is the first CAP forecasting year that we would expect to see a full year of emission reductions from the Rule 361.

**Table R361. POINT SOURCE EMISSION REDUCTIONS  
ANTICIPATED FROM RULE 361 (>2 MMBtu/hr to < 5MM Btu/hr)**

COMPANY	FACILITY	FID <sup>1</sup>	DEVICE NAME	2015 NO <sub>x</sub> EMISSION REDUCTIONS (TPY)	
				POINT OF SALE RULE	RETROFIT RULE
ExxonMobil Production Company	POPCO	03170	Sulfinol Teg Reboiler (B-251)	0.0058	0.1156
Gato Corporation	Tognazzini Lease (Gato)	03200	Boiler	0.0091	0.1823
Gato Corporation	Tognazzini Lease (Gato)	03200	Heater Treater	0.0021	0.0412
Grayson Service, Inc.	Peshine Lease/Tompkins	04129	Boiler	0.0079	0.1581
Greka SMV, Inc.	Bell Lease (Cat Canyon)	03211	Boiler: H-117	0.0093	0.1869
Greka SMV, Inc.	Bell Lease (Cat Canyon)	03211	Boiler: H-118	0.0093	0.1869
Greka SMV, Inc.	Bradley Lands/Bradley Consolidated Lease	04103	Boiler	0.0038	0.0755
Greka SMV, Inc.	Bradley Lands/Bradley Consolidated Lease	04103	Heater Treater / Desander	0.0053	0.1069
Greka SMV, Inc.	Bradley Lands/Bradley Consolidated Lease	04103	Heater Treater	0.0088	0.1756
Greka SMV, Inc.	Chamberlin Lease	03000	Tank Heater #2	0.0025	0.0497
Greka SMV, Inc.	Chamberlin Lease	03000	Tank Heater #3	0.0025	0.0497
Greka SMV, Inc.	Chamberlin Lease	03000	Heater Treater	0.0050	0.0995
Greka SMV, Inc.	Davis Lease	03002	Tank Heater #2	0.0058	0.1152
Greka SMV, Inc.	Davis Lease	03002	Tank Heater #3	0.0058	0.1152
Greka SMV, Inc.	Davis Lease	03002	Heater Treater	0.0115	0.2303
Greka SMV, Inc.	Greka - Los Flores Lease	04008	Boiler/Tank Heater	0.0042	0.0835
Greka SMV, Inc.	Greka - Los Flores Lease	04008	Heater Treater	0.0028	0.0567
Greka SMV, Inc.	Morganti Lease	03303	Boiler #2	0.0151	0.3016
Greka SMV, Inc.	Union Sugar Lease	03083	Heater Treater	0.0158	0.3157
Greka SMV, Inc.	United California Lease	03040	Boiler	0.0058	0.1158
Greka SMV, Inc.	United California Lease	03040	Heater Treater: UCAL2	0.0035	0.0704
Greka SMV, Inc.	United California Lease	03040	Heater Treater / Desander	0.0056	0.1114
Greka SMV, Inc.	United California Lease	03040	Heater Treater / Desander	0.0138	0.2755
Santa Maria Refining Company	Fullerton Lease	03325	Boiler	0.0095	0.1906
Santa Maria Refining Company	Santa Maria Refining Company	00037	Boiler: (B-4) Standby	0.0056	0.1116
Santa Maria Refining Company	Santa Maria Refining Company	00037	Boiler: (B-3) Standby	0.0078	0.1556
Santa Maria Refining	Santa Maria Refining	00037	Asphalt Heater: (Ah-3)	0.0832	1.6635

<sup>1</sup> “FID” stands for *Facility Identification Number*. This is a number assigned by the APCD for tracking devices in the permitting and inventory programs.

COMPANY	FACILITY	FID <sup>1</sup>	DEVICE NAME	2015 NO <sub>x</sub> EMISSION REDUCTIONS (TPY)	
				POINT OF SALE RULE	RETROFIT RULE
Company	Company				
Santa Maria Refining Company	Santa Maria Refining Company	00037	Asphalt Heater: (Ah-1)	0.0918	1.8366
Santa Maria Refining Company	Santa Maria Refining Company	00037	Asphalt Heater: (Ah-2)	0.1158	2.3160
Soladino Energy Partners	Soladino Lease	03031	Steam Boiler	0.0117	0.2332
Southern California Gas Company	La Goleta	01734	Heater: Hot Oil (Plant #14)	0.0035	0.0709
United States Penitentiary	Federal Correctional Inst. (Sign Shop)	03965	Fci Boiler #2	0.0098	0.1951
United States Penitentiary	Federal Correctional Inst. (Sign Shop)	03965	Fci Boiler #1	0.0159	0.3177
Venoco, Inc.	Carpinteria Gas Plant	00027	Therminol Heater H-101 (C-81)	0.0110	0.2195
Venoco, Inc.	Ellwood Onshore Facility	00028	Heater Treater (H-201)	0.0066	0.1328
Total NO <sub>x</sub> Reductions (TPY)				0.5331	10.6623
Total NO <sub>x</sub> Reductions (TPD)				0.0015	0.0292

In addition to point sources, area source combustion units will be subject to Rule 361. The following summarizes the total anticipated NO<sub>x</sub> emission reduction from a Rule 361 as a point of sale and as a retrofit type rule.

Point of sale type rule

2015 Pt Source ERs (TPD)	0.0015
2015 Area Source ERs (TPD)	0.0005
Total (TPD)	0.0019

Retrofit type rule

2015 Pt Source ERs (TPD)	0.0292
2015 Area Source ERs (TPD)	0.0093
Total (TPD)	0.0385

**Rule 361 Control Measure Cost-Effectiveness:**

According to a May 11, 1993 Ventura County APCD Final Staff Report for Rule 74.15.1, Boilers, Steam Generators, and Process Heaters, the cost-effectiveness ranges from a cost savings of roughly 5,800 dollars per ton of NO<sub>x</sub> reduced to a cost of about 21,000 dollars per ton of NO<sub>x</sub> reduced.

The 1992 Santa Barbara County APCD staff report for Rule 342 indicates cost estimates for retrofitting and maintaining low-NO<sub>x</sub> systems, guaranteed to meet the 30 ppmv standard for a 5 MMBtu per hour unit, is 26,000 dollars.

According to information from the Vandenberg Air Force Base ENVVEST program for two 4.25 MMBtu/hr boiler retrofits, the cost-effectiveness was about 6,000 dollars per ton of NO<sub>x</sub> reduced. In addition, data from the APCD's Innovative Technology Group's work on retrofitting nursery boilers in the 4 to 5 MMBtu/hr range indicates the cost-effectiveness ranged from about 3,000 to 4,000 dollars per ton of NO<sub>x</sub> reduced.

Note that the movement of amended Rules 333 and 342 from "Further Study" to "Rules Scheduled for Adoption" was based on direction from ARB (see letter from Robert Fletcher to Tom Murphy dated September 24, 2004 in Section 8.4). At the November 10, 2004 CAC meeting, a motion was made by the CAC to approve the Plan with the stipulation that the APCD contact the ARB to determine whether moving the rules back to further study would jeopardize ARB approval of the Plan. After discussion with the ARB, amended rules 333 and 342 will be moved back to "Further Study" from "Rules Scheduled for Adoption." The information and analyses provided above on these rules is being retained in this chapter, however, for historical continuity of CAC and public input.

- *Marc Chytilo*: Suggested that the APCD should prioritize rules by looking at the emission inventory to see where emissions are greatest and propose rules based on where reductions are needed. Marc also suggested that we should look beyond what other districts are doing and more at available technologies.

Terry responded that all feasible measures are based on the most stringent rules throughout the state and that the South Coast AQMD rules are the most stringent in the nation. Additionally the South Coast AQMD has staff who can investigate new technologies.

- *Marc Chytilo*: Raised concerns that were expressed in his September 24, 2004 letter to Jim Kemp (SBCAG) and Terry Dressler (APCD) regarding TCM's, land use, and the general planning process (see section 8.4).

See APCD Response to Public Comments

- *General CAC Discussion*: A general discussion on potential TCMs took place that focused on alternative forms of transportation and transportation incentive programs. Suggested forms of alternative transportation included rail from north county to south county, van pools, shared cars, employer and self-propelled buses.

Jim Damkowitch said the alternative transportation control measures discussed by the CAC are currently being examined through the 101-in-Motion process.

- *Dr. Inga Cox*: Asked the APCD to provide Holzclaw's reference in bibliography and to provide a better explanation of the term "holistic", which is included in Chapter 7.

The Holzclaw reference has been provided to Dr. Cox and "holistic" will be changed to "comprehensive" on page 7-1 of the plan.

- *Marc Chytilo*: Suggested that ISR was not to be brought to the Board as a specific part of the Plan but more as a rule.

ISR was intended to be part of the Plan as guidance and was never intended as a rule.

- *Tom Banigan (NuSil)*: “Why have baseline ROC emissions increased from that last draft version of the Plan?”

The increase in ROC emissions from 39.46 tons per day to 41.84 tons per day is due to adding area source degreaser emissions that were inadvertently left out of previous estimates.

- *John Gilliland (URS)*: “Why are there no VAFB boilers listed on pages 8-9 and 8-15?”

The APCD will review its inventory to determine which boilers should be included in Table R342 and Table R361.

- *Glenn Oliver (Plains Exploration)*: Some of the measures will affect sources that already provide emission reduction credits. Requiring more controls would then upset the offset efforts. Additionally, since emissions from certain sources are already low, further emission controls are not feasible.

The Planning process utilizes the current inventory in conjunction with the latest air quality monitoring data to determine whether we are making progress toward meeting air quality standards. If we don't meet the standards, then we need to implement all feasible measures. The net air quality benefit is then accounted for in the emissions inventory through the permitting process.

- *Doug Marsh*: “Since rule 361 is currently proposed as a mid-term measure, how do we know which boilers will in existence by the time the rule is implemented?”

As a currently proposed mid-term rule, it is not possible to know which boilers will still be in existence at the time the rule is implemented. It will be necessary to wait until the next plan update to determine the population of devices that will be affected by the proposed rule.

- *Larry Rennacker*: “Did the APCD do cost-effectiveness analyses for Rule 342 and Rule 333?”

Cost effectiveness calculations are presented in the responses to comments made at the October 13, 2004 CAC meeting.

- *George Croll (VAFB)*: “Can banked ERC’s be discounted?”

Yes. The RACT offset discount applies if a rule is made more stringent.

- *Doug Marsh*: “Will proposed rules be going through the rulemaking process?”

Yes. These rules will go through the standard rulemaking process including workshops and CAC discussion.

- *Kevin Wright (Entrix)*: “If Rule 333 is proposed, how will RACT discounting apply and does the surplus go away once the Plan is adopted?”

ERC’s are available until the time a rule is adopted. As any ERCs derived from proposed rules could only generate short-term ERC’s, the APCD would not allow for their use in long-term projects. RACT discounting applies to available ERC’s if a rule becomes more stringent at a later date.

- *Patrice Surmeier*: “Doesn’t the diesel ATCM control internal combustion engines and if so why is Rule 333 needed?”

The diesel ATCM is particulate matter based and targets carcinogenic diesel exhaust, not criteria pollutants.

- *General CAC Discussion*: A motion was made to approve the Plan with the caveat that Rule 342 and Rule 333 be moved from “Rules Scheduled for Adoption” back to “Further Study”, and to provide the Board with a “Statement of Concern” written by CAC members regarding Chapter 7 and the significance of including TCM’s in the Plan.

The APCD has contacted the ARB to determine the ramifications of moving Rules 342 and 333 back to “Emission Control Measures for Further Study” from “Proposed Emission Control Measures.” Based on discussions with ARB, Rule 333 and Rule 342 will be moved back to “Emission Control Measures for Further Study Measures”, and doing so will not jeopardize ARB’s approval of the Plan. In addition, Marc Chytilo and Kevin Wright were nominated by the CAC to provide a “Statement of Concern” to the Board regarding Chapter 7 and the significance of Transportation Control Measures.

### 7.3 2004 PLAN PUBLIC WORKSHOP

This section summarizes all public comments and staff responses from the public workshop. The public workshop was held on September 15, 2004 in Buellton in conjunction with the normally scheduled CAC meeting. There were no members of the public present at the workshop and all comments came from CAC members. Comments from the workshop/CAC meeting and the responses to these comments are provided below.

#### **Comments Received During September 15<sup>th</sup> Community Advisory Council Meeting**

- *General CAC Discussion:* A discussion ensued regarding the presentation of air quality exceedance data and the appropriate time scale to use for the data. Some CAC members suggested that it may be more appropriate to only present exceedance data for the past five years to provide a snapshot of our recent trends while others felt that the current presentation of exceedance data is sufficient and gives a good overall indication of exceedance trends and air quality improvement.
- *Lee Moldaver:* “How did we get the message out to the regulated community regarding the Plan workshop and the opportunity to provide comment on the draft Plan?”

The APCD informed the public of the workshop and of the opportunity to comment through mailing lists and through a public notice in local newspapers. In addition, the plan was provided to a number of sites, including local libraries, where the document could be reviewed by the public.

- *Bill Peitzke:* “CO2 emissions should be shown in the Plan, and what is the APCD doing to address CO2 emissions?”

The 2004 Plan is an state ozone attainment plan and does not cover CO2 emissions. The APCD will provide more information to the CAC on CO2 emissions at a future CAC meeting.

- *John Gilliland (URS):* “Will ERC’s from control measures be lost if a rule comes into place after the Plan is approved?”

If the APCD implements a rule that requires controls on equipment that were controlled to create ERCs, the emission reductions are no longer surplus. If the control technique employed for ERCs over-controls emissions (e.g., has a higher control efficiency than the efficiency required by the rule), then Rule 806 would consider the emission reductions that go beyond the rule requirements as surplus emissions available for emission reduction credits.

- *Dr. Inge Cox*: “Why has the list of 22 potential further study measures that was provided at the April 14, 2004 CAC meeting been reduced to 12 measures in the Plan, and what was the process utilized to determine which further study measures are included in the Plan itself?”

Staff provided the two lists of further study measures at the April 14, 2004 CAC meeting to show the broad number of measures that are being considered as potentially “all feasible measures.” At this CAC meeting, we discussed which ones out of the overall population of *all feasible measures* actually had sources with enough emissions to make it worthwhile to list them as a further study measure.

Staff reduced the initial *further study* lists by reviewing the control measure category inventory and potential emission reductions. If a control measure had the potential to reduce NOx or ROC emissions by 10 tons per year or greater then we kept it in as a further study measure.

- *George Croll (VAFB)*: Regarding increased NOx emissions from marine shipping: “Does the net increase in NOx emissions from marine shipping have an impact on air quality?”

Intuitively, any net increase in emissions will have an adverse impact on air quality. Without photochemical modeling analyses, the extent of the impact due to the net increase in NOx emissions from marine shipping is difficult to determine.

- *John Robinson*: Suggested that the APCD should provide more information to the Board of Directors highlighting the impacts of marine shipping on air quality.

We have provided the Board information regarding marine shipping emissions and they are aware of the magnitude of the challenge of controlling emissions from this significant source. We also plan to invite representatives of Lois Capps and Elton Gallegly to the December Plan adoption hearing so that they can further hear of the air quality challenges associated with marine shipping.

- *Tom Banigan (NuSil Technology)*: “Why can emissions from marine shipping be estimated, but potential emission impacts from the potential widening of 101 cannot be determined?”

SBCAG did provide an estimate of emissions from additional lanes to Route 101 as part of the 2001 Clean Air Plan (Appendix C). They estimate that by adding additional lanes on Route 101 will result in approximately .25 tons per day or 62 tons per year of ROC and NOx combined. This calculation is somewhat “crude” as it does not consider the possible negative impact of induced travel growth as a result of widening, nor the inevitable worsening of congestion and greater vehicular emissions that will occur over time if the freeway is not widened due to slower vehicle speeds under congested conditions. A more complete analysis on the impacts of widening or not widening the 101 freeway will be developed as part of the *101 In-Motion* process.

- *John Gilliland (URS)*: “The 2001 federal Clean Air Plan shows that future emissions are projected to be less than base year emissions. The 2004 state triennial update, however, shows that future year emission estimates of NO<sub>x</sub> are higher than base year levels. Will this jeopardize the 2001 Plan and the ability to maintain compliance with the federal 1-hour standard?”

The APCD has contacted EPA and they are aware of our recent emission projections as presented in the 2004 CAP. The primary reason that NO<sub>x</sub> emissions have increased from earlier estimates is that we were able to use actual horsepower data by individual ship rather than averages of horsepower by ship type in the emission calculations. This resulted in about a four ton per day increase in NO<sub>x</sub> emissions for the 2000 base year over the 1999 base year that was presented in the 2001 Plan. EPA, while concerned about net emission increases, did not indicate that the net increase in NO<sub>x</sub> emissions due to marine shipping would jeopardize the 2001 Plan. Additionally, there have been not violations of the federal 1-hour standard since 2000.

- *Bill Peitzke*: “Why not explore speed reduction to reduce emissions from marine shipping in the Santa Barbara Channel?”

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.

- *Larry Rennacker*: “What is the emission factor NO<sub>x</sub> used to determine marine shipping emissions?”

The NO<sub>x</sub> emission factors range from 16.02 g/kWh for auto carriers and 17.09 g/kWh for container ships. These NO<sub>x</sub> emission factors assume that marine vessels meet International Maritime Organization (IMO) NO<sub>x</sub> emission standards.

- *Larry Rennacker*: “Did ARB look at the potential impacts of marine shipping during its recent transport analysis?”

Back trajectories performed by the ARB showed air parcels moving over the Santa Barbara Channel prior to advecting into the Los Angeles area. It is not possible to determine from the analyses, however, whether emissions from ships transiting through the Santa Barbara Channel had an adverse impact on air quality in the Los Angeles Basin.

- *Lee Moldaver*: “Representatives from the offices of both Lois Capp’s and Elton Gallegly should be invited to the Board Plan adoption hearing so that they can take notice of the marine shipping problem, which may induce increased action at the state level.”

The APCD will contact the offices of both representatives and invite them to the Board Hearing currently scheduled for December.

- *Dr. Inga Cox*: “Why is there a difference in the percentage of overall total NOx emissions between the 2001 Plan and the 2004 Plan?”

NOx emission differences between the 2001 Plan and the 2004 Plan are primarily due to the differences in methods used to calculate marine shipping emissions. NOx emissions from marine shipping in the 2001 Plan were based on average horsepower by ship type (e.g., auto carrier, container ship, etc.) while NOx emissions from marine shipping that is presented in the 2004 Plan are based on ship-specific horsepower data.

- *Marc Chytilo (Law Offices of Marc Chytilo)*: Commented that there are technical deficiencies in the Plan that need to be addressed. These deficiencies are as follows:

1. The Plan references two sections of the Health and Safety code, but not the appropriate section that pertains to state triennial updates.

The 2004 Plan references the appropriate sections of the Health and Safety code for this triennial update in the Executive Summary (H&SC Sections 40924 and 40925) and for our emission reduction strategy in Chapter 4 (H&SC Section 40914).

2. The Plan should address whether the San Joaquin Valley is a potential transport couple and whether emissions from Santa Barbara County impact the southern San Joaquin Valley.

Transport analyses conducted by the ARB have shown that emissions from the San Joaquin Valley can have an impact on the northern portion of the South Central Coast Air Basin (which includes Santa Barbara, San Luis Obispo and Ventura Counties), primarily in northern San Luis Obispo County. The ARB, however, has not identified a South Central Coast Air Basin to San Joaquin Valley transport couple. Additionally, emissions generated in the San Joaquin Valley are considerably higher than those generated in Santa Barbara County. Given the prevailing meteorology and relatively low emissions compared to San Joaquin Valley, it is not likely that Santa Barbara County emissions contribute significantly to San Joaquin Valley exceedances.

3. There are no contingency measures within the Plan.

The suite of further study measures presented in Chapter 4 of the Plan can be considered contingency measures by ARB, if needed. Also, Chapter 5 has been revised to list Enhanced I/M as a contingency measure for the on-road mobile source side of the inventory.

4. There should be a discussion of VMT growth versus population growth and whether VMT growth will be reduced as population increases.

A discussion of VMT with respect to population growth can be found in Section 5.2 of the Plan.

- *Kevin Wright (Entrix)*: “Will Rule 361 (Small Industrial and Commercial Boilers, Steam Generators and Process Heaters – 2 MMBtu/hr to < 5 MMBtu/hr) be a point-of-sale or retrofit rule?”

Rule 361 is a mid-term rule that is scheduled to take effect in the 2007 to 2009 timeframe. Credits are being taken in the Plan by assuming that Rule 361 will be a point-of-sale rule. If during rule development, however, it is determined that a retrofit approach to Rule 361 is cost-effective, staff will bring this issue back to the CAC for discussion.

- *Kevin Wright (Entrix)*: “Can ERC’s be claimed for further study measures, and will the availability of ERC’s go away once the Plan is adopted?”

Further study measures will remain available for ERC’s after the Plan is adopted. Any ERC’s from further study measures are available until the time the rule is adopted. For proposed rules, however, credit cannot be taken once the Plan is adopted

Point-of-clarification: With respect to proposed rules, once a Plan is adopted, the APCD may consider the possibility of creating short-term Emission Reduction Credits that may be used for only short term projects. For example, if a proposed rule in an adopted Plan is not scheduled for implementation until 2010, the APCD may consider allowing short-term ERCs to be created and used by a project whose shut-down date is prior to 2010. As any ERCs derived from proposed rules could only generate short-term ERCs, the APCD would not allow for their use in long-term projects.

- *Kevin Wright (Entrix)*: Commented that many of the further study measures proposed in the Plan are measures implemented by the San Joaquin Valley, which is classified as an “Extreme” area by EPA, whereas Santa Barbara is in attainment for the federal 1-hour ozone standard. Mr. Wright added that it is not necessary to be as aggressive as San Joaquin Valley since Santa Barbara County is a federal attainment area.

We are required to implement every feasible control measure. Generally, this means that control measures adopted by other air districts are cost-effective and feasible. The measures identified in Tables 4-4 and 4-5 are slated for further study. Staff will perform additional analysis on these control measures to determine if they should be moved into the *proposed control measure* category. Cost-effectiveness and the environmental benefits from implementing the control measure will be considered during the further study analysis.

#### **7.4 WRITTEN COMMENTS AND RESPONSES ON THE 2004 PLAN**

This section provides all written comments received on the 2004 Plan and accompanying APCD staff responses to these comments.

## **March 18, 2004 e-mail From John Gilliland (URS) to Jim Damkowitch (SBCAG)**

Jim.

I would like to express my appreciation to you for taking time out of your schedule to meet with me to discuss the APCD 2004 Clean Air Plan (CAP), Chapter 5. You provided informed answers that clarified issues and assisted my further understanding. Following is a brief summary of our discussion.

1. Does the CAP take into account emission reductions resulting from the California Air Resources Board (CARB) revisions to the portable equipment registration program (PERP)? You indicated that emission reductions associated with the PERP revisions are not incorporated into the APCD CAP because these emission sources are typically handled in the CARB off road emission model. Tom Murphy suggested I contact Joe Petrini and confirm this (Joe: Your thoughts? Are the emission reductions associated with the 2010 deadline accounted for in the CAP?)

2. Does the departure from EMFAC2002 Defaults affect the EPA-approved 2001 APCD CAP? You indicated that additional verbiage would be added clarifying that these changes will not affect the basic assumptions applied to the EMFAC 2002 Model and the APCD 2001 CAP.

3. Are emission reduction from control of internal combustion engines (ICEs) following CARB codification of the mobile airborne toxic control measures (ATCMs) accounted for in the EMFAC2002 modeling? You stated that if the ATCMs were final regulations, they would be incorporated into the model. ATCMs not codified as a final regulation are not included and could be incorporated when the EMFAC model is revised. If this revision does not occur by the next APCD triennial review, these emission reductions could be accounted for in an off model calculation. I would suggest that language be added indicating this because you or I may not be around in three years.

4. EMFAC2002 Output Sheets - Are Diesel Oxidation Catalysts accounted for in the CAP? You stated you needed to research this question and would hopefully have an answer available by the next CAC meeting.-

Unfortunately, it appears that I have a scheduling conflict that may prevent my participation at the 14 Apr 04 CAC meeting. In the event that I am unable to attend, I would greatly appreciate it if you would inform members of the CAC of our discussion.

If you have any questions, please do not hesitate to contact me.

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# LAW OFFICE OF MARC CHYTILO

## ENVIRONMENTAL LAW

April 15, 2004

Mr. Terry Dressler, Control Officer  
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260 N San Antonio Road, Suite A  
Santa Barbara, California 93110

Mr. Jim Kemp, Executive Director  
Santa Barbara County Association of Governments  
260 N San Antonio Road, Suite B  
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By E-mail DresslerT@sbcapcd.org, ikemp@sbcag.org

RE: 2004 CAP TCM Plan

Dear Terry and Jim:

At last night's APCD CAC meeting, I expressed concern that the draft TCM list proposed for the 2004 CAP was being developed without the benefit of an emissions reductions target. I further expressed concern that the District must undertake a specific TCM Planning process under State law. Finally, I stated that I supported a more extensive and expansive process for involving and including the public, transit operators, local municipalities, adjacent counties and other agencies in the process of identifying potential TCMs and scoping them so they would receive adequate consideration in the reasonably available control measure analysis process. The CAC was generally supportive of these concerns, so I write to describe more particularly the issues at hand.

Health and Safety Code § 40717 establishes a clear mandate for Districts to establish the quantity of emissions reductions necessary from transportation sources necessary to attain the state standard. § 40717(b)(1). This language unquestionably applies to the 2004 CAP. §§ 40717(a); 40717(b)(3)(C). Other portions of the California Clean Air Act require attainment demonstrations and emissions reductions goals. See, for example, Health and Safety Code § 41503(b), describing the standards by which ARB is supposed to assess the CAP's adequacy. The fact that there is an exemption for District that cannot feasibly predict an attainment date does not eliminate that requirement unless the District and its CAP demonstrate this on the basis of substantial evidence. I was led to believe that the data from SCOS would enable ARB and local Districts to predict attainment dates, and since the District was required to model attainment of the federal one hour standard, addressing the state standard should represent a limited increment of additional work.

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Mssrs. Dressler and Kemp  
April 15, 2004  
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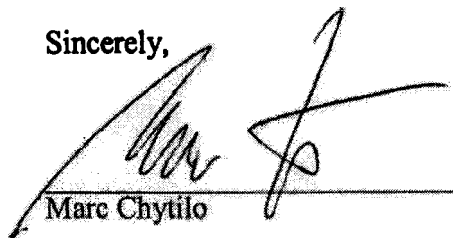
In any case, the Transportation Sources Plan must be developed and "adopted" by the COG, or SBCAG, and then submitted to the District on a schedule adopted by the District. § 40717(b)(2). The District has a mandatory obligation to review and reject that plan if inadequate to achieve the emissions reductions requirement. § 40717(b)(3).

In light of the broad public distrust in the "101 in Motion" process (many community representatives believe that the SBCAG Board of Directors has directed a particular outcome, a belief supported by the record), the TCM planning process is an important opportunity for public involvement in scoping potential TCMs. The APCD CAC had a lively discussion about potential transit measures, and staff recited that there are no shortage of creative ideas to address local congestion issues and different forms of transit. The California Clean Air Act recites that "Districts shall focus particular attention on reducing the emissions from transportation sources and areawide emissions sources." Health and Safety Code § 40910.

I ask that the District and SBCAG create a robust public outreach process that includes the public, the various agencies that have expressed interest in public transit issues through the unmet transit needs process, transit operators and adjoining jurisdictions. Your agencies' duty is to consider all reasonably available transportation control measures, not simply adopt all feasible measures. § 40918(a)(3). The CAP must address means to achieve applicable performance standards. Id.

Thank you for considering these views on this important topic. I hope that this will result in a renewed effort to identify and adopt TCMs that can overcome the challenges our community faces in achieving the state standard and addressing transportation needs of our community.

Sincerely,



Marc Chytilo

CC: Tom Murphy  
Jim Damkovich  
Bill Dillon

## **July 15, 2004 Memorandum From John Gilliland (URS)**

**Memorandum:** Santa Barbara County Air Pollution Control District (APCD)  
Community Advisory Counsel

**From:** John D. Gilliland, CAC Member

**Date:** 15 July 2004

**Subject:** 14 July 2004 Community Advisory Counsel Meeting Comments

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1. I have reviewed the Executive Summary and Chapter 6, Emission Forecasting, to the Santa Barbara County Air Pollution Control District (APCD) State of California Clean Air Plan (SCCAP). The following comments and questions are provided:

2. Executive Summary:

a. Introduction:

(1) Request consideration from the APCD to include a discussion on the new federal 8-hour standard and its relationship to Santa Barbara County.

(2) Should this SCCAP add comments discussing the proposed California 8-hour standard?

b. Does This 2004 Plan Address any Federal Requirements:

(1) Please include the federal authority citation at the end of the paragraph.

3. Chapter 6

a. Section 6.1 – Introduction: The APCD indicates that emissions from natural sources are excluded from the Planning Emission Inventory (PEI) because they are unregulated. Is the APCD willing to consider including some biogenic sources such as oil and gas seeps, agricultural waste composting and range burning in APCD regulations and the PEI? Controlling these sources provides additional air quality improvement and provides industrial sources potential incentives to control emissions for the purposes of creating emission reduction credits.

b. Section 6.2.2 – Control Measures: Refer to the discussions regarding natural sources.

c. Section 6.2.3 – Vandenberg Air Force Base Airborne Laser Mission Growth Allowance: Can the APCD add a footnote to this discussion that indicates this requirement may be removed pending the revocation of the Federal one-hour standard.

d. Section 6.4 – Impacts of Marine Shipping Emissions: Is it possible for the APCD to determine the actual marine shipping for 2001, 2002, and 2003 to see how it tracks with the forecasted assumption? If the emissions are significantly different (either greater or less) is it possible to revise the forecast for this 2004 SCCAP or the 2007 SCCAP?

e. Section 6.4 – Impacts of Marine Shipping Emissions: The APCD stated that the burden of attaining or maintaining air quality improvement goals may fall disproportionately on onshore sources. Please add a discussion as to the ramifications to the APCD if the Board waives air quality improvement rules due to stakeholder input. Are state sanctions or other regulatory penalties mandated by CARB possible?

f. Table 6-5 – 2004 Clean Air Plan Activity Indicators and Factors for 2005, 2010, 2015 and 2020: Under the prescribed fires section, is the APCD willing to consider revising the baseline numbers to more accurately represent this section. Even though this very low activity took place in 2000, a review of previous years and post years indicates values more closely attuned to the 6,250 values. The value, as listed, provides an erroneous growth factor for this category.

g. Figure 6-11 - Santa Barbara County OCS NO<sub>x</sub> Emission Forecast Including Marine Vessels: This table clearly illustrates that the 2000 baseline year is less than the 2020-forecasted year. Is it possible for the APCD to receive Plan approval when the 2020 values are higher than the baseline year?

4. Thank you for the opportunity to provide comments.

JOHN D. GILLIAND

# LAW OFFICE OF MARC CHYTILO

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## ENVIRONMENTAL LAW

September 24, 2004

Mr. Terry Dressler, Control Officer  
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By Fax: (805) 961-8801  
And US Mail

Mr. Jim Kemp, Executive Director  
Santa Barbara County Association of Governments  
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Santa Barbara, California 93110

By Fax: (805) 961-8901  
And US Mail

RE: 2004 CAP Comments

Dear Terry and Jim:

As you know, I am gravely concerned that Santa Barbara County has proceeded headlong into the development of a 'paper' state Clean Air Plan (CAP) *which fails to* address minimum legal requirements for this document and defers treatment of significant issues to a future time, at which point the problems will have become far more difficult to overcome. Please accept these comments on behalf of Our Children's Earth Foundation, an organization committed to improving air quality *throughout* California to meet the needs of all of our community, and in particular, the needs of children and other persons that are particularly sensitive to exposure to air pollution.

I strongly encourage your agencies to withdraw the 2004 CAP and commence the analysis and processes identified in this letter of comment. Residents of Santa Barbara County are entitled to the public health protection required by California law – attainment of the California ambient air quality standards "as expeditiously as practicable." As drafted, the 2004 CAP fails in that fundamental purpose, with substantial adverse human health effects as a result. We deserve better.

### 1. Transportation Control Measures

The CAP is deficient for failing to contain any transportation control measures, which the legislature intended should be a focus in each Clean Air Plan. The California Clean Air Act contains clear and express reference to a particular process that is required to identify and develop Transportation Control Measures (TCMs) in all air quality plans, including CAPS. The Santa Barbara County Air Pollution Control District (APCD) and Santa Barbara County Association of Governments (SBCAG) have ignored that process entirely, and as a consequence, propose no new TCMs in the 2004 CAP. Your agencies' development of the 2004 CAP should be guided by the following admonition:

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"In developing attainment plans and regulations to achieve this objective [of attainment by the 'earliest practicable date'], districts shall consider the full spectrum of emission sources and **focus particular attention on reducing emissions from transportation and areawide sources.**"

Health and Safety Code § 40910 (emphasis added).

The planning emissions inventories in the 2004 CAP disclose that 81% of 2000 ROC emissions and 87% of NO<sub>x</sub> emissions are from mobile and area sources. 3-17. The CAP, however, proposes only nominal progress in reducing emissions from these source categories, beyond the progress achieved by state tailpipe standards and a few rules developed by other Districts. The CAP fails to focus on these source categories, even though they are substantial elements of local emissions inventories. Further, growth in other sectors of the emissions inventory jeopardizes all emissions reductions contained in the plan. The 2004 CAP fails to "focus particular attention on reducing emissions from transportation and areawide sources."

Although several SBC APCD SIPS and CAPs have contained chapters addressing land use strategies, growth associated with land use activities is a significant factor in future emissions inventories. The plans pay lip service to the issue, but the APCD and SBCAG are failing to act aggressively enough to assert these issues in the land use planning process throughout the county. The jobs-housing balance remains at an all-time high, and VMT continues to skyrocket. Despite vigorous debates within the County and virtually every municipal jurisdiction, the APCD remains at the edges of any such discussion, if not absent entirely.

Further, the District and SBCAG have ignored the procedures required by Health and Safety Code § 40717 that would ensure that these issues are given proper focus. That statute is reproduced below, in its entirety.

Health and Safety Code § 40717. Adoption of plan for transportation control measures; Contents of plan

(a) A district shall adopt, implement, and enforce transportation control measures for the attainment of state or federal ambient air quality standards to the extent necessary to comply with Section 40918, 40919, or 40920.

(b) A district which has entered into an agreement with a council of governments or a regional agency to jointly develop a plan for transportation control measures shall develop the plan in accordance with all of the following:

(1) The district shall establish the quantity of emission reductions from transportation sources necessary to attain state and federal ambient air standards.

(2) The council of governments or regional agency, in cooperation with the district and any other person or entity authorized by the council of governments or regional agency, shall develop and adopt a plan to control emissions from transportation sources which will achieve the emission reductions established under paragraph (1). The plan shall include, at a minimum, a schedule for implementing transportation control measures, identification of potential implementing agencies and any agreements entered into by agencies to implement portions of the plan, and procedures for monitoring the effectiveness of and compliance with the measures in the plan. The council of governments or regional agency shall submit the plan to the district for its adoption according to a reasonable schedule developed by the district in consultation with the council of governments or regional agency.

(3) Upon receipt of the plan submitted by the council of governments or regional agency, the district shall review and approve or disapprove the plan in the following manner:

(A) The district shall review, adopt, and enforce the plan if it meets the criteria established by the district pursuant to paragraph (1) and has been submitted pursuant to the schedule established under paragraph (2).

(B) If the district determines that the plan does not meet the criteria established pursuant to paragraph (1), the district shall return the plan to the council of governments or regional agency with comments which identify the reasons the plan does not meet the criteria established pursuant to paragraph (1). Within 45 days, the council of governments or regional agency shall review the district's comments, revise the plan to meet the criteria established under paragraph (1), and resubmit the plan to the district. The district shall review and approve the revised plan if it meets the criteria established by the district pursuant to paragraph (1) and has been resubmitted to the district within 45 days.

(C) If the plan is not submitted pursuant to the schedule established under paragraph (2), or if a plan revised by a council of governments or regional agency and resubmitted to a district pursuant to this subparagraph does not meet the criteria established under paragraph (1), the district shall develop, adopt, and enforce an alternative plan for transportation control measures.

(4) Whenever the district revises its establishment of the quantity of emission reductions from transportation sources necessary to attain state and federal ambient air standards, the plan shall *be* revised, adopted, and enforced in accordance with paragraphs (1), (2), and (3).

(c) Subdivision (b) shall not apply to the Sacramento district. Chapter 10 (commencing with Section 40950) shall govern preparation and enforcement of that plan for transportation control measures for the Sacramento district.

(d) Notwithstanding subdivision (b), a district located in a county of the third class shall develop a plan for transportation control measures as follows:

(1) The district, in consultation with the council of governments, shall develop, approve, and adopt criteria under which the plan shall be developed.

(2) The council of governments shall develop and adopt a plan for transportation control measures which meets the criteria established by the district, and shall submit the plan to the district for its review and adoption according to a reasonable schedule developed by the district in consultation with the council of governments.

(3) Upon receipt of the plan submitted by the council of governments, the district shall review and approve the plan if it meets the criteria established by the district pursuant to paragraph (1) and has been submitted pursuant to the schedule established under paragraph (2). If the district determines that the plan does not meet the criteria established pursuant to paragraph (1) or if the plan is not submitted pursuant to the schedule established under paragraph (2), the district shall develop and adopt an alternative plan for transportation control measures.

(e) A district may delegate any function with respect to the implementation of transportation control measures to any local agency, if all of the following conditions are met:

(1) The local agency submits to the district an implementation plan that provides adequate resources to adopt and enforce the measures, and the district approves the plan.

(2) The local agency adopts and implements measures at least as stringent as those in the district plan.

(3) The district adopts procedures to review the performance of the local agency in implementing the measures to ensure compliance with the district plan.

(4) Multiple site employers with more than one regulated worksite in the district have the option of complying with the district rule and reporting directly to the

district. Employers that exercise this option shall be exempt from the local agency trip reduction measure.

(f) A district may revoke an authority granted under this section if it determines that the performance of the local agency is in violation of this section or otherwise inadequate to implement the district plan.

(g) For purposes of this section, "transportation control measures" means any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions.

(h) Nothing in this section shall preclude a local agency from implementing a transportation control measure that exceeds the requirements imposed by an air pollution control district or an air quality management district if otherwise authorized by law.

The District and SBCAG have entered into an agreement for the joint development of a CAP, but have ignored the mandatory requirements of Health and Safety Code § 40717. For example, the District failed to develop an estimate of emissions reductions from transportation sources necessary for attainment. The California Clean Air Act does not necessarily require a complete, modeled attainment demonstration, but only an estimate. The CAP contains no estimate at all.

Having previously raised this issue with the District and SBCAG, Exhibit 1. The District and SBCAG responded that: "While § 40717 mandates that areas quantify the emission reductions from transportation sources to attain state and federal standards, we do not have the photochemical modeling analysis to identify the targets for the state standard. Therefore, we are technically unable to fulfill the process identified under § 40717 and must default to the every feasible measure approach outlined in § 40914." Letter, Terry Dressler and Jim Kemp to Marc Chytilo, May 21, 2004, attached as Exhibit 2. There is no authority for the conclusion that the general responsibility of every District to utilize the process mandated by HSC § 40717 is preempted by § 40914's supplemental requirement that each District achieve a 5% annual emissions reduction. HSC § 40914 is clearly a description of one necessary element of a CAP, and does not override all other requirements of the California Clean Air Act, such as HSC § 40717.

Further, it is difficult to determine that the District and SBCAG have employed all feasible transportation control measures in the absence of a meaningful and public effort to identify them. This office provided the District and SBCAG with an extensive list of reasonably available transportation control measures that have been employed in other parts of the country. See Exhibit 3, suggested TCMs to the 2001 maintenance plan. It is absurd to contend that the "101 in Motion" process serves as a surrogate for the 40717 process — the "101 in Motion" process is designed and intended to address traffic congestion on a single reach of highway, and was

authorized with the governing SBCAG Board's resolution and staff report referencing that lane widening was the project that the Board wanted to see as the outcome and product. Respectfully, the claims that the agencies are "unaware of a 'broad public distrust' is disingenuous at best. SBCAG's board, controlled by a particular faction, was adamant as to the project that they expected to result and that they intended to approve from the "101 in Motion" process — widening of Highway 101. As evidence, on October 16, 2003, SBCAG staff revised the previously recommended policy concerning Highway 101 to read as follows, with strikethrough and italics in the original indicating stricken and added language:

"The implementation plan shall ~~include~~ *result* in a project or set of projects that will increase the capacity *by adding lanes* and reduce congestion on Highway 101."

SBCAG Staff Report, 10/16/2003, Agenda Item # 10, attached as Exhibit 4. The public testimony included numerous comments, including myself, decrying the mandating of a particular project as the outcome from this process. Lane widening is not a TCM, and nowhere else in the SBCAG Staff Report or "101 in Motion" process is the identification of TCMs specified as an objective.

The inadequacy of the agencies' TCM development process is evident in the result — not a single new TCM is proposed for adoption. Previously APCD staff expressed reservations about adding aggressive new TCMs to the federal SIP due to the requirement that these TCMs actually be implemented, regardless of changed circumstances. This argument does not apply to the State CAP, where there are apparently no consequences from a failure to implement. We note also that the District and EPA have each adopted guidance and/or rules allowing TCM substitution, and thus the nature of the commitment to adopt and implement a TCM is quite different from a stationary source control commitment.

It is apparent that the failure of the District and SBCAG to observe each of the § 40717 steps — identifying an emissions reductions target by the District; SBCAG developing a transportation sources plan that could achieve those emissions reductions; conducting a public hearing where the adequacy of that plan is considered; and the District either guiding SBCAG's development, or assuming itself the responsibility of developing and implementing the transportation sources plan — robbed the CAP TCM process of legitimacy or effectiveness. The agencies were placed on notice early in the process that this was an applicable requirement, Exhibit 1, yet they chose to ignore it. The breathing public, the adequacy of the 2004 CAP, and the direction of transportation in our communities, are the victims of this defiance.

Reasonably available transportation control measures include the following:

Commuter Choice: Adopt and staff a Commuter Choice program. This is an obvious program to adopt. Recent changes in state and federal tax law allow employers to offer employees parking

and transportation benefits as tax-exempt compensation, with greater incentives for parking cash-out and alternative commute options. Employees can receive up to \$175 per month of their existing or new compensation tax free. This is truly "found money" for both employers and employees which offers a meaningful incentive to use alternative commuter options in a flexible and cohesive package. According to the International Council for Local Environmental Initiatives "[t]his simple act of uncovering parking subsidies and offering a choice can reduce solo car commuting by up to 22%." See <http://www.iclei.org/cashout/>. See also <http://www.commuterchoice.com/>.

Community Car Programs: A number of communities in the United States and Europe have begun "community car" programs. In essence, this is a low cost, cooperative subscription car rental system allowing families to avoid many of the expenses of auto ownership while maintaining access to a car when specifically needed. Communities must be designed and operated to allow most daily functions to occur without needing a car. In some European cities (e.g., Zurich), community cars enjoy preferential parking privileges, enhancing their attractiveness. San Francisco has recently initiated a community car cooperative program. Linked to new residential design features enhancing the quality of communities that are not designed with the car as the first priority, the community car concept may offer considerable benefits in encouraging more appropriate land uses

Smart Growth Resources: Smart Growth Resources to land use planning officials. Our sprawling land use patterns cost local government in increased *and* inefficient services, destroy open space, increase auto dependence, waste personal economic resources and degrade quality of life. See, for example, Driven to Spend: How Sprawl and Lack of Transportation Choice Are Driving Up Family Transportation Costs, <http://www.transact.org/>. Land use planners in the County and cities lack a regional perspective and are largely ignorant of the environmental and social ramifications of ignoring air quality impacts and transportation alternatives in their review and planning processes.. This is one essential ingredient of sprawl. Your agencies must tackle this issue aggressively, or else decisions made in coming years will preclude an efficient future public transportation system and create continuing problems for our communities. Only your agencies are positioned to assemble and provide effective materials on "smart" planning for air quality and transportation perspectives and make strong recommendations for appropriate land use development patterns and design. While your agencies lack direct regulatory control, you can serve both as an important source of information, training and expertise to cities and the county.

Bike projects: Design and implement a much more comprehensive bicycle system for the region. Develop and implement a continuous, connected bike lane system from each county line with an extensive bike lane network. Develop a bike lane network serving all medium and large schools to promote safe bike commuting to school. Complete a comprehensive network of bikeways, including: Class I (exclusive bike paths separated from roads), Class II (on-road striped bike lanes), Class III, (on-road shared, signed routes) and Bicycle Boulevards. Install bicycle route

numbering with maps. Maintain effective and continuing review and improvement of safety problems and maintenance of all bikeways. Review and maintain highway and street standards including surface standards, bridge access, bike lane cleaning, illegally parked car intrusion elimination, and bicycle sensitive traffic signals.

Pedestrian Projects: The region lacks a comprehensive sidewalk system, and continues to design new development prioritizing vehicular, rather than pedestrian access. Areas within existing communities where existing and future land uses are conducive to pedestrian use should be subject to a master planning process to be designed and shaped to become more pedestrian-friendly over time as redevelopment and other improvements occur and as these communities and developments mature.

Recognize Induced Traffic and VMT: SBCAG should require future project-level analysis (and analysis of all private projects which require transportation infrastructure improvements to accommodate traffic increases) to include additional modeling that incorporates the principle of latent (induced) demand in its design. Recalibrate the travel model, using actual VMT from completed projects.

Comprehensive Public Transit Gap Analysis: Gaps in the County's public transit system make the use of a car a necessity for many people who would otherwise use the bus. A number of residents simply forgo travel to these areas, as the car is not an option. The CAP should include a public transportation gap analysis and strive to implement a comprehensive public transit system. Once a complete transit system is in place, each portion of the entire system will experience increased ridership.

Indirect Source Review: for all permitting actions that induce traffic, as recommended by the CAC.

Parking Management: increase the cost of parking in all urban areas to subsidize and increase the attractiveness of public transit.

TEA Restrictions to Enhance Transit and Smart Growth: Some communities in California have considered restricting certain portions of TEA-21 funds to communities which adhere to certain land use and transit performance standards. For example, the following policies could have application in Santa Barbara County:

A) A RTP investment policy prioritizing transportation projects that are coupled with transit, bicycle and pedestrian oriented development along transit corridors and nodes, and conditioning capacity increasing highway projects on the adoption of growth management plans that embody provisions for open space preservation and subregional agreement on a growth budget that does not overload either transportation infrastructure or other forms of infrastructure.

B) Condition funding and approval of projects serving large new trip generating land uses on a major reduction in drive-alone access to those projects. Such reductions shall be based on providing parking for fewer than the number of spaces ordinarily required, parking charges, cashing out employer paid employee parking, developer subsidies for transit access to the project, and other similar transportation measures. The effectiveness of demand management shall be guaranteed by an enforceable agreement to meet performance standards for access that reduce by some figure (half?) the number of drive alone trips and mandate the addition of further transportation incentives to meet performance goals if they are not met.

C) Increased county-level transit ridership targets (necessitating increased investment in transit, increasing the cost effectiveness of transit investments, as well as encouraging land use jurisdictions to provide incentives to transit-supportive land use decisions). The TCM should reference achieving and maintaining a minimum modal split for transit, pedestrian and bike travel at specific milestone's, with If/Then consequences for each portion of the county at these points for not reaching the specified target.

D) Fund highway expansions only within cities or sub-regions of the county where 80 percent of employees in businesses with over 5 employees are offered parking cash-out or commuter choices, and where parking is unbundled from rental housing and business rental/lease agreements.

E) Allocate a certain percentage of discretionary funds exclusively to projects (both maintenance and capacity-expanding) in areas that meet specified smart growth criteria as is the practice in San Mateo (where transportation money is given to cities that approve dense housing near rail stations).

These policies build upon the use of TEA funds as incentives for smart growth principle utilization, as pioneered by Dr. John Holtzclaw, director of Sierra Club's Transportation Program. This approach has been determined to be legally appropriate upon scrutiny by the Air Resources Board. (K. Walsh, ARB General Counsel, to F. Chin, MTC, 10/26/1999).

EPA's Transportation Air Quality (TRAQ) Center provides state and local air quality regulators and transportation planners with access to critical information regarding transportation programs and mobile source incentive based programs, partnership opportunities, grant funding sources, useful contact names, and technical assistance. <http://www.epa.gov/oms/transp.htm>. Links from this page provide testimonials and experiences from other programs and references to EPA's emissions reductions quantification analysis for TCMs and land use strategies. See also The Surface Transportation Policy Project: <http://www.transact.org/caldefault.htm>.

Finally, there is no evidence to support the CAP'S apparent conclusion that none of the list of further study transportation control measures could be feasibly implemented more immediately.

## 2. VMT Growth

The California Clean Air Act imposes several mandatory elements of a CAP. As a "moderate" area, Santa Barbara County's CAP must include:

"(a)(3) Reasonably available transportation control measures sufficient to substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip if the district contains an urbanized area with a population of 50,000 or more."

Health and Safety Code §. 40918(a)(3).

As demonstrated by figure 2-2b, daily VMT is increasing at ever steeper rates. This reflects, although the CAP does not specifically address, increases in both trips taken and miles traveled per trip. The 2004 CAP is defective for posting gross VMT information and comparing it to population, rather than examining trip starts and trip length. Trip start data and average trip length are each available through the County's travel model, yet this information is omitted. The CAP should be revised to reflect the data that is relevant to addressing the standard imposed by the Act — trip starts and miles traveled per trip, and not merely VMT growth rates.

Notwithstanding the use of misleading and different units, with zero transportation control measures, the CAP is obviously incompetent to address this requirement. Far from a "substantial reduction" in VMT growth, the CAP simply endorses business as usual, and offers no substantive evaluation or analysis of the source of the problem, instead merely reporting on past trends and concluding "Santa Barbara County is clearly not meeting this State act performance standard." Rather than merely reporting on "historical trends" as the summmand total of the analysis, the CAP should more fully develop and articulate the basis for this failure and propose strategies and alternatives that could address the problem. Were a more complete and robust TCM review and development process undertaken, potential solutions to this problem might be under consideration.

## 3. Contingency measures

The 2004 CAP lacks treatment of contingency measures as required by law. Health and Safety Code § 40915. Since the CAP predicts that emissions reductions will likely be overtaken by increased emissions from marine shipping, and revised estimates show increased marine shipping emissions than previously projected (in the 2001 maintenance plan) it is incumbent on the District to include a robust set of contingency measures to address the likely loss of progress towards attainment. Further, as the CAP reports the inability to achieve interim goals, such as control over VMT growth, contingency measures are necessary immediately to attempt to get the County back onto the path of attainment. Recent exceedences of both the state and federal 8 hour ozone standards is troubling, and may reflect a trend. If so, contingency measures should be

implemented according to the 180 day deadline in Health and Safety Code § 40915. Their omission is unacceptable and jeopardizes the adequacy of the CAP.

#### 4. Transport

The 2004 CAP does not contain a complete analysis of air pollution transport to and from Santa Barbara County. It ignores the substantial effects of northern Santa Barbara County emissions on southern San Joaquin Valley air quality, in particular episodic emissions from Vandenberg Air Force Base activities. Previously, the APCD provided assurances that the SCOS data would allow an independent evaluation of transport to *and* from Santa Barbara County, but the CAP relies exclusively upon a canned ARB conclusion, then recites that it doesn't really matter since the state requirements for upwind Districts are so ineffectual that they merely require what is already required. Health and Safety Code § 40912 establishes the State's § 39610 "Transport Mitigation" control requirements as a floor, not a ceiling. Additional controls and emissions reductions are required of upwind Districts under state law "to reduce emissions originating in the District below the level at which violations of the state ambient air quality standards would occur in the absence of the transport contribution." Health and Safety Code § 40912. The 2004 CAP must use the SCOS data and ensure that Santa Barbara County meets this requirement.

#### 5. Emissions Trends

The draft 2004 CAP recognizes that marine shipping emissions, if uncontrolled, will actually exceed the projections made *in* the 2001 CAP and maintenance plan. The 2004 CAP fails to either develop methods of controlling these emissions or identify other sources that can provide additional emissions reductions to overcome the growth. Given the trend line for the emissions inventory, the CAP is inadequate to ever improve air quality to the point of attainment, and thus fails to reach attainment "as expeditiously as practicable."

A number of new port projects in California threaten to further increase marine shipping emissions and impacts to Santa Barbara County. Ports in Long Beach are proposed to be expanded, and a series of new LNG terminals are under discussion. The District must become an active and forceful advocate in constraining these expansions and/or ensuring that air pollution impacts will be avoided or minimized.

#### 6. The "All Feasible Measures" Analysis is a Race to the Bottom

The control strategies in the 2004 CAP fall short of the level of aggressiveness required to attain the California ambient air quality standard for ozone. First to fall was an attainment demonstration, then the 5% annual emissions reductions became obsolete, and now the all feasible measures process has devolved into an arbitrary comparative process where no measure needs be considered unless it has been adopted in another District. Since all Districts prepare triennial CAPs and look no further than the list of control measures adopted by other Districts,

few new control measures are developed. Thus the CAP all feasible measure process is largely an exercise with no meaningful benefit.

This is elucidated in the statement that only rules adopted by other Districts will be considered, and references to other Districts that have been the least effective at controlling air pollution in the state. If Santa Barbara County elects to follow the footsteps of San Joaquin Valley in controlling air pollution, it is unlikely we will ever achieve and maintain the California ambient air quality standard for ozone.

There is no explanation as to why control measures identified as reasonably available control measures should not be imposed prior to 2007 and 2010 — the Act requires attainment "as expeditiously as practicable" and that requires control strategies to be implemented "as expeditiously as practicable." A six year delay in identifying a known control measure for which a parallel rule already exists is not expeditious or acceptable. Given that "long term" control measures are 'scheduled for adoption until 2100-2012, it appears that the further study measures may not be adopted until after that time.. The 2004 CAP does not appear to actually include all feasible control measures for adoption or implementation, but rather puts them on a very generous schedule for eventual consideration.

A further study measure carried forward from the 2001 maintenance plan, wineries and breweries, should be adopted and implemented promptly. This is a growing source category in Santa Barbara County that should be controlled expeditiously.

The control measure vetting and winnowing process appears quite arbitrary. The CAC questioned why staff made various unilateral screening decisions rejecting control strategies without consulting that body for guidance. This "closed door" exercise taints the integrity of the control strategy selection process. The District should hold workshops that include the public and CAC in evaluating prospective sources and control strategies.

#### 7. Construction Equipment Emissions Inventory Issues

The 2004 CAP discloses that construction (and mining) equipment emissions are up to five times higher than previously estimated, as previously contended by commenter's counsel. 3-11. In light of the newfound significance of this emission category, the District must achieve a better characterization of the emissions from this category and develop strategies for their control, including alternatively fueled construction equipment and other mandatory mitigation measures for application by land use permitting jurisdictions.

#### 8. Environmental Justice Issues

There are continuing concerns that the District and SBCAG are ignoring environmental justice consequences of its actions. Public transit is an important community asset for low income and

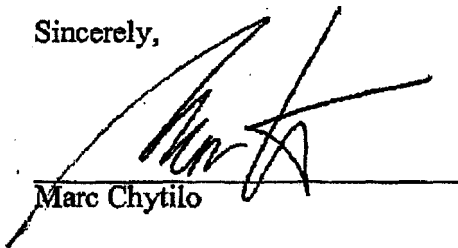
communities of color. The County has emphasized subscription, commuter transit services (which serve more affluent populations) to the detriment of scheduled services that serve the needs of our County's poor. The County lacks basic intercommunity service allowing a person to use public transit to move between many of our communities. Not only is it discriminatory; but it induces auto dependence and increased single occupancy vehicle emissions and VMT.

Further, spiraling VMT and the related highway-based emissions from vehicle use disproportionately and increasingly affects housing adjacent to highways, which typically contains high percentages of low income and people of color. Intentionally or accidentally, the effect of the CAP and its related programs is to discriminate against low income communities and communities of color.

The CAP should include a consideration and analysis of the environmental justice implications of its adoption and implementation. What is in the CAP is as important *as what is* not in the CAP, and means to avoid disproportionate impacts should be included as part of a environmental justice impact assessment.

Thank you for considering our concerns on the 2004 CAP.

Sincerely,



Marc Chytilo

Attachments

CC: Our Children's Earth Foundation  
Tom Murphy  
Jim Damkovich

# LAW OFFICE OF MARC CHYTILO

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## ENVIRONMENTAL LAW

April 15, 2004

Mr. Terry Dressler, Control Officer  
Air Pollution Control District 260 N  
San Antonio Road, Suite A Santa  
Barbara, California 93110

Mr. Jim Kemp, Executive Director  
Santa Barbara County Association of Governments  
260 N San Antonio Road, Suite B  
Santa Barbara, California 93110

By E-mail - DresslerT@sbcapcd.org, jkemp@sbcag.org

RE: 2004 CAP TCM Plan

Dear Terry and Jim:

At last night's APCD CAC meeting, I expressed concern that the draft TCM list proposed for the 2004 CAP was being developed without the benefit of an emissions reductions target. I further expressed concern that the District must undertake a specific TCM Planning process under State law.. Finally, I stated that I supported a more extensive and expansive process for involving and including the public, transit operators, local municipalities, adjacent counties and other agencies in the process of identifying potential TCMs and scoping them so they would receive adequate consideration in the reasonably available control measure analysis process. The CAC was generally supportive of these concerns, so I write to describe more particularly the issues at hand.

Health and Safety Code § 40717 establishes a clear mandate for Districts to establish the quantity of emissions reductions necessary from transportation sources necessary to attain the state standard. § 40717(b)(1). This language unquestionably applies to the 2004 CAP. §§ 40717(a); 40717(b)(3)(C). Other portions of the California Clean Air Act require attainment demonstrations and emissions reductions goals. See, for example, Health and Safety Code § . 41503(b), describing the standards by which ARB is supposed to assess the CAP's adequacy. The fact that there is an exemption for District that cannot feasibly predict an attainment date does not eliminate that requirement unless the District and its CAP demonstrate this on the basis of substantial evidence. I was led to believe that the data from SCOS would enable ARB and local Districts to predict attainment dates, and since the District was required to model attainment of the federal one hour standard, addressing the state standard should represent a limited increment of additional work.

MARC CHYTILO  
P.O. Box 92233 • Santa Barbara, California 93190  
Phone: (805) 682.0585 • Fax: (805) 682.2379  
Email: airlaw5@cox.net

**EXHIBIT 1**

Mssrs. Dressler and Kemp  
April 15, 2004  
Page 2

In any case, the Transportation Sources Plan must be developed and "adopted" by the COG, or SBCAG, and then submitted to the District on a schedule adopted by the District. § 40717(b)(2). The District has a mandatory obligation to review and reject that plan if inadequate to achieve the emissions reductions requirement. § 40717(b)(3).

In light of the broad public distrust in the "101 in Motion" process (many community representatives believe that the SBCAG Board of Directors has directed a particular outcome, a belief supported by the record), the TCM planning process is' an important opportunity for public involvement in scoping potential TCMs. The APCD CAC had a lively discussion about potential transit measures, and staff recited that there are no shortage of creative ideas to address local congestion issues and different forms of transit. The California Clean Air Act recites that "Districts shall focus particular attention on reducing the emissions from transportation sources and areawide emissions sources." Health and Safety Code § 40910.

I ask that the District and SBCAG create a robust public outreach process that includes the public, the various agencies that have expressed interest in public transit issues through the unmet transit needs process, transit operators and adjoining jurisdictions. Your agencies' duty is to consider all reasonably available transportation control measures, not simply adopt all feasible measures. § 40918(a)(3). The CAP must address means to achieve applicable performance standards. Id.

Thank you for considering these views on this important topic. I hope that this will result in a renewed effort to identify and adopt TCMs that can overcome the challenges our community faces in achieving the state standard and addressing transportation needs of our community.

Sincerely,

                    /s/  
Marc Chytilo

cc: Tom Murphy  
Jim Damkowitz  
Bill Dillon

May 21, 2004

Marc Chytilo  
Law Office of Marc Chytilo  
P.O. Box 92233  
Santa Barbara, CA 93190

Dear Mr. Chytilo:

The Santa Barbara County Air Pollution Control District (APCD) and the Association of Governments (SBCAG) appreciate your interest in the development of the 2004 Clean Air Plan and specifically the on-road mobile source portion of the inventory. We share your enthusiasm for transportation control measure (TCM) planning and we believe that the cooperative planning process undertaken pursuant to our memorandum of understanding complies with the intent of the applicable requirements in the Health and Safety Code. In your recent letter on this topic, you raise the following issues that we have responded to below:

- The 2004 Clean Air Plan is being developed without a specific emissions reductions target.
- There should be a more extensive and expansive process for identifying TCM's in the 2004 Clean Air Plan.
- The 2004 Clean Air Plan must address means to achieve applicable performance standards.

The fundamental state requirement that our planning process has focused on since the enactment of the California Clean Air Act is the five percent annual emission reduction requirement under Health and Safety Code § 40914. If an area can not meet the five percent reduction requirement, they must include every feasible measure in their plan to attain the state standard by the earliest practicable date. While § 40717 mandates that areas quantify the emission reductions from transportation sources to attain state and federal standards, we do not have the photochemical modeling analysis to identify the targets for the state standard. Therefore, we are technically unable to fulfill the process identified under § 40717 and must default to the every feasible measure approach outlined in § 40914. Even without the benefit of photochemical modeling, we believe that the progress we have made in cleaning our air (with significant emissions reductions from on-road mobile sources) clearly shows that our air quality planning process has been a success. According to our most recent air quality data, we have one monitoring station (Paradise Road) that violates, that state standard and only by a very slim margin. Back in 1990, we had ten monitoring stations that violated the state standard.

## **EXHIBIT 2**

The origin of the TCM projects identified in the 2004 Clean Air Plan is from the previously adopted plans (1994 and 1998). As part of the development of these plans – a comprehensive process involving and including the public, transit operators, local municipalities, and other agencies was undertaken. We agree with your desire for an extensive and expansive process for identifying TCM's and believe that the current "101 in Motion" process represents a unique opportunity to engage in such an endeavor. We are unaware of a "broad public distrust" in the process and encourage you to take advantage in this very important opportunity. Many of the further study measures identified in the 2004 Clean Air Plan will be evaluated by "101 in Motion" and we see this as an unparalleled opportunity for the public, transit operators, local municipalities, and other agencies to participate in developing transportation strategies to address congestion and air quality in Santa Barbara County. As § 40910 provides that it is the intent of the legislature to avoid redundant work, we view the "101 in Motion" process as the proper forum front which to evaluate existing and future TCM's in our most congested transportation corridor at this point in time.

As Chapter 5 of the 2004 Clean Air Plan discusses, areas having "moderate" air pollution are required to track and provide reasonably available TCM's to provide a substantial reduction in the rate of increase in passenger trips and vehicle miles traveled (VMT). The ARB has further defined this "performance measure" as holding the growth in VMT to the same growth rate in population. The data presented in Chapter 5 shows that for 12 of the last 16 years, the annual VMT growth rate has exceeded the annual population growth rate in Santa Barbara County. Our ability to limit the growth rate of VMT to that of the local population is problematic due to many factors related to how and where we live and work in the region. This issue is also one that the "101 in Motion" process will consider and we encourage you to bring this issue to that forum.

We hope that we have addressed your concerns and that you will take an active role in the "101 in Motion" process. If we find that the "101 in Motion" process was ineffective in evaluating TCM's or our local air quality is degrading, we will consider initiating another process to evaluate such measures. If you have any questions or comments, please call either Michael Powers at (805) 961-8910 or Tom Murphy at (805) 961-8857.

Sincerely,

Terry Dressler  
Air Pollution Control Officer  
Santa Barbara County Air Pollution  
Control District

Jim Kemp  
Executive Director  
Santa Barbara County Association  
of Governments

cc: Michael Powers, SBCAG  
Tom Murphy, APCD  
Dennis Wade, ARB

# LAW OFFICE OF MARC CHYTILO

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## ENVIRONMENTAL LAW

March 28, 2001

Mr. Bill Derrick, Executive Director  
Santa Barbara County Association of Governments  
222 E. Anapamu Street, Suite 11  
Santa Barbara, California 93101

Mr. Doug Allard, Control Officer  
Santa Barbara County Air Pollution Control District  
26 Castilian Drive, Suite B-23  
Santa Barbara, California 93117

RE: TCMs and Land Use Strategies for the 2001 Maintenance Plan and Regional Transportation Plan

Dear Bill and Doug:

As each of us has discussed, our County faces a growing mobile sources emissions inventory and shrinking stationary source emissions inventory. The severity of the future problem is exacerbated by substantial population and VMT growth projections. These factors mandate that your agencies take more serious steps to develop and implement more effective land use air pollution control strategies and transportation control measures (TCMs). At the March meeting of the APCD Community Advisory Council (CAC), the CAC expressed a strong desire that your agencies address this issue in a more effective and comprehensive manner. This desire was stated by both public health advocates and stationary source representatives on the CAC.

As the Maintenance Plan is being developed, I implore your agencies to consider a new suite of land use strategies and TCMs for inclusion in the upcoming Maintenance Plan and revised Regional Transportation Plan (RTP). Not only are new, popular and feasible TCMs and land use strategies available, but improved modeling allows a more realistic and meaningful assessment of the emissions reductions benefits of these measures. Projecting future population and VMT growth curves against either increased single occupancy vehicle automotive usage or wider-spread use of alternative transportation strategies discloses the necessity of developing alternatives to the single occupancy vehicle. This is particularly important in addressing the fine particulate matter ambient air quality standard and the upcoming "next generation" of state and federal ambient air quality standards. We are not out of the woods.

MARC CHYTILO  
P.O. Box 92233 • Santa Barbara, California 93190  
Phone: (805) 682.0585 • Fax: (805) 682.2379  
Email: [airlaw5@cox.net](mailto:airlaw5@cox.net)

**EXHIBIT 3**

In order to stimulate your staff's discussion and consideration of options, below is a list of potential land use strategies and TCMs suggested for inclusion in the Maintenance Plan and RTP. I obtained most of my information about these strategies from various web sites and from experience in other communities. I trust that you will ensure that each suggestion receives careful consideration.

Commuter Choice: Adopt and staff a Commuter Choice program. This is an obvious program to adopt. Recent changes in state and federal tax law allow employers to offer employees parking and transportation benefits as tax-exempt compensation, with greater incentives for parking cash-out and alternative commute options. Employees can receive up to \$175 per month of their existing or new compensation tax free. This is truly "found money" for both employers and employees which offers a meaningful incentive to use alternative commuter options in a flexible and cohesive package. According to the International Council for Local Environmental Initiatives "[t]his simple act of uncovering parking subsidies and offering a choice can reduce solo car commuting by up to 22%." See <http://www.iclei.org/cashout/>. See also <http://www.conzmuterchoice.com/>.

Guaranteed Ride Home Program: A locally missing element of all alternative transportation strategies is the guaranteed ride home program (and/or workplace loaner car) for individuals who must return home (or to their child's school) for emergencies or after hours when transit service may not be available. While typically administered through taxi companies, some communities have implemented "community car" programs, where an employer and/or employee can participate in cooperative car ownership to provide a "backup" for workers who need a car infrequently, but urgently, while at the workplace or on their personal time.

Community Car Programs: A number of communities in the United States and Europe have begun "community car" programs. In essence, this is a low cost, cooperative subscription car rental system allowing families to avoid many of the expenses of auto ownership while maintaining access to a car when specifically needed. Communities must be designed and operated to allow most daily functions to occur without needing a car. In some European cities (e.g., Zurich), community cars enjoy preferential parking privileges, enhancing their attractiveness. San Francisco has recently initiated a community car cooperative program. Linked to new residential design features enhancing the quality of communities that are not designed with the car as the first priority, the community car concept may offer considerable benefits in encouraging more appropriate land uses

Smart Growth Resources: Smart Growth Resources to land use planning officials. Our sprawling land use patterns cost local government in increased and inefficient services, destroy open space, increase auto dependence, waste personal economic resources and degrade quality of life. See, for example, Driven to Spend: How Sprawl and Lack of Transportation Choice Are Driving Up Family Transportation Costs, <http://www.transact.org/>. Land use planners in the County and cities lack a regional perspective and are largely ignorant of the environmental and social ramifications of ignoring air quality impacts and transportation alternatives in their review and planning processes. This is one essential ingredient of sprawl. Your agencies must tackle this issue aggressively, or else decisions made in coming years will preclude an *efficient* future public transportation system and create

continuing problems for our communities. Only your agencies are positioned to assemble and provide effective materials on "smart" planning for air quality and transportation perspectives and make strong recommendations for appropriate land use development patterns and design. While your agencies lack direct regulatory control, you can serve both as an important source of information, training and expertise to cities and the county.

Bike projects: Design and implement a much more comprehensive bicycle system for the region. Develop and implement a continuous, connected bike lane system from each county line with an extensive bike lane network. Develop a bike lane network serving all medium and large schools to promote safe bike commuting to school. Complete a comprehensive network of bikeways, including: Class I (exclusive bike paths separated from roads), Class II (on-road striped bike lanes), Class III, (on-road shared, signed routes) and Bicycle Boulevards. Install bicycle route numbering with maps. Maintain effective and continuing review and improvement of safety problems and maintenance of all bikeways. Review and maintain highway and street standards including surface standards, bridge access, bike lane cleaning, illegally parked car intrusion elimination, and bicycle sensitive traffic signals.

Pedestrian Projects: The region lacks a comprehensive sidewalk system, and continues to design new development prioritizing vehicular, rather than pedestrian access. Areas within existing communities where existing and future land uses are conducive to pedestrian use should be subject to a master planning process to be designed and shaped to become more pedestrian-friendly over time as . redevelopment and other improvements occur and as these communities and developments mature.

Recognize Induced Traffic and VMT: SBCAG should require future project-level analysis (and analysis of all private projects which require transportation infrastructure improvements to accommodate traffic increases) to include additional modeling that incorporates the principle of latent (induced) demand in its design. Recalibrate the travel model, using actual VMT from completed projects.

TEA Restrictions to Enhance Transit and Smart Growth: Some communities in California have considered restricting certain portions of TEA-21 funds to communities which adhere to certain land use and transit performance standards. For example, the following policies could have application in Santa Barbara County:

- 1) A RTP investment policy prioritizing transportation projects that are coupled with transit, bicycle and pedestrian oriented development along transit corridors and nodes, and conditioning capacity increasing highway projects on the adoption of growth management plans that embody provisions for open space preservation and subregional agreement on a growth budget that does not overload either transportation infrastructure or other forms of infrastructure.
- 2) Condition funding and approval of projects serving large new trip generating land uses on a major reduction in drive-alone access to those projects. Such reductions shall be based on providing

parking for fewer than the number of spaces ordinarily required, parking charges, cashing out employer paid employee parking, developer subsidies for transit access to the project, and other similar transportation measures. The effectiveness of demand management shall be guaranteed by an enforceable agreement to meet performance standards for access that reduce by some figure (half?) the number of drive alone trips and mandate the \*addition of further transportation incentives to meet performance goals if they are not met.

3) Increased county-level transit ridership targets (necessitating increased investment in transit, increasing the cost effectiveness of transit investments, as well as encouraging land use jurisdictions to incentivize transit-supportive land use decisions). The TCM should reference achieving and maintaining a minimum modal split for transit, pedestrian and bike travel at specific milestones, with If/Then consequences for each portion of the county at these points for not reaching the specified target.

4) Fund highway expansions only within cities or sub-regions of the county where 80 percent of employees in businesses with over 5 employees are offered parking cash-out or commuter choices, and where parking is unbundled from rental housing and business rental/lease agreements.

5) Allocate a certain percentage of discretionary funds exclusively to projects (both maintenance and capacity-expanding) in areas that meet specified smart growth criteria as is the practice in San Mateo (where transportation money is given to cities that approve dense housing near rail stations).

These policies build upon the use of TEA funds as incentives for smart growth principle utilization, as pioneered by Dr. John Holtzclaw, director of Sierra Club's Transportation Program. This approach has been determined to be legally appropriate upon scrutiny by the Air Resources Board. (K. Walsh, ARB General Counsel, to F. Chin, MTC, 10/26/1999),

EPA's Transportation Air Quality (IRAQ) Center provides state and local air quality regulators and transportation planners with access to critical information regarding transportation programs and mobile source incentive-based programs, partnership opportunities, grant funding sources, useful contact names, and technical assistance. <http://www.epa.gov/oms/transp.htm>. Links from this page provide testimonials and experiences from other programs and references to EPA's emissions reductions quantification analysis for TCMs and land use strategies. See also The Surface Transportation Policy Project; <http://www.transact.org/ca/.default.htm>.

### Environmental Justice Issues

Transportation Equity issues are central to this process. SBCAG's environmental justice deficiency was noted by the Department of Transportation in the recent MPO certification review, and must be addressed aggressively. A suggested approach is the formation of a joint APCD-SBCAG Environmental Justice Committee comprised of community representatives that are supported and

staffed by agency members. Funds should be available to reimburse qualifying (low-income) participants the lost income and costs of attendance to allow participation by transit-dependent community representatives. The Agencies should commit to create a consensus methodology for EI impact equity analysis.

This is a preliminary list with both some concrete suggestions and conceptual framework for addressing these issues. I hope this assists you and your staffs in evaluating TCMs in the Maintenance Plan and Regional Transportation Plan. I trust that you will ensure that these issues are given serious and careful consideration.

Thank you.

Sincerely,

Marc Chytilo

**STAFF REPORT**

**SUBJECT:** Highway 101 Implementation Plan

**MEETING DATE:** October 16, 2003

**AGENDA ITEM:** 10

**RECOMMENDATION:**

A. Approve an amendment to the Measure D expenditure plan to:

1. Revise the existing Route 101 widening project to:  
Route 101 interchange improvements, *operational improvements*, and widening to six lanes, ~~San Ysidro Road~~ *Milpas Street* to county line.
2. Allocate available Regional Measure D funds designated for the Route. 101 widening project as follows:
  - a. \$11,107,000 to expedite completion of programmed 101 operational improvements.
  - b. \$1,500,000 for operation and expansion of intercounty transit service between Ventura County and Santa Barbara County.
  - c. Up to \$1,082,742 for the Highway 101 Implementation Plan.

*(Note: Approval of the expenditure plan amendment requires 9 affirmative board votes)*

B. Adopt a policy directing that:

1. The implementation Plan shall ~~include~~ *result in* a project or set of projects that will increase the capacity *by adding lanes* and reduce congestion on Highway 101.
2. Highway 101 widening options shall include at a minimum additional mixed flow lanes, High Occupancy Vehicle lanes, High Occupancy Toll lanes, reversible lanes and/or use of the highway shoulders and restriping for additional lanes within the present rights-of-way.
3. In addition to widening Highway 101, the Implementation Plan shall include other projects providing congestion relief including those that *increase corridor capacity (eg., rail and bus transit)*, reduce *regional* travel demand, ~~promote~~ *expand* alternative transportation modes and improve operation and management of the transportation system.

Member Agencies

Buellton • Carpinteria • Goleta • Guadalupe • Lompoc • Santa Barbara • Santa Maria • Solvang • Santa Barbara County

**EXHIBIT 4**

4. The implementation Plan shall include an analysis of alternative congestion relief projects which may be used in support of the NEPA and/or CEQA environmental review process during the next phases of project development.
- C. Authorize the Chair to execute an agreement with Parsons Brinckerhoff to perform technical services for the Highway 101 implementation Plan, at a not-to-exceed price of \$1,511,742.
- D. Authorize Executive Director to approve contract amendments up to \$151,000.
- E. Approve appropriation increases in both the FY 03-04 General Fund and LTA Capital Projects budgets in the amount of \$689,300 for the Highway 101 Implementation Plan consultant contract and an increase in General Fund revenues for the Measure D contribution to the 101 Implementation Plan.

## **DISCUSSION:**

At the last two SBCAG meetings in August and September, the board heard public testimony and had extended discussions about the 101 Implementation Plan. While there was general agreement among the board members that SBCAG, Caltrans and local agency partners need to move forward quickly to develop an action plan for relieving traffic congestion on the 101 corridor, there were outstanding questions on how the Implementation Plan can fulfill this need. The item has been continued to the October 16 meeting and the board has indicated that it intends to take action on the implementation Plan at this meeting.

Based on board discussion and direction given at prior meetings, staff has developed several recommendations for board action. The recommendations, which are supported by the TAG with North County staff representatives, include:

- Amending the Measure D expenditure plan to allocate available funds to implement near-term congestion relief projects,
- Adopting a policy to provide board direction for the IP regarding alternative strategies for congestion relief, and
- Approving a consultant contract, scope of services and funding actions for completion of the IP.

## **Measure D Expenditure Plan Amendment**

Board members have expressed a strong desire to implement projects that will bring congestion relief benefits as quickly as possible. Caltrans has reported, however, that completion of a freeway widening project will take more than ten years. The Implementation Plan will identify both short-term congestion relief projects that can be implemented quickly as well as longer term major capital improvement projects.

At last month's meeting and retreat, the board was advised that the lack of sufficient STIP funding is jeopardizing timely completion of the Route 101 operational improvement projects, which were programmed in the 1996 STIP, and are currently under development by Caltrans. These projects are intended to reduce congestion, improve operations and safety at specific locations in the South Coast 101 corridor between Milpas Street and the Ventura county line by

adding new freeway and auxiliary lanes and improving ramps and interchanges. The three 101 operational Improvement projects currently programmed are:

- 101/Milpas St to Hot Springs Road—reconstruct interchanges, add southbound freeway lane and northbound auxiliary lanes
- 101/Ortega Hill (Evans to Sheffield)—add northbound auxiliary lane •
- 101/Linden Ave and Casitas Pass Road—reconstruct interchanges

All three of the projects are being developed to be compatible with the future widening of 101. In fact, some of the major components of the operational improvement projects such as the addition of freeway and auxiliary lanes and interchange reconstruction will complete elements of work that would be necessary as part of a widening project and thus will result in a direct reduction in costs for a future widening project.

Unfortunately, the current uncertainty of STIP funding is likely to delay completion of the operational improvements along with their congestion and safety benefits. In particular, the lack of state funding will have an Immediate adverse Impact on two of the operational improvement projects and delay further progress on them as noted below.

- The design work on the 101/Ortega Hill (Evans to Sheffield) project is nearly complete and the project will be ready to begin construction in early 2004 with construction being anticipated for completion in early 2006. The project is fully programmed with \$3.1 million in STIP funds. However, since the State Highway Account (source of the STIP funds) has been depleted, the project will be placed on the CTC's "pending allocation" list and it is unknown when the funds needed to proceed with construction will be available. It is conceivable, based on the funding situation statewide, that the project would be delayed significantly without outside funding.
- The 101/Milpas to Hot Springs Road project will have an environmental document finalized this Fall and work is scheduled to begin on final design and right of way acquisition. However, due to the STIP cash shortfall, the \$5.7 million in programmed funds for the right-of-way phase are not currently available for allocation and it is unknown when these funds will be made available. The project has a projected funding shortfall of \$11.11 million (\$10.36 million in construction and \$0.75 million in right of way). Construction, which is expected to begin in 2006, will likely be delayed without outside funding.

Several board members expressed support for a proposal to use Measure D Regional funds to keep these projects on schedule. As a result, staff has developed a recommendation, supported by the TAG, to amend the Measure D expenditure plan to allocate Measure D funds to the two 101 operational improvements identified above. In addition, the recommendation calls for a Measure D allocation to provide expanded inter-county transit service on the 101 corridor and to fully fund the 101 implementation plan as discussed below.

The Measure D expenditure plan currently includes a project to widen Route 101 to six lanes and improve interchanges between San Ysidro Road and the county line. In order to allocate Measure D funds for the operational improvements, it is recommended that the board approve an amendment to the Measure D expenditure plan to revise the 101 project. The proposed amendment would extend the western limit of the project to Milpas Street and specifically allow the expenditure of these Measure D funds for the 101 operational improvement projects.

The proposed expenditure plan amendment would also allocate Measure D funds designated for the 101 project as follows:

- \$11,107,000 to expedite completion of programmed 101 operational improvements.
- \$1,500,000 for operation and expansion of intercounty transit service between Ventura County and Santa Barbara County.
- Up to \$1,082,742 for the Highway 101 Implementation Plan.

It is currently projected that a total of \$15.3 million in Measure D funds will be available for the Route 101 project. Amending the Measure D expenditure plan as recommended will require a two-thirds majority approval by the entire SBCAG board (9 affirmative votes).

As indicated in Attachment A, the \$11.107 million in Measure D funds proposed for the operational Improvements would be allocated as follows: \$3.1 million for construction of the 101/Ortega Hill project and \$8.0 million for the 101/Milpas to Hot Springs project (\$5.6 million for right-of-way capital and support and \$2.4 million for construction). The \$8.0 million in STIP funds currently programmed for construction of the 101/Ortega Hill project and right-of-way capital and support for the 101/Milpas to Hot Springs project would be reprogrammed to address the \$10.4 million construction funding shortfall for 101/Milpas to Hot Springs. The reprogrammed STIP funds would be coupled with an additional \$2.4 million in Measure D funds to eliminate the current shortfall for this project.

At this time, no Measure D funding is recommended for allocation to the 101/Linden and Casitas Pass project. Although the project has a projected construction shortfall of approximately \$20 million, no immediate benefit can be realized by allocating Measure D funds. Caltrans work on this project is continuing with the STIP funds that are currently allocated. The project is currently under environmental review and is scheduled to begin construction in 2007 and complete construction in 2011.

Using the Measure D funds to expedite completion of the 101 operational improvement projects is both appropriate and consistent with purpose of the 101 project listed in the Measure D expenditure plan. The Measure D regional highway program has committed nearly \$120 million of local Measure D revenues to complete 15 major highway projects. Virtually all of these funds have been or will be expended to relieve congestion and improve operations and safety on state highways in the County. The last of the 15 projects in the Measure D highway program to be completed is the 101 widening/interchange improvement project. The project limits currently described in the expenditure plan do not include the four-lane section of 101 from San Ysidro Road to Milpas Street because in 1989 when Measure D was approved, a project to widen this segment to six lanes was fully programmed in the STIP. The clear intent of the project in the Measure D expenditure plan was to provide a portion of the funds needed to extend the 101 widening and interchange improvements south of San Ysidro Road and to help ensure that the entire 12 mile four-lane segment of 101 between Milpas Street and the county line is widened and improved. It is, therefore, appropriate to extend the limit of the Measure D project to Milpas Street as proposed.

If the board approves the allocation of Measure D funds for the 101 operational improvements, it will be necessary for the board to take subsequent actions at future meetings to approve cooperative

agreements with Caltrans for each of the projects. The agreements will outline the roles and responsibilities of each agency. In addition, SBCAG will need to seek approval by the CTC of a STIP amendment revising the programming amounts for each project as described in Attachment A.

Providing local contributions to fund state highway improvement projects is quite common, particularly in self-help counties that have local transportation sales taxes. SBCAG's contribution of Measure D funds to the 101 operational improvement projects would have no effect on the county share amount of STIP funds that SBCAG will receive because these funds are allocated to regions based on a formula specified in statute.

Staff and the TAG are also recommending that the board allocate \$1.5 million of the Measure D 101 project allocation for operation and expansion of the intercounty transit service currently provided by the Coastal Express. It was reported to the board at its retreat last month that this service is experiencing strong ridership growth (16% increase in FY 02-03) *and* productivity (farebox recovery ratio is currently 31%) . and it is believed that there is significant potential for expansion of current peak period and express service. Because the Coastal Express service provides direct congestion relief benefits by reducing peak hour auto trips on the South Coast 101., allocating the Measure D funds for this service should be considered.

At the board retreat, staff reported that the CMAQ funding being used for the Coastal Express 3-year demonstration project will be exhausted along with the current APCD subsidy at the end of the current fiscal year. It is projected that beginning in FY 04-05, SBCAG will experience a shortfall of approximately \$200,000 annually for its share of the Coastal Express operating costs (Ventura County Transportation Commission and SBCAG split the costs equally). Unless another funding source is identified for SBCAG's share of the operating costs, the Coastal Express service will have to be terminated at the end of the pilot program next year.

The recommended allocation of \$1.5 million in Measure D funds will allow the service to continue to operate for at least 6 more-years (until Measure D expires in 2009) and provide for an expansion of the service to include approximately 4 more weekday peak period round trips (11 weekday round trips are currently provided). Other funding options for subsidizing the Coastal Express are limited. Existing sources of transit funding including FTA 5307 urbanized area formula funds and TDA funds are already fully committed to existing transit services. CMAQ funds cannot be used after the 3-year pilot program is complete.

The staff and TAG recommendations for allocating Measure D funds for operational improvements and transit services in the 101 corridor will provide several benefits as shown in the table below:

Project	Status	Benefit
US 101: Millpas to Hot Springs Road	<ul style="list-style-type: none"> <li>Final EIR in November</li> <li>Construction scheduled for 2006</li> <li>Ready to begin right of way but no money in SHA</li> <li>Overall funding shortfall of \$11.1 million</li> </ul>	<ul style="list-style-type: none"> <li>Maintain current schedule</li> <li>Initiate right of way delivery</li> <li>Fully funds project</li> </ul>
US 101: Ortega Hill — Evans to Sheffield	<ul style="list-style-type: none"> <li>Ready for advertisement; no money in SHA</li> </ul>	Begin construction in 2004
Coastal Express	<ul style="list-style-type: none"> <li>On-going service showing increased ridership levels</li> <li>Operating deficit beginning in FY 04-05</li> </ul>	<ul style="list-style-type: none"> <li>Maintain existing service</li> <li>Expand peak service in FY 04-05</li> <li>Reduce trips on 101 corridor</li> </ul>
US 101: Linden / Casitas Interchanges	<ul style="list-style-type: none"> <li>In environmental review</li> <li>Overall funding shortfall of \$20 million</li> </ul>	<ul style="list-style-type: none"> <li>No immediate direct benefit</li> </ul>

The recommended Measure D expenditure plan amendment would allocate about \$13.7 million of the available funds for the 101 project leaving a balance of approximately \$1.6 million. It is recommended that the remaining funds be reserved at this time to serve as a contingency amount for the 101 operational improvement projects. The reserve could be also be used for specific projects that come from the IP including early implementation of low cost projects that can provide immediate congestion relief benefits,

### **Policy Direction for the Implementation Plan**

One of the major concerns expressed by several board members is that the IP fails to reflect the necessity of adding new capacity to 101 to improve traffic flow. While many members acknowledged the need to evaluate other strategies, they also stated that relieving congestion would require increasing the capacity of 101 by adding new lanes and that this must, therefore, be a mandatory component of the IP. Increasing frustration with the congestion and voter approval of Measure D in 1989—which includes a project to widen 101 south of San Ysidro Road—are cited as evidence of broad support for widening 101. As a result, some board members indicated that they may support the IP only if it includes a project to widen 101 as a mandatory component.

Consequently, last month, staff and the TAG presented recommendations for board consideration that would provide policy direction for development of the IP. These recommendations are again being presented this month with some changes based on board comments and alternative language suggested by Councilmember Smyser at last month's meeting. The suggested language by Councilmember Smyser was as follows:

*The Implementation Plan shall result in a project that will provide additional lanes and concurrently other capacity alternatives that may result in other projects to reduce congestion on Highway 101. The plan will also provide concurrently for the designation and release of Measure D funds for approved operational improvements*

The policy direction recommended by staff and the TAG is included in Recommendation B. The revised language in B(1) states the board's intent that a project or projects to increase the capacity of 101 shall be the result of the IP and clarifies that increased capacity shall be provided by adding lanes. The board must not preclude consideration of the many options for adding freeway lanes including traditional mixed flow lanes, high occupancy vehicle (carpool) lanes, high occupancy toll lanes, reversible lanes, etc. Consequently, recommendation B(2) identifies some of these options for widening 101 and adding lanes that will be evaluated in the IP. A successful long-range, comprehensive plan for relieving congestion must also include projects other than adding freeway lanes. Recommendation B(3) states that the IP will include other projects that would increase the carrying capacity of the travel corridor such as bus or commuter rail transit, reduce travel demand, provide alternatives for peak period single-occupant auto trips and improve the operation and management of the system. Finally, Recommendation B(4) states that the board intends to fully comply with CEQA and NEPA by using the IP to support a requirement to evaluate alternative congestion relief projects.

### **Consultant Scope of Work Modifications**

At the September board meeting, staff and the TAG presented some recommended changes in the consultant scope of services to ensure that the IP addresses regional issues in Northern Santa Barbara County and Ventura County (these were presented as Recommendation B in the

September staff report). Since the feedback from board members was generally supportive, staff requested that Parsons Brinckerhoff incorporate the recommendations in a revised contract scope of services.

Staff and the TAG recommended that the consultant scope *of services be* modified to address four regional issues. The issues and the amendments to the Scope of Work are identified below, The Scope of Work is provided as Attachment C.

Issue: identify future congestion problems in North County and northern Ventura County.

Increased commuting from Ventura County and Northern Santa Barbara County by South Coast workers is a trend that is likely to continue. The SBCAG Regional Travel Model will be used to forecast traffic growth out to 2020 for the entire county based on SBCAG's adopted Regional Growth Forecast. This forecast of added vehicle traffic will be compared to existing capacity on Highway 101 to identify any significant deficiencies both within and outside the South Coast area. Sub-areas within Ventura and San Luis Obispo Counties are included as part of the SBCAG travel model so the interregional travel issue will also be addressed. Forecast periods for the travel model are based on the SBCAG Regional Growth Forecast that provides population, employment and household projections every five years from 2000 to 2030.

Response: Scope of Work modified to reflect use of regional travel model to address countywide travel issues. See Attachment C - Revised Scope of Work: Subtask 2.4 and Task 10.0 respectively.

Issue: Evaluate the potential impacts of future construction on 101 corridor on congestion levels and potential migration of commuters from Ventura County to Northern Santa Barbara County

There is potential for migration of South Coast commuters from Ventura County and elsewhere to Northern Santa Barbara County due to worsening congestion, highway construction related impacts, and, housing un-affordability. While such changes in travel behavior can be difficult to predict, the travel model will allow assumptions regarding commute shifts to be tested and potential new congestion problems to be identified throughout the region.

Response: Scope of Work modified to reflect potential change in commute patterns and countywide travel issues. See Task 10.0 of Attachment C.

Issue: Develop project screening/evaluation criteria that specifically account for effects (positive and negative) of candidate projects on North County areas of 101.

The IP must ensure that project evaluation criteria assess impacts to North County. Through the IP public outreach process, criteria will be developed to help screen and prioritize congestion relief projects. Screening/evaluation criteria will include those that will assess impacts of candidate projects on areas outside the South Coast. .

Response: Scope of Work modified to reflect potential change in commute patterns and countywide travel issues. See Task 10.0 of Attachment C.

Issue: Expand public outreach efforts in North County areas.

The IP needs to engage North County and Ventura County commuters so they and other stakeholders are given an opportunity to participate in its development.

Response: Scope of Work modified to reflect involvement of other users of the Highway 101 corridor. See Subtask 3.1, 3.2, 3.3, 3.4, and 3.8 of Attachment C.

Staff believes that the changes in the scope of services noted above respond to the board's direction.

### **Funding for the Implementation Plan**

Attachment B summarizes the proposed funding sources for the 101 IP. It is recommended that up to \$1,082,742 in Measure D funds be allocated to the 101 IP. These funds would be allocated from the 101 project through the proposed Measure D expenditure plan amendment. The current balance of Measure D funds estimated to be available for this project is approximately \$15.3 million. To the extent that other funds are secured for the IP, the need for Measure D funding will be reduced.

Earlier this year, SBCAG requested the assistance of Congresswoman Capps in obtaining a Congressional funding appropriation of \$600,000 for the 101 IP. It appears likely that this request will be approved this year. The House and Senate appropriations committees have approved an FY 03-04 transportation appropriations bill that includes the full \$600,000 requested for the 101 IP.

In addition, SBCAG was recently informed by Caltrans of the award of two discretionary planning grants for the IP of \$90,000 and \$158,800. SBCAG applied for these grants some time ago and is fortunate to have received approval given the state's current fiscal condition. SBCAG will need to approve grant agreements before being permitted to expend these funds.

Assuming that the federal appropriations bill is approved and the two recent grant awards are approved, SBCAG will have succeeded in obtaining nearly \$850,000 in state and federal discretionary funding for the IP and the need for Measure D regional funds would be reduced to less than \$250,000. It is important to note that these funds have been awarded specifically to complete the 101 Implementation Plan and they cannot be used for other purposes if the board decides not to proceed with the IP.

### **Conclusion**

More than a year ago, the board adopted the South Coast 101 Deficiency Plan and concurrently directed that staff develop an Implementation Plan which would provide a comprehensive, long-term action plan for relieving congestion on 101. Since that time, significant progress has been made including:

- Execution of an MOU committing SBCAG, Caltrans, the County, the Cities of Santa Barbara, Carpinteria and Goleta, the SBMTD and the APCD to work cooperatively in development of the IP

- Selection of a qualified consultant and negotiation of a contract and detailed scope of services to complete the IP.
- Identification of multiple funding sources needed to complete the IP including approval of nearly \$1.0 million in discretionary grants.
- Preparation of a board policy to guide development of the Implementation Plan
- Development of a work plan that will make use of Measure D regional funds to expedite completion of 101 operational improvement projects and to operate intercounty transit services providing near-term congestion relief benefits

The board actions being presented at the October 16 meeting for approval are needed to move forward with the development of the implementation Plan.

#### **COMMITTEE REVIEW:**

The Technical Advisory Group, supplemented with North County representation considered the staff recommendations on October 3. The TAG considered the proposal by Councilman Smyser and other Issues raised by board members at the September Board meeting. The TAG approved the recommendations above including the Measure D expenditure plan amendment, policy direction for the IP and the consultant contract with Parsons Brinckerhoff. The TAG expressed some reservations about the availability of STIP funding needed to complete the operational improvement projects and requested that staff seek commitments from the CTC, to the extent this is possible, to ensure that the operational improvements are given a high priority for allocation of STIP funds when they are needed.

**STAFF CONTACT:** Jim Kemp, Michael Powers, Fred Luna, Steve Vandenberg

Attachment A: Putting Measure D to work In the Corridor

Attachment B: Highway 101 implementation Plan Funding Proposal (Revised)

Attachment C: Revised Scope of Work submitted by Parsons Brinckerhoff Cost Proposal by Parsons Brinckerhoff

September 23, 2004

RECEIVED  
2004 SEP 24 PM 3:30  
SANTA BARBARA COUNTY  
AIR POLLUTION CONTROL

Tom Murphy  
APCD Manager  
Technology and Environmental Assessment 260  
N. San Antonio Rd. Suite A  
Santa Barbara, CA 93110

Comments Draft 2004 Clean Air Plan  
August 2004

Dear Mr. Murphy:

Here are my questions and comments for the above document:

Pg 3-14 NO<sub>x</sub> annual emissions. Under mobile sources you cite 78% = 13,804 tons; in the 2001 Clean Air Plan (CAP) we had 80% = 15,319. We are dealing here with light duty passenger cars and trucks. How do you explain this reduction, if the traffic and gridlock in the freeways and streets is continuing to increase? Please comment.

Pg.4-4 table 4-1(2004 CAP) "Emissions control measures adopted before 2001" you dropped the ROC and NO<sub>x</sub> emission reduction that one can clearly see in the comparable table on pg 4-27 (2001 CAP).

I suggest keeping the same format with the same headings and information from the 2001 Clean Air Plan. Why drop the future projections of ROC and NO<sub>x</sub> for 2005, 2010, and 2015?

Pg 4-11 Table 4-4 Please add the Rule# to Gas turbines (363)

Pg. 4-23 (2001 CAP) Liquefied Natural and Petroleum Gas Truck loading was deleted from in the 2001 Clean Air Plan. On March 3, 2004 a truck contracted by the Southern California Gas Co. spilled five gallons of mercaptan in Goleta near the Bacara Resort. The CAC was informed about the spill. This control measure should be reinstated and not deleted.

1 of 3

Pg 5-2 It would be helpful to have comparison charts from North and South County regarding population growth and VMT (Vehicle Mile Traveled). The source of your VMT is Caltrans. Did they take into account traffic originating in Santa Barbara County or are they counting traffic on the 101 freeway, a major thoroughfare for the entire state of California?

Land use strategies:

Higher density with fewer parking spaces does not mean fewer cars. To the contrary, higher density with inadequate parking affects adjacent residential areas as people who do not have places to park in their development will use the side streets leading to them. Sometimes they even will park on designed bike lanes, creating a danger to bicyclists as they have to use the street instead of their assigned safer lane.

Pg. 7-8 paragraph 6e) needs correction "Discourage projects less than 20 housing units per gross acre". The Village Homes at Davis cited as an example by the Local Government Commission (LGC) have a density of 7.7 per acre, not 20 per acre.

Where was the # 20 for the housing units per acre taken from?

Public transportation has to be optimal and functional for people to leave their cars. Streets and thoroughfares should be built first. People living in California are dependent on their cars. They are still the preferred mode of transportation. SUV's are replacing cars and instead of carrying more passengers; we still see one person per vehicle.

Building of large residential areas should be placed on hold until alternative routes or mode of transportation have been created if the LOS (level of service) of the existing streets is going to be degraded to a LOS D or F secondary to increased traffic generated by this homes.

2 of 3

Developments should not encroach on buffer areas of ESHA's (environmental sensitive habitats).

In Goleta the few open spaces left are already being eyed for development. Once you have paved over an area there is no going back.

Infill development should not place residents or employees near sources of nuisance, dust, odors and accidental releases of toxic substances that could be lethal.

Why do the CMP (Congestion Mitigation Program) requirements state that a specific area should be zoned residential within one third of a mile of a rail transit station? We know NOx reacts with ammonia, moisture and other compounds to form nitric acid and related particles. Small particles penetrate into the lung and can cause respiratory disease such as emphysema, bronchitis and can aggravate existing heart disease.

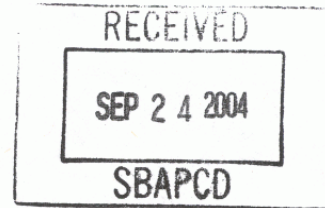
Studies regarding the impact of ROC and NOx to populations near trains should be incorporated into this report.

As part of the final document under a separate chapter I would like to see all the comments that we members of the CAC contributed for each chapter. This is part of the public record and should be shared.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Inge E. Cox', written over a large, loopy circular flourish.

Inge E. Cox, MD  
CAC Member for the  
City of Goleta



September 23, 2004

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Mr. Tom Murphy  
APCD Manager  
Technology and Environmental Assessment  
260 N. San Antonio Rd, Suite A  
Santa Barbara, CA 93110-1315

Dear Mr. Murphy;

Thank you for the opportunity to review and comment on the proposed Air Quality Management Plan. While the Plan contains valuable information, Chapter Seven raises several questions.

Chapter Seven contains many useful suggestions to enhance the potential for greater use of alternative transportation modes. However, the chapter also contains numerous recommendations that could create adverse impacts on the local quality of life and if implemented by the Air Resources Board would be an unwarranted intrusion into local land use authority and jurisdiction. These recommendations may even serve to reduce air quality in the region instead of improving it. There are two sets of policies that are particularly troubling, the policies relating to densification (Section 7.3.1) and parking (Section 7.4.3).

#### **DENSIFICATION POLICIES**

The densification policies in this chapter, Section 7.3.1, are based on inadequate premises and could be growth inducing.

#### **Premises of the Recommendations:**

Chapter Seven advocates policies to intensify land use based on the conclusion that past land use patterns and trends are creating an increase in vehicle miles traveled and that research conducted in other geographical areas has demonstrated that more dense land use patterns reduce vehicle miles traveled (VMT) on a per unit basis.

### Increasing VMT

The recommendations in this chapter appear to be based on the following:

The largest source of human-generated onshore air pollution in Santa Barbara County is motor vehicles. Consistent with state and national trends, and as discussed in Chapter 5 of this 2004 Plan, motor vehicle use continues to increase and the rate at which vehicle miles traveled is growing much faster than the rate of population growth. *The principal reasons for this are high housing prices and land use patterns that encourage long-distance commuting from home to work and increasingly require cars to be used for every errand, from taking children to school to shopping to dining.* (Italics added; Page 7-2)

There is no documentation presented for the conclusion that a change in land use patterns or housing costs are the principal causes of the increasing rate of growth for vehicle miles traveled. During this period of time there has been very little change in residential development patterns on the south coast. The changes that have occurred would tend to indicate that the population of the south coast area is becoming more concentrated rather than more dispersed.

Between 1990 and 2000 the total number of housing units on the south coast increased by only 3.4%, almost all of this consisting of "infill" of parcels within the existing development pattern. Most of this development occurred at locations where travel patterns would be very similar to the travel patterns with the surrounding uses and therefore would not tend to increase the *per capita* Vehicle Miles Traveled. The 3.4% rate of growth was less than half the rate of population growth in the same period (8%)—indicating that about half of the population growth was absorbed into existing units. In addition all of the net population growth in the Santa Barbara County Census Division consisted of Hispanic households who tend to reside in the city centers of the area. Hispanic households also tend to use alternative forms of transportation more than non-Hispanic households. As such, these trends can not be considered a significant change that would account for the amount of increase in vehicle miles traveled.

While there has been an increase in long distance commuting between 1990 and 2000, the amount of this increase is very small relative to the total amount of population, employment or vehicle miles traveled. The US Census of Population reports for the period indicate that the number of people who commute more than 30 minutes to work increased by 10% (not 20% as reported on page 5-17 of the Plan)<sup>1</sup> a little above the population increase of 8%.

<sup>1</sup> Americanfactfinder, Tape 3 of 2000 Census, Table P31 and Tape 3 of 1990 Census, Table P50.

In addition, as correctly noted on page 5-11, an increase in inter-county commuters has occurred. Countywide this increase was 5,403 between 1990 and 2000.<sup>2</sup> This number represents only about 3% of the entire Santa Barbara County workforce. It is difficult to conclude that these numbers (combined, accounting for only about 5% of the 18% increase in VMT for 1990 to 2000 shown on figure 5.1) account for the increases in VMT cited in Chapter 5 as noted by the above quoted paragraph.

The Plan does not significantly address other potential influences. For example changes in VMT may be closely related to economic conditions. The graph on page 5-2 should be compared to economic indicators to see if economic conditions may be a significant factor—the trough between 1989 and 1995 does suggest that this may be a factor. We also note that the VMT data is from CalTrans and therefore is likely based on traffic count data on the State system which would be heavily influenced by through and recreational traffic volumes unrelated to local population growth in the area. Other significant factors that should also be considered include—relative gas prices, general demographic factors etc. Finally, since VMT is difficult to estimate at the local level, the methodology involved in making these estimates should be examined.

#### *Research in Other Areas.*

In order to justify the effectiveness of its recommended land use strategy the Plan relies on a study for the Air Resources Board "Transportation –Related Land Use Strategies to Minimize Motor Vehicle Emissions: an Indirect Source Research Project" (1995). As noted on page 7-3 of the Plan, this study did find substantial differences in VMT generation from different densities of development, with high-density areas having substantially lower VMT rates than lower density areas. However, all of the higher density areas studied were very large urban areas, parts of large metropolitan regions (San Francisco Bay area, Los Angeles, Sacramento and San Diego) of millions of people. Even the suburban "control" places were within or closely associated with these metropolitan areas. None of these high density areas included geographic areas that were comparable in scale of development or population to any part of Santa Barbara County now, or forecasted for the future the SBCAG.

Since the study only included metropolitan areas and used density as the primary variable to be examined, it did not consider one of the most significant variables associated with reducing per capita VMT generation; the mass of urban development. Massive traffic congestion that occurs in these metropolitan areas (many times the magnitude found here) leads to people seeking alternative transportation. If traffic does not reach truly intolerable levels, the private automobile still is the preferred mode for almost all people. The findings of this study are inapplicable to this area. We are unaware of any study that shows the benefits of density to reducing VMT per capita conducted on any area comparable in size and scale to this region. In order for the strategies suggested to work in this region, substantial growth would first need occur that would create the traffic congestion comparable to the metropolitan regions that

<sup>2</sup> We do complement the Plan on reporting the correct intercounty commuting data as reported by the Census rather than other often cited, yet less established data sources.

were studied. Even then it might be questionable that the strategies would have a significant impact based on the examples cited.

### **Adverse Impacts of Following the APCD Recommendations**

The Plan does not include an analysis to determine if the policies recommended would actually reduce air quality relative to existing land use plans and regulations. There are at least two ways that these recommendations could reduce air quality conditions on the south coast: growth and high density sprawl.

#### *Growth*

The report does not address the most basic cause of air quality degradation—increased growth. The density standards recommended by the Plan would increase substantially the development envelop of the region, allowing substantially more growth to occur than what would currently be permitted under existing plans and ordinances. The impacts of this additional growth should be analyzed in comparison to existing regulations with and without additional commuting into the region.

#### *High Density Sprawl*

While the Plan does recognize that its recommendations should not be applied in inappropriate circumstances, the thrust of the policies is to promote densification in almost all urban or suburban locations. All that seems to be required is a “transit route” irrespective of existing or planned head-ways and connectivity to jobs and commercial areas.

This includes many areas where commercial services and jobs are not likely to be located. If new development occurs at the densities recommended the residents of these developments would still need to travel significant distances to these services. Since the higher density would result in a larger number of people traveling to these services, there will be more travel than there would be with a lower density development at such sites.

For people not to use their cars, even in high density environments, transit use must be more attractive for the trip than the car. The Plan makes no assessment of whether transit services would be financed to provide the high level of service that would be required to achieve the objectives sought if the desired densities were achieved. Even with much more extensive transit services available, it would still be questionable whether the benefits of such service would cause people to choose transit over their car in our area or similar areas.

## PARKING

Section 7.4.3 advocates a severe restriction in the amount of parking that may be allowed in new development. Although a clear rationale for such an aggressive measure is not expressed in the chapter, it appears to be related to the belief that curtailing parking opportunities would stimulate transit use; e.g. if you cannot park your car you will ride the bus. This at very best -- is a gamble. If not successful this strategy will result in many problems. In residential areas, parking problems will overflow into adjacent areas detracting from neighborhood quality. In commercial areas, minimal parking tends to exacerbate traffic congestion (and related air pollution) as people search for parking and may ultimately result in a loss of business.

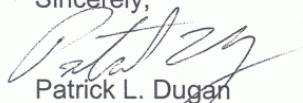
There are numerous areas where second units and overcrowding have created a lack of parking in the City of Goleta. There is no evidence that increased transit use has been a result, but problems associated with parking have been. In commercial areas, this policy will hinder the viability of commercial uses and could result in large public expenditures to mitigate the problems associated with inadequate parking.

## CONCLUSION

There are important air quality impacts associated with development patterns. The most significant of these impacts is from growth itself. Unless this aspect of land use is addressed, policies advocating densification and restrictive parking will have little if any impact on overall air quality. "Transportation -Related Land Use Strategies to Minimize Motor Vehicle Emissions: an Indirect Source Research Project," gives many examples of communities that have relatively low vehicle miles traveled per capita. While this may or may not be due to density, we would not want to trade our quality of life for the quality of life in any of those communities or for that matter our air quality.

Thank you for the opportunity to review your Air Quality Management Plan. Please contact us if you have any questions.

Sincerely,

  
Patrick L. Dugan  
General Plan Manager

Cc: Frederick C. Stouder  
City Manager

CITY OF  
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# Air Resources Board

Terry Tamminen  
Agency Secretary

2004 SEP 27 AM 7:27

Alan C. Lloyd, Ph.D.  
Chairman

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Sacramento, California 95812 • www.arb.ca.gov



Arnold Schwarzenegger  
Governor

SANTA BARBARA COUNTY  
AIR POLLUTION CONTROL DISTRICT

September 24, 2004

Mr. Tom Murphy, Manager  
Technology and Environmental  
Assessment Division  
Santa Barbara County Air Pollution  
Control District  
260 North San Antonio Road, Suite A  
Santa Barbara, California 93110-1315

Dear Mr. Murphy:

Thank you for providing the Air Resources Board (ARB) the opportunity to review the Santa Barbara Air Pollution Control District's (District) Draft 2004 Clean Air Plan (Draft Plan). Santa Barbara County recently achieved two significant air quality goals: the U.S. Environmental Protection Agency (U.S. EPA) redesignated the County to "attainment" for the federal 1-hour ozone standard, and designated the County as attainment, based on current air quality data, for the new federal 8-hour ozone standard. The Draft Plan provides the framework for achieving the next ozone air quality goal: attainment of the state standard.

We appreciate District staff's early consultation with ARB to help ensure that the Draft Plan and addresses California Clean Air Act planning requirements. This letter provides ARB staff's comments on the Draft Plan and our suggestions for your consideration regarding the proposed control measure adoption and evaluation commitment.

## Emission Inventory

ARB staff has identified emission estimates for several inventory categories in the Draft Plan that differ from estimates in ARB's databases. As you know, the Southern California region will begin to develop attainment plans for the federal 8-hour ozone standard soon. Accurate and complete base year and forecast inventories are essential to the development of these plans. Although the County is in attainment for and will not need to submit a State Implementation Plan (SIP) revision for the federal 8-hour ozone standard, the County's emission inventory will play an important role in overall ambient air quality modeling for the region. Therefore, we strongly encourage you to coordinate your emission inventory revision efforts with our Emission Inventory Branch.

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: <http://www.arb.ca.gov>.*

California Environmental Protection Agency

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We appreciate the cooperation between the District and the Santa Barbara County Association of Governments (SBCAG) in providing ARB the motor vehicle activity data needed to develop EMFAC2002 emission estimates for the Draft Plan. We understand that SBCAG expects to complete an update of its travel model in time for the next triennial update, and encourage the District to continue its work with SBCAG and ARB staff in the preparation and review of the new activity data. We also note and appreciate that the District and SBCAG extended the planning horizon out to 2020 as a part of the 2004 plan update.

#### **Progress Made in the 2001-2003 Reporting Period**

The 2001 Plan proposed the adoption of four District control measures in the near-term period of 2001 through 2003. The District adopted two of four measures proposed for this period. The revisions to the District's Architectural Coatings rule produced significantly higher emission reductions than were forecast in the 2001 Plan, while Rule 360, Large Water Heaters and Small Boilers, proved to be less effective than expected. The District did not meet commitments to consider two revisions to Rule 333, Reciprocating Internal Combustion (IC) Engines.

#### **Control Strategy Recommendations**

The Potential All Feasible Measures report prepared by the California Air Pollution Control Officers Association Rules Subcommittee (CAPCOA Report) identifies the most stringent measures adopted to date by California districts. The District has utilized this resource, as well as ARB's Identification of Performance Standards for Existing Stationary Sources: A Resource Document, in identifying "all feasible measures" and defining its proposed control strategy. These documents also formed the basis for our comments on the Draft Plan.

The Draft Plan identifies a total of 13 emission control measures for adoption. Four of these measures are slated for adoption during the near-term (2004-2009), six in the mid-term (2007-2009), and three in the long-term (2010-2012). Santa Barbara's 2001 Clean Air Plan identified two measures for adoption by 2004 that have not yet been acted on; these are identified in the 2004 Draft Plan as potential near-term controls that will be considered for adoption in the 2004-2006 timeframe. These revisions are projected to produce over 1 ½ tons per day reductions of ozone precursors by 2015.

ARB staff concurs with the selection of these measures proposed for adoption in the near-, mid- and long-term timeframes.

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The Draft Plan also identifies four new control measures and potential revisions to eight existing rules for further study. Some of the further study measures would affect rules or source categories that are also identified as proposed emission control measures. We have comments on the following proposed further study measures.

Natural Gas Fuel Specifications: We support the District's efforts to maintain a consistent natural gas fuel supply for stationary sources that avoids excess emissions from "hot" gas combustion. The California Public Utilities Commission, the California Energy Commission, and ARB are exploring the need for Statewide standards; we recommend that the District take these efforts into account when considering the need for a District-specific standard.

Gas Turbines: This source category is a carry-over from the 2001 Clean Air Plan, which included a proposed near-term control measure that has not yet been brought to the District Board for consideration. The District does not currently have a prohibitory rule for this source category, although turbines at facilities subject to the District's New Source Review regulation may have been required to meet the Best Available Control Technology standards in place at the time of the review. In addition, several other districts have adopted rules for this category. Therefore, we encourage you to add it to your list of proposed emissions control measures.

Boilers, Steam Generators and Process Heaters, and Stationary IC Engines (Rules 342 and 333): Revisions to control measures for these categories may yield significant additional emission reductions. The levels of control now available for these source categories already exceed those identified in the 2001 Plan. Therefore, we encourage the District to move these proposed rule revisions from "further study" to its list of rules scheduled for adoption.

Solvent Cleaning and Degreasing (Rules 362 and 321): These rules are identified as both "proposed measures" and "further study" measures. We recommend that the District consider incorporating rule limits consistent with All Feasible Measures when these rules are revised in the near term.

#### **Coordination with SBCAG**

We are aware that the District, SBCAG, local transit and transportation agencies, and the California Department of Transportation (Caltrans) are participating in the "101 in Motion" study to identify regional solutions to mobility issues in Santa Barbara County. The Draft Plan shows that the growth in annual Vehicle Miles Traveled (VMT) has increased at twice the rate of Santa Barbara's population growth since 1980. The disparity in these growth rates increased significantly in the latest reporting period, with

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VMT increasing at four times the rate of population growth. We recognize that methodological changes in VMT estimation from 1999 on may account for some of the sharp increase in this ratio. We encourage the District and SBCAG to continue participation in the "101 In Motion" project to develop broad regional strategies. These strategies to reduce VMT growth may include smart growth, alternative transportation modes, mixed land uses, and measures to improve the job/housing balance.

We look forward to continuing our work with you and your staff. If you have any questions, please contact me at (916) 322-5350, or have your staff contact Ms. Sylvia Oey, Manager, Southern California Liaison Section, at (916) 322-8279.

Sincerely,



Robert D. Fletcher, Chief  
Planning and Technical Support Division

cc: Ms. Sylvia Oey  
Air Resources Board

Mr. Michael Powers  
Deputy Director for Planning  
Santa Barbara County Association of Governments  
260 North San Antonio Road, Suite B  
Santa Barbara, California 93110

## **APCD RESPONSE TO PUBLIC COMMENTS**

- ***Comments From Marc Chytilo***

1. Comment: Health and Safety Code Section 40717

Response: While the District and SBCAG have not performed photochemical modeling to determine an emission reduction quantity necessary from transportation sources to attain the state standard, the District and SBCAG have determined the emissions reductions necessary for such sources by including in the CAP all reasonably available and feasible TCM's. These TCM's in the CAP constitute the District and SBCAG's determination of the emission reductions necessary for this CAP to attain the state standard. These reductions together with the substantial emission reductions achieved through ARB's regulation of fuels and tail pipe emissions are achieving significant reductions of emission from transportation sources. As explained in the District/SBCAG letter to Marc Chytilo on May 21, 2004, the District has made substantial progress toward attainment of the state standard since 1990, when 10 monitoring stations showed violations of the state standard. In contrast, the most recent data show that only one station (Paradise) violates the state standard and only by a slim margin. In light of this progress and the very narrow margin of improvement needed to attain the state standard, the District and SBCAG have determined that the emission reduction necessary from transportation sources necessary to attain the state standard are those that will be achieved from the implementation of all feasible measures that have been included in the CAP. These reductions together with the stationary source regulations should achieve the state standard. The District will continue to monitor the air quality data and, if necessary, make future adjustments to the CAP, including to TCM's, as necessary to take further steps to achieve the state standard.

2. Comment: Transportation Control Measures

Response: Table 5-2 in Chapter 5 (“Transportation Control Measures”) enumerates thirteen currently adopted TCMs while Table 5-5 lists nine TCMs proposed for further study. Seven projects identified in this list of nine for further study TCMs have now either been implemented or are funded and proceeding to implementation. The remaining projects are currently being evaluated as part of a comprehensive study called the *101 In-Motion*. The latter is a \$1.6 million study to identify a “solution package” of projects/strategies to address congestion in the Highway 101 corridor in the long term. Additionally one TCM has been proposed as a contingency measure.

Commenter cites only the first SBCAG board directive regarding the *101 in Motion process*. The complete adopted policy direction from the SBCAG board for the *101 in Motion* process is as follows:

- 1) *101 in Motion* shall result in a project or set of projects that will increase the capacity by adding lanes and reduce congestion on Highway 101.
- 2) Highway 101 widening options shall include at a minimum additional mixed flow lanes, High Occupancy Vehicle lanes, High Occupancy Toll lanes, reversible lanes and/or use of the highway shoulders and re-striping for additional lanes within the present rights-of-way.
- 3) In addition to widening Highway 101, *101 in Motion* shall include other projects providing congestion relief including those that increase corridor capacity (e.g., rail and bus transit), reduce regional travel demand, expand alternative transportation modes and improve operation and management of the transportation system.
- 4) *101 in Motion* shall include an analysis of alternative congestion relief projects which may be used in support of the NEPA and/or CEQA environmental review process during the next phases of project

development.

The commenter is doubtful that the *101 in Motion* process is one through which TCMs could be developed and maintains that there remains a “broad public distrust” of *101 in Motion* process. However, through *101 in Motion*, a wide cross-section of community members as well as city, County, Caltrans, APCD and MTD staff have jointly developed eight alternative congestion relief packages one of which does include traditional mixed flow lanes but others include TCMs such as high occupancy vehicle lanes (standard and reversible), ramp metering, express transit, commuter rail, limiting the number of all-day parking spaces, variable parking rates, enhanced demand management strategies (flexible work schedules, reducing bus/vanpool fares), and land use measures such as transit oriented development. Additionally, the *101 in Motion* process has also included an extensive public outreach program – specifically to low income and minority segments of our population. These efforts have been well received by the public. And while there may remain a segment of the public which is distrustful of the eventual outcome of *101 in Motion*, the process does represent the most inclusive and comprehensive effort to date for developing meaningful TCMs. It should also be made clear that although a freeway capacity enhancement will be part of the *101 In-Motion* solution package, this could take the form of HOV/HOT lanes and/or reversible HOV/HOT lanes. The latter project types are federally recognized TCMs (CAAA Section 108f), are listed as further study TCMs in the 2004 Clean Air Plan, and are eligible for federal Congestion Mitigation and Air Quality (CMAQ) program funds.

As a point of clarification APCD Rule 701, Transportation Conformity, does not have a TCM substitution provision.

3. Comment: Suggested TCMs.

a) Commuter choice

Response: SBCAG already has adopted (TCM 1-4) and staffs a similar program.

SBCAG's Traffic Solutions Office implements a commuter based TDM program countywide. Recent changes in state and federal tax law that allow employers to offer employees parking and transportation benefits as tax-exempt compensation, with greater incentives for parking cash-out and alternative commute options has been aggressively marketed by the Traffic Solutions Office. Copies of the tax code, samples and descriptions of the various potential parking cash-out strategies and their estimated tax savings are provided in the Employer Transportation Coordinator (ETC) Training and Resource Guide. Similar information is posted on the Traffic Solutions Web Site. In addition, SBCAG staff regularly recommends parking cash out programs when reviewing/commenting on environmental documents for land use projects that trigger the Congestion Management Program thresholds for analysis.

SBCAG's Traffic Solutions Office provides/implements the following commuter based TDM programs and services:

- Employer Services: Including the development of a training and resource manual, free consulting services, and a monthly newsletter geared towards informing employers about alternative transportation resources available to them and their employees.
- Carpool Matching: Provide free carpool matching services for commuters interested in forming carpools. Matchlists can be e-mailed, mailed, faxed or telephoned to clients. In 2004/05, on-line instant carpool matchlists will be available through the Traffic Solutions website.
- Emergency Ride Home Program: Program providing a free ride home to eligible alternative transportation commuters in the event of an unplanned personal emergency. This program is offered through a

partnership with employers (at no charge to employers).

- New Vanpool Rider Rebate Program: Provides a \$100 rebate to new vanpoolers, after they join the vanpool for at least three months.
- Vanpool Quick Start Program: Provides a 50 and 25 percent subsidy for vanpool lease support for each new vanpool for the first and second months of operation respectively; \$60 rebate for vanpool driver physical exams; lease support for new vanpools serving Downtown Santa Barbara commuters and aggressively assists in the formation of vanpool groups; and, a \$400 subsidy for the San Marcos Pass Vanpool program paid for by San Marcos Golf Course.
- Amtrak Commuter Passes: Negotiated and market reduced rate passes (monthly and 10-ride) for Central Coast commuters.
- Coastal Express: Marketing and administrative support for the Coastal Express bus service between Santa Barbara and Ventura counties.
- Clean Air Express: Administration of the Clean Air Express commuter bus service.
- Bike to Work Day: Cooperative special event with the Santa Barbara Bicycle Coalition held at seven locations countywide to promote and reward bicycle commuting.
- Rideshare Events: Countywide events designed to encourage alternative transportation.
- Pollution Prevention Week Partner: An annual educational campaign about pollution and the strategies individuals and businesses can use to reduce pollution.
- Green Award Consortium: Annual award honoring the voluntary environmental efforts of Santa Barbara county businesses.
- Participates and supports the Santa Barbara Carfree Program designed to encourage visitors to tour Santa Barbara without a car.
- Kids Care for Clean Air Calendar: Cooperative educational project with APCD showcasing children's art about air pollution and transportation.
- Countywide Bike Map & Countywide Transit Map: Production and distribution of both maps displaying bike and transit routes throughout Santa Barbara County.

- Website: Maintain an up-to-date website that includes information about alternative transportation in Santa Barbara county, including on line applications for carpool matchlists and links to transportation service providers and resources.
- Downtown Santa Barbara Transportation Programs: Repackage and renew the downtown alternative transportation programs, such as carpool parking, free bus passes, and bicycle lockers.
- School Programs: staff resources to promote alternative transportation at schools, including bike and walk to school days, bicycle and pedestrian safety instruction, school pools, buses, and incentive programs for school children.
- Enhanced Employer Programs: Staff and financial resources to provide and support employer-based telework and flexible schedule pilot programs.

b) Community Car Program

Response: Community car programs are of interest to SBCAG and the APCD. Such programs have worked well in areas like the Bay Area where they have been integrated with major transit hubs and where certain conditions exist such as adequate density, severely limited on-street parking, limited and expensive garage space etc. Although these conditions do not exist in Santa Barbara County, SBCAG feels that there are applications for community car programs that can be structured to promote alternative forms of transportation. One such example is for new developments (e.g. large residential developments) to offer a community car program coupled with parking cash out options as a means to reduce residential parking requirements. As reviewing agencies under CEQA, SBCAG and the APCD will continue to consider community car programs a potential mitigation for new developments of this scale.

SBCAG does feel that given the right conditions and program requirements, some employer based car-sharing programs can be effective at promoting alternative forms of transportation to work thereby reducing vehicle

emissions. One such program is being considered at UCSB. SBCAG has met and discussed how such a program could be structured at UCSB in order for it to compete for Congestion Mitigation and Air Quality (CMAQ) funds. Given the lack of more favorable conditions for a more regional approach to car sharing, SBCAG feels it is more prudent and protective of air quality to assess the merit of employer based car-sharing programs on a case by case basis.

c) Smart Growth Resources

Response: Both SBCAG and the APCD agree with your statements regarding the importance of educating both local planners and the public on the importance of better land use development and design. Hence, an entire chapter of the 2004 Clean Air Plan addresses the land use and air quality linkage. Chapter 7 provides examples of specific land use strategies; provides a list of prospective transportation system management policies and programs that local agencies can incorporate into general plans and circulation elements; and, describes the process in terms of communication, coordination, and monitoring that may be necessary to ensure that such policies if pursued will produce the desired results. This chapter was purposely structured in this “how to” fashion to be a resource for local agencies to use as they deem appropriate.

While SBCAG has very limited direct responsibility for land use planning in the region, there is increasing recognition of the need to effectively integrate land use and transportation planning in order to 1) reduce the impact of sprawl and consumption of land, 2) address the imbalance between jobs and housing in different parts of the region, 3) limit the increase in travel demand, and 4) minimize the need for major highway capacity improvements.

SBCAG’s Overall Work Program for fiscal year 2004-05 includes several

activities designed to help inform decision-makers and provide a framework for addressing these issues. These include upgrades to SBCAG's travel forecasting model, a continuing project to analyze alternative land use futures in terms of their transportation implications and SBCAG's recent jobs/housing Interregional Partnership report. These activities will build upon the Regional Growth Forecast anticipated to be updated in 2005/06 and will also provide input to the update of the Regional Transportation Plan.

d) Bike projects

Response: The identification of a more comprehensive bicycle system for the region was made and formalized with the adoption of The Regional Bikeway Plan (SBCAG) in July of 1994. A primary goal of the study was to identify a regional bikeway system which links the major population centers and, within centers, major trip origins and destinations. Routes chosen for inclusion on the regional bikeway system serve the needs of both commuters and recreational riders. Completion of the regional bikeway network is a transportation performance measure that is tracked and reported by SBCAG during biennial updates of the Santa Barbara County Congestion Management Program (see 2003 CMP). A full update of SBCAG's Regional Bikeway Plan is scheduled in 2004/05.

In August of 1998, the SBCAG board approved two new Regional Transportation Plan policies regarding bikeways. First:

- Determine that projects supportive of the SBCAG Regional Bikeway Study will be given priority for the use of bikeway funds.

This policy is carried out as part of SBCAG's project selection criteria for state and federal funding program cycles. Priority is given to bikeway projects (Class I or II) that fill or connect the SBCAG regional system of routes as identified in the Regional Bikeway Study.

To help guarantee a funding source for the completion of the regional bikeway system, the SBCAG board approved the second RTP policy:

- Establish goal to program a least 10% to TEA-21 flexible funds from the Regional STP, CMAQ and TEA funds for these bikeway projects (i.e., regional bikeway system).

Upon completion of each federal funding cycle, SBCAG reports how the flexible funds are distributed by project type. Historically, SBCAG has programmed over 15% of ISTEA and TEA-21 flexible funds for bikeway projects countywide.

Continuous review and improvement of safety problems and maintenance including surface street standards, bridge access, and traffic control issues are carried out by not only each respective local agency's public works department but by eight regional bike clubs throughout the county as well.

SBCAG's Traffic Solutions Division disseminates the "official" Santa Barbara County Bike Map on a continuous basis and tracks the number of maps it gives out in its monthly newsletter. The Santa Barbara County Bike Map includes a complete inventory of all designated Class I, Class II, and Class III bikeways in the county. The Bike Maps also lists phone numbers and contacts for regional bike clubs within the county and for reporting of bikeway hazards, provides safety tips for cyclists, and lists all applicable bike laws. SBCAG plans to include the taxonomy of bicycle signage in future upgrades of the Bike Map. The taxonomy will help educate cyclists on how to understand the various bicycle signs. Presently, all South County jurisdictions use a consistent standardized taxonomy of signs. North County jurisdictions have not coordinated bicycle signage efforts to date.

In conclusion, SBCAG/APCD believe that many if not all of the suggestions for bike projects are already being addressed.

e) Pedestrian projects

Response: SBCAG agrees that pedestrian-friendly facilities need to be given greater consideration in land use design and implementation. However, such considerations continue to be under the purview of the cities and the county. Chapter 7 of the 2004 Clean Air Plan provides examples of specific land use strategies; provides a list of prospective transportation system management policies and programs that local agencies can incorporate into general plans and circulation elements; and, describes the process in terms of communication, coordination, and monitoring that may be necessary to ensure that such policies if pursued will produce the desired results. This chapter was purposely structured in this “how to” fashion to be a resource for local agencies to use as they deem appropriate.

The City of Santa Barbara is planning to develop a Pedestrian Facility Plan that will identify a comprehensive sidewalk system. This will be the first plan of its kind in Santa Barbara County.

A more regional issue that SBCAG is cognizant of and will continue to work with Caltrans on is cross-highway pedestrian and bikeway access issues. Given that Highway 101 can act as a barrier to pedestrian and bikeway cross-highway movements, increasing attention to this issue is needed during the design phase of new interchanges and interchange reconstruction projects.

f) Recognize induced traffic and VMT

Response: This is not a TCM but more of an air quality analysis consideration. SBCAG did include a discussion of induced VMT in the 2001 RTP EIR and has included a more in depth assessment using local traffic data in the Highway 101 Deficiency Plan (June, 2002). SBCAG does not advocate an “across the board” treatment of induced vehicle activity as a result of transportation infrastructure improvements. Current peer reviewed research and local data

strongly suggests that the magnitude of an induced effect is scale sensitive (i.e., magnitude of travel time savings from the proposed improvement) and dependent on the presence of several other land use and travel demand characteristics and factors. Hence, consideration of latent demand should be handled on a project-by-project basis.

All travel models – including SBCAG’s Santa Barbara Travel Model are calibrated/validated using actual “ground truth” HPMS VMT data. Santa Barbara County’s Highway Performance Monitoring System (HPMS) sample size currently meets 90–10 precision limits (90-percent confidence with 10-percent allowable error – or in other words there is the probability that 90 times out of a 100 the error of a data element estimate will be no greater or less than 10 percent of its true value). This ensures that the annual HPMS VMT estimates for Santa Barbara County reflect VMT from currently completed projects. Future land use projects are generically reflected in SBCAG’s travel forecasts given that the model’s socio-economic input files include growth in employment and housing levels for small geographical units called Traffic Analysis Zones (TAZs). The source of the model’s socio-economic data comes directly from SBCAG’s Regional Growth Forecast. SBCAG monitors how well the Regional Growth Forecast tracks actual growth in employment and housing.

g) Comprehensive Public Transit Gap

Response: A pilot transit project between Lompoc and Santa Maria has been funded by SBCAG and local agencies and this intercommunity transit service is scheduled to begin in 2004/05. Intercommunity transit exists between the Ventura County and Santa Barbara County (Coastal Express), the Cities of Santa Maria and Guadalupe (SMAT), and is also scheduled to begin service connecting Santa Ynez Valley communities with southern Santa Barbara County (SBMTD). Currently, regional commuter transit exists between San

Luis Obispo County and the Santa Maria area of Santa Barbara County (SLORTA) and between northern Santa Barbara County and the South Coast of Santa Barbara County (Clean Air Express). SBCAG will monitor the success of these services to determine their cost-effectiveness and opportunities to expand. In addition, an analysis of the effectiveness of enhanced inter-city and inter-county public transit service to and from the South Coast of Santa Barbara County will be studied as part of the *101 In-Motion* process.

h) Parking management

Response: Such strategies were considered as part of the 1995 101 Alternatives Study but did not gain general public or political acceptance or support. Parking management strategies to subsidize and increase public transit will again be assessed as part of the *101 In-Motion* process.

i) TEA Restrictions

Response: This is an interesting concept. However, SBCAG staff feels that such restrictions if desired by the Board would be more appropriate as RTP policies rather than formal TCMs. Such policies do not easily lend themselves to emission reduction quantification or tracking.

As stated previously (bike projects), to help guarantee a funding source for the completion of the regional bikeway system, the SBCAG board approved the following RTP policy:

- Establish goal to program a least 10% to TEA-21 flexible funds from the Regional STP, CMAQ and TEA funds for these bikeway projects (i.e., regional bikeway system).

Upon completion of each federal funding cycle, SBCAG reports how the flexible funds are distributed by project type. Historically, SBCAG has programmed over 15% of ISTEA and TEA-21 flexible funds for bikeway

projects countywide.

It should also be mentioned that currently the following two flexible funding programs (Federal Surface Transportation Program (STP) and Federal Congestion Mitigation and Air Quality (CMAQ)) are subject to similar restrictions within jurisdictions that are found to be in noncompliance with the adopted Congestion Management Program for Santa Barbara County (Section 65089.2 (C)(1) California Government Code).

4. Comment: Land Use Strategies

Response: The APCD's participation in land use activities rests with Community Programs section. This section is responsible for reviewing and commenting on environmental documents for development projects, recommending mitigation measures to reduce a projects emissions profile as well as representing the APCD on the County's Subdivision Review Committee. The APCD is also a member of a statewide group of air districts committed to supporting and updating URBEMIS, an ARB-developed model which calculates emissions from development projects. Finally, the APCD provides training to County and city planning department staff on issues relating to air quality and land use.

5. Comment: VMT Growth

Response: Given that trip starts and average trip length are estimated using traffic modeling rather than being measured in the field, they are not the most appropriate statistics to assess historical trends in vehicle activity. Both EPA and ARB recognize and advocate the use of "ground truth" vehicle activity data generated as part of the federal Highway Performance Monitoring System (HPMS) program for this purpose. This is footnoted on page 5-2 in Chapter 5.

6. Comment: Contingency Measures

Response: Chapter 5, Table 5-5 has been revised to list Enhanced Inspection and Maintenance Program as a contingency measure. This is consistent with previous Clean Air Plans transportation control measures as shown in Table 5-3 and Table 5-4.

7. Comment: Air Pollution Transport

Response: Transport analyses conducted by the ARB have shown that emissions from the San Joaquin Valley can have an impact on the northern portion of the South Central Coast Air Basin (which includes Santa Barbara, San Luis Obispo and Ventura Counties), primarily in northern San Luis Obispo County. The ARB, however, has not identified a South Central Coast Air Basin to San Joaquin Valley transport couple. Additionally, emissions generated in the San Joaquin Valley are considerably higher than those generated in Santa Barbara County. Given the prevailing meteorology and relatively low emissions compared to San Joaquin Valley, it is not likely that Santa Barbara County emissions contribute significantly to San Joaquin Valley exceedances.

8. Comment: Emissions Trends (marine shipping)

Response: The APCD's Innovative Technology Group, in concert with other coast air districts, ARB, EPA and the federal Maritime Administration are aggressively pursuing programs to reduce marine shipping emissions through the application of control technologies such as fuel- water emulsification. As EPA has preempted state and local jurisdictions insofar as controls on marine vessels and as a majority of marine vessels transiting our coast are foreign-flagged, progress is not as rapid as we would desire.

9. Comment: All Feasible Analysis

Response: The basis for selecting all feasible measures has been the California Air

Pollution Control Officers Association's Potential All Feasible Measures report as well as ARB's "Identification of Performance Standards for Existing Stationary Sources". The former document identifies the most stringent measures adopted to date by California air districts. ARB considers these two documents a sufficient basis from which to select all feasible measures.

With respect to the concerns raised as to when certain measures will be adopted, ARB concurs with the timeframes and measures selected.

10. Comment: Construction Emissions

Response: We always strive to improve the accuracy of our emissions inventories and control measures.

11. Comment: Environmental Justice

Response: SBCAG and the APCD are both striving to properly address environmental justice issues as part of our planning procedures and processes. SBCAG and the APCD will continue to gauge and monitor whether the current forums and public outreach process and technical analyses addresses environmental justice issues.

• ***Comments From Dr. Ingeborg Cox***

1. Comment: Reduction in mobile source emissions

Response: The 2001 CAP is based on a 1999 baseline inventory while the 2004 CAP is reporting a 2000 baseline inventory. Although there is greater on-road activity in 2000 than in 1999, there are less vehicle emissions of ROC and NOx. This is primarily the result of changes in ARB's estimated rate of fleet turnover (new vehicles being introduced into the fleet while older more polluting vehicles being retired from the fleet).

2. Comment: Table 4-1 and future ROC and NOx projections

Response: This Plan focuses on the triennial update and the Plan revision guidelines that require us to examine measures proposed in the last three years and in the future. Therefore, we did not quantify emission reductions from previously adopted measures.

3. Comment: Add Rule # to Gas Turbines

Response: Rule numbers are provided at the time a control measure is proposed as a new rule. As the gas turbine control measure is in the Further Study category and there is no existing gas turbine control rule, there is no rule number.

4. Comment: LPG Truck Loading Control Measure

Response: This control measure would have required balance systems to collect displaced vapors during truck loading and unloading. It was deleted in the 2001 CAP because facilities are already equipped with vapor balance systems as required by Title 58 of the National Fuel Gas Code and no further ROC emission reductions would be realized. In any event, it would not have prevented accidental spills as occurred near the Bacara resort.

5. Comment: VMT/Population growth and source of VMT data

Response: While population estimates for Santa Barbara County can be reported by sub-area, the “ground truth” VMT estimates from Caltrans can not. This precludes generating population to VMT growth rates disaggregated by north and south county. SBCAG’s new regional travel model will be able to generate VMT estimates by sub-area. As such, future triennial updates can report future growth rate comparisons of population and VMT by sub-area if desired.

6. Comment: Land Use Strategies

Response: Research conducted by John Holtzclaw of the Sierra Club (“How Compact Neighborhoods Affect Modal Choice – Two Examples”) indicates that auto trips significantly increase when density falls below 20-25 units per acre. Therefore the 2004 Plan recommends 20 units per acre.

7. Comment: Infill development

Response: We agree that infill development should not place residents or employees near sources of nuisance, dust, odors or accidental releases of toxic substances. See Section 7.3.1, first paragraph.

8. Comment: CMP Requirements

Response: The rationale of zoning residential units within one third of a mile from rail transit stations is to provide alternative transportation within a reasonable walking distance of homes.

9. Comment: Include all comments in the Plan

Response: All comments received and responses to them will be documented in Chapter 8 of the Plan.

- ***Comments From the City of Goleta***

1. Comment: The City of Goleta express a general concern that the recommendations contained in this chapter constituted an unwarranted intrusions into local land use authority and jurisdiction. Additionally the City of Goleta found the policies relating to densification and parking, particularly troubling.

Response: Chapter 7 has been substantially revised to address the concerns expressed by the City of Goleta and members of the APCD Board of Directors. It should be noted that this chapter does not establish land use policies; rather its purpose is to recommend that the air pollution impacts of growth be minimized through land use policy. Communities can and should decide

which land use policies would ultimately result in the least negative effects to air quality.

- ***Comments From the California Air Resources Board***

1. *Comment:* Emission Inventory

*Response:* We are addressing the 2004 Plan inventory categories identified by ARB staff as differing from the estimates in the ARB data base. Additionally, we will continue our coordination with SBCAG and ARB staff in preparing and reviewing the new activity data in SBCAG travel model.

2. *Comment:* Control Strategy Recommendations

*Response:* Natural Gas Fuel Specifications: Should it become necessary to adopt a district-specific standard, we will certainly consider the efforts undertaken by the CPUC, CEC and ARB.

Gas Turbines: At this time, we have concluded that adoption of a gas turbine control measure will not result in any emission reductions and thus would not be the most prudent use of our resources. We will continue a dialog with ARB staff concerning the development of this control measure

Boilers, Steam Generators and Process Heaters and Stationary IC Engines: Based on CAC recommendations and on subsequent discussion with ARB, Rules 333 and 342 will remain as Further Study Measures.

Solvent Cleaning and Degreasing: When Rules 321 and 362 are revised, we will consider incorporating rule limits consistent with All Feasible Measures.

3. *Comment:* VMT Growth

*Response:* Comment noted. As stated, a sampling change in Caltrans Highway Performance Monitoring System (HPMS) program did occur in 1999 (see

below). Although this change has had a positive effect on the veracity of Santa Barbara County's VMT estimates for the period 2000 to 2002, it does represent a methodological departure from all previous historical VMT estimates generated for our county. Also, causality associated with this "trend" must be tempered by the fact that this is a short-term 3-year trend that is being compared with two 10-year trends.

Prior to 2000, states could put all of the urban areas that contained more than 50,000 but less than 200,000 population - that were not in an NAAQS non-attainment area - into a statewide "collective". This enabled a state to sample this collective as if it were just one urban area. Urban areas (population >50000 and <200000) within NAAQS non-attainment areas would still have to be sampled individually. Large urban areas (population >200,000) would always have to be sampled individually whether or not they were in an NAAQS non-attainment area (although all of the large urban areas were in NAAQS non-attainment areas). At the time, this collective included the urban areas of Chico, Redding-Anderson, Salinas, San Luis Obispo, Santa Cruz, Seaside-Monterey, Watsonville, Yuma (the portion of the urban area that's in California), along with Lompoc, Santa Barbara and Santa Maria. Accordingly, Caltrans sampled this collective as though it were a single urban area.

- ***Comments From John Gilliland's July 15<sup>th</sup> Memo***

1. *Comment:* The APCD indicates that emissions from natural sources are excluded from the Planning Emission Inventory (PEI) because they are unregulated. Is the APCD willing to consider including some biogenic sources such as oil and gas seeps, agricultural waste composting and range burning in APCD regulations and the PEI?

Response: We do not have any current plans to regulate natural sources, including those you mention above. As you point out, emissions from natural sources are excluded from the planning inventory since they are not regulated or controlled through the implementation of control measures. The planning inventory is a modified subset of the annual emission inventory developed by adjusting the annual inventory to account for seasonal variation because most ozone exceedances occur between April and October. Planning inventories are created consistent with guidance from the Air Resources Board.

2. Comment: Vandenberg Air Force Base Airborne Laser Mission Growth Allowance: Can the APCD add a footnote to this discussion that indicates this requirement may be removed pending the repeal of the Federal one-hour standard?

3. Response: The emissions shown in the VAFB ABL Growth Allowance table are included in the 2004 Plan for consistency with inventories specified in the 2001 Plan. We will footnote the ABL emissions table, however, to specify that the requirement may be removed pending the repeal of the Federal 1-hour standard.

Comment: Impacts of Marine Shipping: Is it possible for the APCD to determine the actual marine shipping for 2001, 2002, and 2003 to see how it tracks with the forecasted assumption? If the emissions are significantly different (either greater or less) is it possible to revise the forecast for this 2004 SCCAP or the 2007 SCCAP?

Response: Marine shipping forecasts are based on growth data from the 1999 report: Marine Vessel Emissions Inventory, Update to 1996 Report: Marine Vessel Emissions Inventory and Control Strategies prepared by ARCADIS for the South Coast Air Quality Management District.

NOx estimates from 2000 to 2002 are as follows (2003 inventory not yet

prepared):

2000: 11,512 tons per year

2001: 11,972 tons per year

2002: 12,940 tons per year

These data show that 2002 NO<sub>x</sub> emissions were 12.4% higher than 2000 emissions. We have predicted about 19% growth from 2000 to 2005 in the 2004 Plan. Based on the short-term trends, our growth predictions appear reasonable.

4. Comment: Impacts of Marine Shipping: The APCD stated that the burden of attaining or maintaining air quality improvement goals may fall disproportionately on onshore sources. Please add a discussion as to the ramifications to the local jurisdictional authority if air quality improvement goals are waived for onshore sources.

Response: The statement regarding disproportionate onshore responsibilities was made to highlight the potential implications of the large increase in NO<sub>x</sub> emissions anticipated from marine shipping. We are not aware of any state sanctions that could be imposed by ARB if the Board waives air quality improvement rules due to stakeholder input. The ARB does, however, have the legal authority to mandate additional control measures if a district fails to achieve interim goals or maintain adequate progress toward attainment.

5. Comment: 2004 Clean Air Plan Activity Indicators and Factors for 2005, 2010, 2015 and 2020: Under the prescribed fires section, is the APCD willing to consider revising the baseline numbers to more accurately represent this section. Even though this very low activity took place in 2000, a review of previous years and post years indicates values more closely attuned to the 6,250 values. The value, as listed, provides an erroneous growth factor for this category.

Response: Forecasts are prepared relative to baseline activity and adjusting real baseline value to “fit” more closely with forecasts is not a good precedent. While forecasted activity for prescribed fires for each of the planning years is significantly higher than 2000 baseline levels, it shows the ratio of expected activity (provided by the National Forest Service) to actual activity.

6. Comment: Santa Barbara County OCS NOx Emission Forecast Including Marine Vessels: This table clearly illustrates that the 2000 baseline year is less than the 2020-forecasted year. Is it possible for the APCD to receive Plan approval when the 2020 values are higher than the baseline year?

Response: The ARB is fully aware of challenges of controlling emissions from marine shipping and the implications that these emissions have on air quality goals. The ARB has indicated, however, that projected emissions from marine shipping should not jeopardize approval of the Plan. The APCD will continue to work closely with the ARB and other agencies to determine appropriate control strategies for marine shipping.

- ***Comments From John Gilliland’s March 18<sup>th</sup> Memo***

1. Comment: EMFAC2002 Output Sheets - Are Diesel Oxidation Catalysts accounted for in the CAP?

Response: Yes – indirectly. Future vehicle emission standards that are presently adopted are reflected in EMFAC2002. EMFAC2002 is technology neutral i.e., how the auto manufacturers meet these standards is left to them. Diesel oxidation catalysts may be one such strategy to meet the emission standards reflected in EMFAC2002.



# SBCAG

santa barbara county association of governments

May 21, 2004

Marc Chytilo  
Law Office of Marc Chytilo P.O.  
Box 92233  
Santa Barbara, CA 93190

Dear Mr. Chytilo:

The Santa Barbara County Air Pollution Control District (APCD) and the Association of Governments (SBCAG) appreciate your interest in the development of the 2004 Clean Air Plan and specifically the on-road mobile source portion of the inventory. We share your enthusiasm for transportation control measure (TCM) planning and we believe that the cooperative planning process undertaken pursuant to our memorandum of understanding complies with the intent of the applicable requirements in the Health and Safety Code. In your recent letter on this topic, you raise the following issues that we have responded to below:

- The 2004 Clean Air Plan is being developed without a specific emissions reductions target.
- There should be a more extensive and expansive process for identifying TCM's in the 2004 Clean Air Plan.
- The 2004 Clean Air Plan must address means to achieve applicable performance standards.

The fundamental state requirement that our planning process has focused on since the enactment of the California Clean Air Act is the five percent annual emission reduction requirement under Health and Safety Code § 40914. If an area can not meet the five percent reduction requirement, they must include every feasible measure in their plan to attain the state standard by the earliest practicable date. While § 40717 mandates that areas quantify the emission reductions from transportation sources to attain state and federal standards, we do not have the photochemical modeling analysis to identify the targets for the state standard. Therefore, we are technically unable to fulfill the process identified under § 40717 and must default to the every feasible measure approach outlined in § 40914. Even without the benefit of photochemical modeling, we believe that the progress we have made in cleaning our air (with significant emissions reductions from on-road mobile sources) clearly shows that our air quality planning process has been a success. According to our most recent air quality data, we have one monitoring station (Paradise Road) that violates that state standard and only by a very slim margin. Back in 1990, we had ten monitoring stations that violated the state standard.

260 N San Antonio Road, Santa Barbara, California 93110

Terry Dressler  
Air Pollution Control Officer  
805.961.8800

Jim Kemp  
SBCAG Executive Director  
805.961.8900

The origin of the TCM projects identified in the 2004 Clean Air Plan is from the previously adopted plans (1994 and 1998). As part of the development of these plans - a comprehensive process involving and including the public, transit operators, local municipalities, and other agencies was undertaken. We agree with your desire for an extensive and expansive process for identifying TCM's and believe that the current "101 in Motion" process represents a unique opportunity to engage in such an endeavor. We are unaware of a "broad public distrust" in the process and encourage you to take advantage in this very important opportunity. Many of the further study measures identified in the 2004 Clean Air Plan will be evaluated by "101 in Motion" and we see this as an unparalleled opportunity for the public, transit operators, local municipalities, and other agencies to participate in developing transportation strategies to address congestion and air quality in Santa Barbara County. As § 40910 provides that it is the intent of the legislature to avoid redundant work, we view the "101 in Motion" process as the proper forum from which to evaluate existing and future TCM's in our most congested transportation corridor at this point in time.

As Chapter 5 of the 2004 Clean Air Plan discusses, areas having "moderate" air pollution are required to track and provide reasonably available TCM's to provide a substantial reduction in the rate of increase in passenger trips and vehicle miles traveled (VMT). The ARB has further defined this "performance measure" as holding the growth in VMT to the same growth rate in population. The data presented in Chapter 5 shows that for 12 of the last 16 years, the annual VMT growth rate has exceeded the annual population growth rate in Santa Barbara County. Our ability to limit the growth rate of VMT to that of the local population is problematic due to many factors related to how and where we live and work in the region. This issue is also one that the "101 in Motion" process will consider and we encourage you to bring this issue to that forum.

We hope that we have addressed your concerns and that you will take an active role in the "101 in Motion" process. If we find that the "101 in Motion" process was ineffective in evaluating TCM's or our local air quality is degrading, we will consider initiating another process to evaluate such measures. If you have any questions or comments, please call either Michael Powers at (805) 961-8910 or Tom Murphy at (805) 961-8857.

Sincerely,

Terry Dressler  
Air Pollution Control Officer  
Santa Barbara County Air Pollution  
Control District

Jim Kemp  
Executive Director  
Santa Barbara County Association  
of Governments

cc: Michael Powers, SBCAG  
Tom Murphy, APCD  
Dennis Wade, ARB

**July 26, 2004 Letter to Tom Banigan (NuSil Technology) Regarding Employment Trends**

July 26, 2004

Mr. Thomas P. Banigan  
1150 Mark Avenue  
Carpinteria, CA 93013

Dear Tom,

At the July 14, 2004 Community Advisory Council meeting, you provided an estimate that approximately 4,000 jobs were lost in the industrial sector over the last five years and suggested that the industrial employment activity indicator used in the 2004 Clean Air Plan may be trending in the wrong direction, particularly in the short-term. Please note that industrial employment includes not only jobs in manufacturing (durable and non-durable goods), but mining and construction as well. These projections come directly from the Santa Barbara County Association of Governments (SBCAG) Regional Growth Forecast 2000-2030 (RGF). The RGF was prepared with extensive public participation and review, and was adopted by SBCAG's Governing Board on March 21, 2002. According to RGF data, industrial employment is expected to grow by about 4,700 jobs from 2000 to 2005.

We have researched your concerns further using the April 2004 UCSB Economic Outlook for Santa Barbara County that shows about 2,220 industrial jobs were lost in Santa Barbara County during the period of 2000 to 2003. During that timeframe, 2,275 jobs were lost in manufacturing alone, although construction employment increased by 283 jobs in that period. From 2002 to 2003, however, manufacturing employment increased by 200 jobs. Additionally, from 2002 to 2003, construction employment gained 416 jobs, while mining employment, the smallest fraction of the industrial sector, decreased by about 58 jobs. These data show that there was a net increase in industrial employment of 558 jobs from 2002 to 2003.

The UCSB Economic Outlook data suggest that while there were net losses in manufacturing

employment from 2000 to 2003, total industrial employment may be trending upward as shown by 2002 to 2003 data. In addition, we believe that there will be significant increase in housing construction, in particular due to considerable growth in the North County, which will translate to further increases in construction employment over the next several years. Recent increases in manufacturing and construction employment suggest that our industrial employment growth projections and trends for 2005 are possible. As such, our emission growth projections for sources tied to industrial employment will continue to reflect the industrial employment growth forecasts presented in SBCAG's 2000 RGF.

Should you have any questions, please do not hesitate to call me at 961-8894 or Brian Bresolin, SBCAG's Regional Analyst at 961-8909.

Sincerely,

Joe Petrini  
Emission Inventory/Planning Specialist III

Cc: Tom Murphy, APCD  
Brian Bresolin, SBCAG

## **7.5 ARB TRANSPORT ANALYSIS**



Terry Tamminen  
Agency Secretary

# Air Resources Board

Alan C. Lloyd, Ph.D.

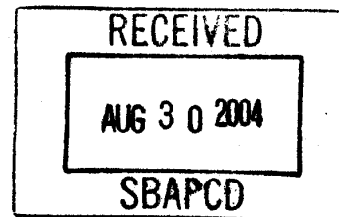
Chairman

1001 I Street • P.O. Box 2815  
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Arnold Schwarzenegger  
Governor

August 25, 2004



Mr. Terry Dressler  
Air Pollution Control Officer  
Santa Barbara County Air Pollution  
Control District  
260 North San Antonio Road, Suite A  
Santa Barbara, California 93110

Dear Mr. Dressler:

The purpose of this letter is to transmit a final copy of the report summarizing our recent evaluation of the effect of transport from Santa Barbara County on ozone levels in the South Coast Air Basin. The enclosed document, "Assessment of Transport from Santa Barbara County to the South Coast Air Basin," updates the previous Air Resources Board (ARB/Board) assessment conducted in 1990.

Last year, the Board adopted amendments to the transport mitigation regulations that apply to air quality districts that have been identified as contributing to ozone violations in a downwind area. The amendments require these upwind districts to implement "all feasible measures." The amendments also provide an option under section 70601(d) that allows upwind districts to limit the application of this requirement if the most recent transport assessment indicates that the upwind district's impact on the downwind area is "inconsequential." As a result of these amendments, your district asked ARB staff to update the assessment of Santa Barbara County's transport impact on the South Coast.

In conducting the analysis, my staff worked closely with your staff and the staff of the Ventura and South Coast districts. Our updated analysis has determined that, based on the most recent air quality and meteorological data, the impact of Santa Barbara County on the South Coast Air Basin is "inconsequential." Should you wish to invoke section 70601(d) based on the results of this new analysis, the mechanism for doing this is to incorporate the analysis and findings of the study into the triennial update of your State ozone plan.

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: <http://www.arb.ca.gov>.*

California Environmental Protection Agency

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Mr. Terry Dressler

August 25, 2004

Page 2

If you have any questions, please contact Ms. Lynn Terry at (916) 322-2739. If you or your staff have questions of a technical nature regarding the study, please contact Mr. Robert Effa at (916) 322-6076.

Sincerely,

  
Catherine Witherspoon  
Executive Officer

Enclosure

cc: Dr. Barry Wallerstein  
Executive Officer  
South Coast Air Quality  
Management District  
21865 E. Copley Drive  
Diamond Bar, California, 91765-4182

Mr. Michael J. Villegas  
Air Pollution Control Officer  
Ventura County Air Pollution  
Control District  
669 County Square Drive, 2<sup>nd</sup> Floor  
Ventura, California 93003-5417

Lynn Terry  
Deputy Executive Officer  
Air Resources Board

Mr. Robert Effa  
Chief, Air Quality Data Branch  
Air Resources Board

## **Assessment of Transport from Santa Barbara County to the South Coast July 28, 2004**

### **Introduction**

In 2003, the Air Resources Board (ARB or Board) amended the transport mitigation requirements applicable to upwind air quality districts (upwind districts). Upwind districts are those that have been identified as contributing to ozone violations in downwind areas. The new requirement to implement “all feasible measures” significantly strengthened the regulations. The regulations also provide an option for upwind districts to limit the application of the mitigation requirements if the measures are not needed in the downwind area, or if the most recent transport assessment demonstrates that the upwind district’s impact on the downwind area is “inconsequential.”

The ARB has previously identified the Santa Barbara Air Pollution Control District (Santa Barbara District) as an upwind district and it is included, along with the Ventura County Air Pollution Control District, in the South Central Coast to South Coast transport couple. However, transport impacts can change over time. Transported emissions can decrease due to the implementation of emission control regulations, which reduce emissions in the upwind area. This couple has not been evaluated since 1990 and considerable air quality progress has occurred during this fourteen-year period.

The Santa Barbara District now attains both the national 1-hour and 8-hour federal ozone standards, and is close to attaining the more stringent State ozone standard. In addition, emissions have also dramatically declined during this period due to the implementation of a wide variety of emission control measures. Due to the improving air quality in Santa Barbara County, the Santa Barbara District requested that ARB work together with the districts in the region to reassess their transport impacts. This assessment would be most helpful prior to the release of the Santa Barbara District’s update to their State air quality plan. Upwind districts are required to begin implementing the new “all feasible measures” provision of the transport mitigation regulations in their 2003/4 triennial air quality plans.

ARB staff worked with representatives from the Santa Barbara District, the South Coast Air Quality Management District (the South Coast District) and the Ventura County Air Pollution Control District (the Ventura District). This report summarizes the updated assessment, which relied on data for the period 2000 through 2003. This study only evaluated transport between the South Central Coast and South Coast, and not transport between districts within the South Central Coast.

### **Previous Assessment**

ARB evaluated transport between the South Coast and South Central Coast in 1989 and 1990. In 1990, modeling was used to characterize the magnitude of transport. In addition,

over the last thirty years a number of researchers have evaluated transport between the southern portion of the South Central Coast Air Basin (Santa Barbara and Ventura Districts) and the South Coast Air Basin. The general consensus, as reported in ARB's 1989 transport identification report, is that transport takes place in both directions, but transport is mostly from the South Coast Air Basin to the South Central Coast Air Basin.

In 1990, ARB analyzed three ozone episodes that occurred in 1984 and 1985. An urban airshed model was used and incorporated data from the South Central Coast Cooperative Aerometric Monitoring Program (a field study). Two episodes were characterized as insignificant and the other as significant for transport from the South Central Coast to the South Coast. The two days characterized as insignificant, September 7, 1984 and September 13, 1985 had daily peak ozone levels of 0.14 and 0.11 ppm at Reseda, respectively. The September 17, 1984 ozone episode identified as significant had a peak ozone level of 0.16 ppm at Reseda. However, the 1990 ARB Staff Report concluded that while the couple included both Santa Barbara and Ventura as upwind districts, most of the transported mass most likely originated in Ventura County.

### Assessment Approach

Transport of ozone and its precursors occurs when winds of sufficient speed, direction, and duration are present. Transport can take place near the surface (surface-level transport) or far above the surface (transport aloft). This assessment only considered the likelihood of surface level transport over land, and did not evaluate potential for surface level transport over the Santa Barbara Channel (channel) or transport aloft. Transport over the channel or offshore of the channel was not evaluated because both districts and ARB have very limited legal authority to control emission sources operating there. Specifically, the Santa Barbara and Ventura Districts only have authority over the stationary sources in the channel or offshore of the channel, and not marine shipping sources. Marine shipping sources represent over 90% of those emissions in the channel or offshore of the channel.

Aloft transport is of concern for many areas of the State, and was considered for inclusion in this analysis. However, it was deemed not to be important for the transport couple under consideration. This is because there are very few emission sources within the onshore portion of either Santa Barbara or Ventura Counties with the potential to release emissions aloft. For example, based on one SCOS 1997 summer episode day emissions inventory for the Santa Barbara County, only 5% of the NO<sub>x</sub> emissions (1.8 tons per day) and only 1% of the ROG emissions (0.4 tons per day) are from stack-based sources. Aloft emissions of this magnitude were considered unlikely to contribute significantly to downwind ozone levels at the sites under consideration for this analysis.

The characterization of transport is based on detailed analysis of one or more days when the ozone standard was violated in the downwind area. There are two basic approaches that are typically utilized to assess transport: (1) air quality modeling evaluations or (2) data analysis techniques. The modeling approach relies on large data sets gathered from special field studies. In contrast, the data analysis approach uses available data from air

quality monitoring and meteorological databases, along with emissions and population estimates, to assess transport. Regardless of which approach is used, the results of the analysis are used to label the magnitude of transport. Three labels are applied according to whether the ozone violation in the downwind area is predominately due to transport (overwhelming), local emissions (inconsequential), or a combination of both (significant).

This current study evaluated transport for all State ozone exceedance days during the period 2000 through 2003. As has been done in prior studies, it would have been desirable to include a model-based assessment of transport for the days that were analyzed. The available modeling episodes for southern California (using the SCOS modeling domain, which includes Santa Barbara and Ventura Counties) are from 1997 and 1998. Development of other episodes is very resource intensive, and would have impacted SIP development efforts for central and northern California. Therefore, a number of air quality analysis methods were used to evaluate transport impacts for this current study. This study was conducted in several steps.

- ◆ Typical wind flow patterns were identified for the study area and the magnitude of the ozone air quality problem in the downwind area was identified;
- ◆ Screening analyses were conducted on all exceedance days to identify days with potential for transport;
- ◆ In-depth trajectory analyses were conducted on days identified as having weather conditions conducive to transport, which were identified in the step above;
- ◆ Population growth and change in emissions were evaluated in both upwind and downwind areas.

### Study Area

For this current analysis, the study area consisted of the two southern counties in the South Central Coast (Ventura and Santa Barbara) and a portion of the South Coast Air Basin, as shown in Figure 1. The downwind area in the South Coast is the western part of the San Fernando Valley and the Santa Clarita area. The Santa Clarita area is slightly north of the San Fernando Valley. The air monitoring sites representative of the downwind areas in this analysis are Reseda and Santa Clarita. These sites are closest to the boundary between the two air basins. If transport originated in the South Central Coast, one or both of these sites would be the most impacted.

The Santa Barbara coastal strip is only a few miles wide and is bordered on the inland side by mountains that reach 4,000 feet. This narrow southern coastal strip of Santa Barbara County connects to the San Fernando Valley via the Oxnard Plain of Ventura County. The Oxnard Plain includes the cities of Ventura, Oxnard, and Camarillo. The San Fernando Valley is an inland valley within northwestern Los Angeles County and extends to the southeastern boundary of Ventura County. Still further inland and northward, the Santa Clara River Valley runs eastward from near the city of Ventura to Castaic and the Santa Clarita area that are located just north of the San Fernando

Valley. To the south of the San Fernando Valley, the 3,000 foot Santa Monica Mountain ridge slopes down to sea level at Point Mugu in Ventura County.

### Wind Flow Patterns

Throughout the year, airflow patterns within the study area are dominated by a diurnal land-sea breeze pattern with strong on-shore winds most of the day and calm to weak offshore during the night. These sea breeze winds are generally from the southwest to west in the study area and are channeled by the coastal mountains. In addition, a portion of the onshore seabreeze in the Los Angeles coastal plain and the seabreeze from the Oxnard Plain converge in the San Fernando Valley.

Under the seabreeze pattern, emissions transport is complex within the study area. In general, the onshore seabreeze blows emissions within the Oxnard Plain of Ventura County eastward into the interior valleys of Ventura County.

Two other wind flow patterns can exist in the study area. These include a general pattern of winds from the south and weak to strong offshore winds associated with the Santa Ana pattern. Under these two patterns emissions transport is complex.

As discussed above, there are a number of geographical barriers and wind flow patterns that limit the pathway that a parcel of air originating in Santa Barbara County could take. The three most likely pathways over land for emissions in the coastal Santa Barbara County area to transport into western Los Angeles County are listed below and shown in Figure 1:

- ◆ Santa Barbara County to Ventura County to Santa Clarita via the Santa Clara River Valley;
- ◆ Santa Barbara County to Ventura County to Reseda in the San Fernando Valley via Highway 118;
- ◆ Santa Barbara County to Ventura County to Reseda in the San Fernando Valley via Highway 101.

### Air Quality

There has been a growing concern over air quality at the Reseda and Santa Clarita downwind sites, which had 263 State 1-hour ozone exceedances from 2000 through 2003.

The 2002 and 2003 ozone seasons were particularly severe in this portion of the South Coast, with an average of 85 and 55 days per year exceeding the State ozone standard at Santa Clarita and Reseda, respectively. Approximately 70% of the time when the South Coast experiences a State ozone exceedance anywhere in the basin, it also occurs at Santa Clarita. In addition, some of the highest peak level ozone levels that occurred in the South Coast during the last two years have been recorded at the Santa Clarita monitoring site. This includes ozone concentrations twice the level of the State standard. While the South Coast is classified as an extreme one-hour ozone nonattainment area and has more than enough emissions within the basin to cause these exceedances, it is also important to

evaluate whether transport is a contributing factor to poor ozone air quality in this region. If transport is a factor, it needs to be addressed through the implementation of the mitigation regulations.

In contrast, the number of days when ozone standards are exceeded in Santa Barbara County has dropped dramatically. Santa Barbara County now attains both federal ozone standards. During the last three years, the Santa Barbara District, classified as a moderate nonattainment area, averaged only five days when the State ozone standard was exceeded. The average daily maximum ozone concentration for 2001-2003, using the mean of the top 30 days for the worst site, is now at the level of the State standard, with only a few days remaining that have peaks above the level of the State Standard. Ventura County, the other upwind district in this couple, has also seen significant air quality improvements. They now attain the federal 1-hour ozone standard, although they still exceed the more protective federal 8-hour ozone and State 1-hour ozone standards. Though they had an average of 32 State ozone exceedance days over the last three years, the number of exceedances has decreased by 141 percent since 1990.

### Screening Analyses

In order to determine the transport impacts that the Santa Barbara District has on the South Coast Air Basin, there was a need to review all recent ozone exceedances at the downwind sites. As noted, there were 263 State 1-hour ozone exceedance days that occurred at Reseda and/or Santa Clarita between 2000-2003. Due to the large number of exceedance days, it was not possible to evaluate each exceedance day in-depth. Therefore, the approach used was to identify days with potential for transport, and then focus more in-depth analyses on these days.

Multiple levels of screening methods were used to identify days with high transport potential. The screening methods employed were (1) evaluation of weather conditions, (2) conducting time series analysis, and (3) a review of the progression of the hour of the daily maximum ozone concentration. These screening methods are described below.

The primary method for screening was an evaluation of weather conditions to determine if winds of sufficient speed, direction, and duration were present that would have been conducive to the transport of ozone or its precursors. For all 263 days, the wind speed and direction at the downwind sites (Reseda and Santa Clarita) were examined at the time of the daily maximum ozone concentration and up to six hours prior to the maximum ozone concentration. The goal was to identify days with persistent winds from the west, which could have resulted in transport from Santa Barbara and Ventura Counties.

The second screening method was time series analysis. This analysis was applied to some of the days identified as having transport potential in the first screening step. The objective of this analysis is to determine whether weather conditions are conducive to transporting emissions on the prior day and remaining overnight to contribute to an exceedance on the next day. This analysis consists of plotting hourly ozone, NO<sub>x</sub>, and CO concentrations, along with hourly wind speed and direction for a 48-hour period at the

downwind site (Reseda and/or Santa Clarita sites). Hydrocarbon measurements were not available. However, CO was used instead to characterize the motor vehicle emissions behavior. The impact of transported emissions on the previous day would be indicated by persistent winds from the west along with high NO<sub>x</sub> and CO concentrations on the prior day, followed by calm winds and continued high NO<sub>x</sub> and CO concentrations on the next day. In other words, emissions transported into the area on the previous day remain to contribute to an ozone exceedance on the following day. Low winds on both days with high NO<sub>x</sub> and CO would suggest emissions are mostly local and transport was unlikely.

The third screening method was a review of the progression of the hour of the daily maximum ozone concentration along a path beginning in Santa Barbara County through Ventura County to Reseda or Santa Clarita. If there is progression in the time of the peak ozone concentration along the path, this could be an indication that ozone was transported. However, this approach was not effective in identifying potential transport days, because of the intermediate precursor emissions in Ventura County, topography, and varying elevations of air monitoring sites along the path.

### Trajectory Analysis

The screening procedure described above identified 12 potential transport days for the period 2000 through 2003. Ten of these days are for exceedances that occurred at Santa Clarita and two for Reseda. These 12 days, plus an additional 4 days with the highest daily maximum ozone concentration at Santa Clarita (0.18-0.19 ppm) in 2003, were chosen for in-depth study using trajectory analysis. The additional 4 days were not identified as having weather conditions conducive to transport during the screening analysis; however they were analyzed due to their high concentrations.

The objective of a trajectory analysis is to identify the most likely source of emissions and the path those emissions took to result in an ozone exceedance at a downwind location. In other words, it is a pictorial analysis technique that estimates the path an air parcel took over a specified period of time. In a backward trajectory, the site location and site hour of the daily maximum ozone concentration are used as the starting point. From this point, the air parcel is backed up in time, based on an hourly set of wind data. Depending on whether a computer model or manual approach is used, the path of the air parcel is estimated using model generated hourly gridded wind fields or manually generated hourly airflow fields, respectively. The gridded wind and airflow fields are based on wind speed and direction at various sites in the study area. In a model, terrain barriers can be considered. However, they were not used in this analysis. In ARB staff's opinion, the observed wind measurements already reflected the influence of terrain.

Initially, back trajectories were manually constructed for the two Reseda and one Santa Clarita State ozone exceedance days which were identified in the screening process. This manual method has been used in previous ARB transport assessments. Back trajectories were manually drawn for these three days, due to the unavailability of a trajectory model at the early point in this assessment. Wind data (speed and direction) from approximately 21

weather monitoring stations within the study area were used to construct each manually drawn back trajectory. Wind data included four offshore buoy sites. The wind data were obtained from the U.S EPA-AIRS, CIMIS, and NOAA buoy databases. A total of about 90 weather data sites were available; however only 21 were used in this case due to the extensive time requirements to construct manually drawn back trajectories. Based on these trajectories, the ARB and districts determined those State ozone exceedances for the two Reseda days were the result of local emissions. However, the one Santa Clarita day warranted further analysis by a trajectory model.

When the two dimensional (2-d) Caltech trajectory model became available, it was used to analyze the remaining Santa Clarita day. In addition, it was used to analyze the other 9 days identified in the screening process, along with the 4 days having the highest ozone concentration at Santa Clarita in 2003.

Wind data (speed and direction) from approximately 90 weather monitoring stations within the study area were used to construct each 2-d trajectory. Wind data included six offshore buoy sites. The wind data were obtained from U.S EPA-AIRS, CIMIS, RAWS, NOAA buoy, and Plymouth State University databases.

Typically, back trajectories are constructed beginning at the hour of the daily maximum ozone concentration. However, for each of the 14 days analyzed with the 2-d Caltech trajectory model, separate back trajectories were constructed for each hour when the State ozone standard was exceeded. The back trajectories extended back in time up to 44 hours depending on the hour of the State ozone exceedance. This was done to better characterize the weather conditions and likely pathways for emissions to be transported. Since all of the 14 exceedance days occurred at Santa Clarita, back trajectories beginning at Santa Clarita were constructed for these 14 days. In addition, because on 11 out of these 14 days there was also an exceedance at the Reseda site, back trajectories for these days were also constructed beginning at Reseda. In all, a total of 83 Reseda and 94 Santa Clarita back trajectories were completed using the 2-d Caltech trajectory model.

In general, back trajectories from Santa Clarita indicated that emission contributions from Los Angeles County and Ventura County occurred at hours exceeding the State ozone standard on 10 of these 14 days. Four of these ten days had this emission contribution over multiple consecutive hours. As noted, there were also ozone exceedances at Reseda on 11 of these 14 days. Back trajectories at hours that exceeded the State ozone standard at Reseda on 7 of these 11 days indicated that emissions were limited to Los Angeles County. However, the remaining four days had contributions of emissions from Los Angeles County, along with Ventura County or Ventura County and the offshore area of Santa Barbara County.

As discussed above, none of the back trajectories were similar to the transport paths shown in Figure 1; that is, they did not follow the paths all the way into Santa Barbara County or back into the Santa Barbara urban area from the Santa Barbara Channel. However, a few trajectories backed into the vicinity of Vandenberg Air Force Base from

the channel. However, this small area only represents approximately 1% of Santa Barbara County's emissions (estimated 0.8 tons per day combined ROG and NOx emissions, see Tables 1 and 2) and less than 0.1% of Los Angeles County's combined ROG and NOx emissions. Therefore, the emissions in the Vandenberg Air Force Base area are insufficient to have influenced ozone concentrations in the South Coast. It is also not located within the major population centers of Santa Barbara County.

### Emissions

A comparison of emission trends over time will provide additional information on which to base an assessment of transport impacts. Emission estimates for ozone precursors were obtained for the current year and compared to 1985 emission estimates (the year of the ozone episode evaluated in 1990). These emission estimates are shown in Table 1 and Table 2 and the source of these emission estimates is discussed in detail in Attachment A. The ROG and NOx emission estimates are from the official ARB emission inventory in the 2004 Almanac. However, the emission estimates may not reflect the district's most recent inventory in their air quality plans.

Emissions in the upwind and downwind areas have declined significantly since 1985. The South Central Coast portion of Santa Barbara and Ventura Counties (onshore emissions) combined ROG and NOx emissions have declined by over 40%. Moreover, emissions decreased by 58% in the San Fernando Valley and the South Coast portion of Los Angeles County, although they are substantially higher than those emissions in either the South Central Coast portion of Ventura or Santa Barbara County. The Outer Continental Shelf (>3 to 25 miles offshore) portion of Santa Barbara County's combined ROG and NOx emissions for ships (approximately 33 tons per day), which are uncontrollable by the Santa Barbara District, are approximately 25% of Santa Barbara County's total combined ROG and NOx emissions.

Thus, both the upwind and downwind areas have had steadily declining emissions since 1985. These declining emissions in Santa Barbara County suggest a lower potential for significant transport impact on the South Coast since the 1990 ozone transport assessment. Because Ventura County separates Santa Barbara County from the San Fernando Valley, these declining emissions suggest a much lower potential for transport impact from Santa Barbara County on the South Coast since the 1990 transport assessment. Declining emissions may also indicate a lowered potential for transport from Ventura County. The decline in emissions is expected to continue. This should continue to lower the potential for transport from the South Central Coast.

### Population

A comparison of population in the study area over time will provide additional information on which to base an assessment of transport impacts. The population of Los Angeles County dwarfs that of either Santa Barbara or Ventura counties. The 2000 population of Los Angeles County exceeds 9 million, compared to 753,000 for Ventura County and 400,000 for Santa Barbara County. However, there has been significant population

growth along certain portions of the transport pathway, particularly in Ventura County. The Ventura County cities of Thousand Oaks, Oxnard, and Simi Valley are connected to Los Angeles County through commerce, jobs, and commute traffic. These cities experienced 11.1% to 19.5% population growth between 1990 and 2000. Santa Clarita grew at the even larger rate of 36.5%. In contrast, the City of Santa Barbara had a 4.7% increase in population.

### Transport Contribution

This section links emission trends, population trends, air quality, and trajectory results together to assess the transport contribution. We look at these to assess the transport contribution from Santa Barbara County, Ventura County, and the South Coast. As discussed in the section of trajectories, no trajectory backed into the landmass of Santa Barbara County with significant emissions and population. However, the back trajectories did indicate a contribution from Ventura County and the South Coast.

Of the 263 State ozone exceedance days at Reseda and/or Santa Clarita, there were no back trajectories that included a significant contribution from Santa Barbara County. However, back trajectory analysis identified 10 Santa Clarita days with emission contributions from Los Angeles County and Ventura County at hours exceeding the State ozone standard. Of these 10 Santa Clarita days, four days indicated significant emissions contribution from Ventura County due to multiple hours with back trajectories from the west.

The back trajectories indicate that for three of these four days, the initial buildup of ozone concentrations reaching the State 1-hr exceedance level was due to emissions within the South Coast. However, this buildup reached a peak either during the hour that the wind direction shifted or two hours after the wind direction shifted and brought emissions from Ventura County. Ventura County emissions, along with local South Coast emissions, continued to be sufficient in maintaining ozone concentrations above the State standard one hour after the occurrence of the peak ozone concentration. The Ventura County contribution was evident upwind at Piru by the elevated ozone concentrations that included one day that exceeded the State 1-hour ozone standard. In addition, the back trajectories also indicated that the Ventura County emissions had built up in stagnant flow overnight or during the early morning hours of the exceedance day over urban areas on the Oxnard Plain or inland valley. When air stagnates over an emissions area, these emissions accumulate (buildup) dispersing very little. The stagnation of emissions over these urban areas suggests that a significant buildup of emissions occurred within Ventura County before arriving at Santa Clarita in the westerly sea breeze. This was evidenced by the high ozone concentrations upwind of Santa Clarita at Piru.

On the fourth day, the back trajectories indicated that the initial buildup of ozone concentrations in the late morning was due to emissions within the South Coast. However, a wind direction shift at noon brought emissions from Ventura County over the next three hours. The back trajectories also indicated that these Ventura County

emissions had built up in stagnant airflow overnight in the Piru area prior to arriving at Santa Clarita in the westerly seabreeze. These emissions reaching Piru had come from urban areas in the northern Oxnard Plain (Ventura) and transported inland by seabreeze winds the previous day. In addition, elevated ozone concentrations upwind at Piru suggest that there was a significant contribution of Ventura County emissions during the three hour period. The combination of local South Coast emissions and transported Ventura County emissions resulted in 3 hours of ozone concentrations exceeding the State 1-hr ozone standard.

The stagnation of air in Ventura County prior to reaching Santa Clarita, emissions from the urban areas in the Oxnard Plain and inland valley, and elevated ozone concentrations upwind of Santa Clarita at Piru suggest that Ventura County contributed to ozone exceedances at Santa Clarita. In addition, the large number of ROG and NO<sub>x</sub> emissions in Los Angeles County compared to the South Central Coast indicate that local emissions within the South Coast were sufficient to significantly contribute to the exceedances on these four days.

### Conclusions

This study examined all 263 State ozone exceedance days for the period 2000 to 2003 that occurred at either the Reseda and/or Santa Clarita monitoring sites. Of these 263 days, analyses indicate that weather conditions on these days do not show transport of significant ozone precursors or ozone from the mainland portion of Santa Barbara County to either Santa Clarita or Reseda. Trajectory analyses indicate that contributions were from either the South Coast Air Basin or the South Coast Air Basin and Ventura County. In addition, emissions are continuing downward, and the magnitude of emissions makes transport of ozone precursors from the Santa Barbara County portion of the South Central Coast even less likely.

This analysis supports a finding that the magnitude of transport during the last four years from Santa Barbara County to the South Coast has been inconsequential. In addition, this study did not find any basis for changing the transport classification for the Ventura County portion of the South Central Coast.

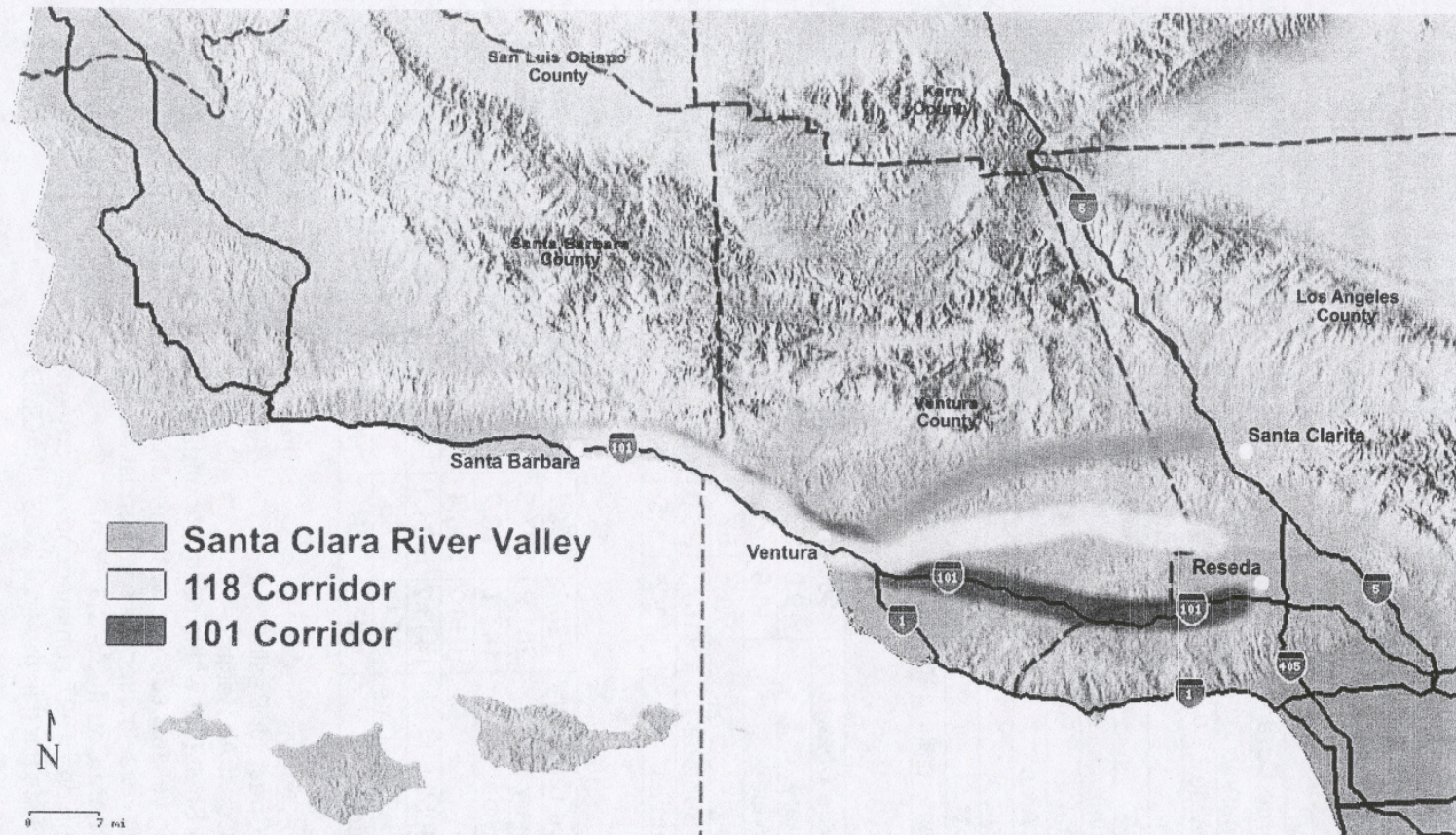


Figure 1. Study Area and Transport Pathways over Land (South Central Coast to South Coast)

Table 1  
 ROG Emission Inventory for Air Basin Portions of Santa Barbara, Ventura, and  
 Los Angeles Counties  
 Annual Average (tons per day)  
 ARB Emissions Inventory Branch 2004 Almanac Data

**Santa Barbara County**

<b>Air Basin</b>	<b>Source Category</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>	<b>2005</b>	<b>2010</b>
SCCAB	Stationary	22.1	19.8	15.6	13.9		13.5	11.9	12.1
	Area-Wide	12.6	13.0	11.6	11.9		11.6	11.1	11.2
	Mobile	46.8	40.2	29.5	21.5		17.4	15.1	11.0
	Ships*				0	0			
	Commercial Boats*				0.087	0.034			
	Subtotal	81.5	73.0	56.7	47.3		42.5	38.1	34.3
	VAFB Area**					0.4	0.4		
OCS	All Sources	4.9	5.4	4.9	3.1		3.2	2.7	2.9
	Ships*				0.98	1.10			
	Commercial Boats*				0.085	0.034			

**Ventura County**

<b>Air Basin</b>	<b>Source Category</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>	<b>2005</b>	<b>2010</b>
SCCAB	Stationary	19.0	20.9	15.6	13.2		13.4	13.6	14.2
	Area-Wide	16.8	16.8	14.7	16.1		14.6	13.9	13.8
	Mobile	71.4	57.3	45.0	33.0		26.8	23.0	16.5
	Subtotal	107.2	95.0	75.3	62.3		54.8	50.5	44.5
OCS	All Sources	1.2	1.5	1.4	0.5		0.6	0.6	0.1

**Los Angeles County**

<b>Air Basin</b>	<b>Source Category</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>	<b>2005</b>	<b>2010</b>
SoCAB	Stationary	281.9	227.5	124.5	118.2		94.0	86.2	88.9
	Area-Wide	147.1	128.2	106.8	113.2		101.1	97.2	90.3
	Mobile	1014.2	668.4	513.3	369.1		285.7	240.2	174.1
	Subtotal	1443.2	1024.1	744.6	600.5		480.8	423.6	353.3
	SFV** All Sources	374	265	193	155		133	118	80
OCS	All Sources	NR	NR	NR	NR		NR		

Notes:

NR=Not Reported

SFV=San Fernando Valley

SCCAB=South Central Coast Air Basin

VAFB=Vandenberg AFB

SoCAB=South Central Coast Air Basin

Ships=large ocean-going vessels such as container ships, auto carriers, and tankers.

Commercial boats=small vessels used for commercial fishing.

\* Provided by Santa Barbara County APCD

\*\*Emissions are based on one 1997 summer episode day and are estimated from 1997 and 2010 baseline emissions used in the final 2003 SCAQMD SIP

Table 2  
NOx Emission Inventory for Air Basin Portions of Santa Barbara, Ventura, and  
Los Angeles Counties  
Annual Average (tons per day)  
ARB Emissions Inventory Branch 2004 Almanac Data

**Santa Barbara County**

<b>Air Basin</b>	<b>Source Category</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>	<b>2005</b>	<b>2010</b>
SCCAB	Stationary	13.4	12.7	9.8	10.1		9.5	8.6	8.5
	Area-Wide	2.0	2.0	2.0	2.0		2.0	2.0	2.0
	Mobile	48.5	50.1	42.0	35.3		28.8	26.3	19.9
	Ships*				0	0			
	Commercial Boats*				0.50	0.39			
	Subtotal	63.9	64.8	53.8	47.4		40.3	36.9	30.4
	<b>VAFB Area**</b>					0.4	0.4		
OCS	All Sources	37.2	35.8	34.9	34.7		38.6	41.1	47.1
	Ships*				32.06	35.45			
	Commercial Boats*				0.49	0.39			

**Ventura County**

<b>Air Basin</b>	<b>Category Name</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>	<b>2005</b>	<b>2010</b>
SCCAB	Stationary	28.6	14.0	8.2	6.3		6.1	6.0	5.8
	Area-Wide	2.2	2.0	2.0	2.0		2.0	1.9	2.0
	Mobile	61.9	69.0	56.4	48.4		42.6	39.0	28.2
	Subtotal	92.7	85.0	66.6	56.7		50.7	46.9	36.0
OCS	All Sources	8.1	8.5	8.3	8.9		9.5	9.9	0.4

**Los Angeles County**

<b>Air Basin</b>	<b>Category Name</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>	<b>2005</b>	<b>2010</b>
SoCAB	Stationary	195.8	121.6	99.2	65.2		48.6	47.7	45.9
	Area-Wide	23.2	17.5	16.7	18.5		19.3	19.5	16.1
	Mobile	955.3	874.6	740.9	645.1		562.3	513.1	392.3
	Subtotal	1174.3	1013.7	856.8	728.8		630.2	580.3	454.3
	SFV** All Sources	242	209	177	150		128	113	76
OCS	All Sources	NR	NR	NR	NR		NR		

Notes:

NR=Not Reported

SCCAB=South Central Coast Air Basin

SoCAB=South Central Coast Air Basin

SFV=San Fernando Valley

VAFB=Vandenberg AFB

Ships=large ocean-going vessels such as container ships, auto carriers, and tankers.

Commercial boats=small vessels used for commercial fishing.

\* Provided by Santa Barbara County APCD

\*\*Emissions are based on one 1997 summer episode day and are estimated from 1997 and 2010 baseline emissions used in the final 2003 SCAQMD SIP

## **ATTACHMENT A**

### **EMISSIONS**

We used annual average emission estimates for ROG and NOx from ARB's 2004 Almanac web page for the years 1985, 1990, 1995, 2000, and 2003. These estimates covered Santa Barbara County, Ventura County, and Los Angeles County. In addition, we developed a ROG and NOx emissions inventory for the same years for the San Fernando Valley in order to have emissions estimates representing the Reseda and Santa Clarita area.

The San Fernando Valley NOx and ROG emissions inventory were estimated by extracting emissions from grid cells in the SCOS97 modeling region. The emission estimates were based on emissions in the 1997 and 2010 baseline years for a Tuesday during the 1997 episode (August 5). These emission estimates were extracted from the final emission inventories used for the 2003 South Coast SIP photochemical modeling. San Fernando Valley ROG and NOx emissions for 1985, 1990, and 1995 were based on the ratio of San Fernando Valley to Los Angeles County emissions for the year 2000. Emissions for 2000 and 2003 were interpolated from the 1997 and 2010 baseline year emissions.

## References

- Air Resources Board, 1989: California Surface Wind Climatology. Staff Report prepared by the Technical Support Division, Air Resources Board, Sacramento, California, October 1989, reprinted January 1992.
- Air Resources Board, 1989: Proposed Identification of Districts Affected by Transported Air Pollutants which Contribute to Violations of the State Ambient Air Quality Standard for Ozone. Staff report prepared by the Technical Support Division, Air Resources Board, Sacramento, California, October 1989.
- Air Resources Board, 1990: Assessment and Mitigation of the Impacts of Transported Pollutants on Ozone Concentrations within California. Staff report prepared by the Technical Support Division and Office of Air Quality Planning and Liaison, Air Resources Board, Sacramento, California, June 1990.
- State of California, Department of Finance, Revised Historical City, County and State Population Estimates, 1991-2000, with 1990 and 2000 Census Counts. Sacramento, California, March 2002 via DOF Website [http://www.dof.ca.gov/HTML/DEMOGRAP/NewHist\\_E-4.XLS](http://www.dof.ca.gov/HTML/DEMOGRAP/NewHist_E-4.XLS).
- Air Resources Board, 2003: Initial Statement of Reasons for the Proposed Amendments to the Ozone Transport Mitigation Regulations. Staff report prepared by the Planning and Technical Support Division, Air Resources Board, Sacramento, California, April 2003.
- South Coast Air Quality Management District, 2003: Final 2003 Air Quality Management Plan. Staff report prepared by the Air Resources Board, Sacramento, California, and the South Coast Air Quality Management District, Diamond Bar, California, August 2003.



## PUBLIC NOTICE

### Draft 2004 Clean Air Plan and Supplemental Environmental Impact Report Public Comment Period Starts August 25, 2004

**SUMMARY:** The Santa Barbara County Air Pollution Control District (APCD) has prepared a Draft 2004 Clean Air Plan and associated Draft Supplemental Environmental Impact Report. As required by the California Clean Air Act, the 2004 Clean Air Plan provides a three-year update to the 2001 Clean Air Plan. Previous plans developed to comply with the California Clean Air Act include the 1991 Air Quality Attainment Plan, the 1994 Clean Air Plan, and the 1998 Clean Air Plan. The 2004 Clean Air Plan includes previously adopted air pollution control measures and newly proposed and further study emission control measures. The 2004 Plan is not required to address any Federal Clean Air Act requirements. The 2004 Clean Air Plan will be submitted to the California Air Resources Board for approval.

Pursuant to the California Environmental Quality Act (CEQA), the APCD has prepared a Draft Supplemental Environmental Impact Report for the 2004 Clean Air Plan.

**PUBLIC REVIEW:** Beginning **August 25, 2004**, the Draft 2004 Clean Air Plan will be available for public review and comment for 30 days and the Draft Supplemental Environmental Impact Report will be available for review and comment for 45 days. Both documents will be available at public libraries in Santa Maria, Buellton, Lompoc, Goleta, Santa Barbara, and UCSB, and at the following four locations, and on the APCD website at [www.sbcapcd.org](http://www.sbcapcd.org):

1. Santa Barbara County APCD: 260 N. San Antonio Road, Suite A, Santa Barbara
2. Santa Barbara County Clerk's Office: 123 E. Anapamu Street, Santa Barbara
3. Santa Barbara County 5<sup>th</sup> District Supervisors Office: 511 E. Lakeside Parkway, Santa Maria
4. Santa Barbara County Clerk's Office: 401 E. Cypress, Suite 101, Lompoc

**PUBLIC WORKSHOP:** There will be a meeting of the APCD Community Advisory Council to consider the 2004 Clean Air Plan on Wednesday September 15, 2004 at 6:30 pm at the address below. Public comments can be provided on the Draft 2004 Clean Air Plan and the Draft Supplemental Environmental Impact Report at the Community Advisory Council meeting.

Wednesday, September 15, 2004 6:30 pm Days Inn: Windmill Room 114 East Highway 246, Buellton
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#### **WRITTEN COMMENTS:**

Written comments on the Draft 2004 Clean Air Plan should be submitted to

- Tom Murphy, APCD Manager, Technology and Environmental Assessment,
  - 260 N. San Antonio Rd, Suite A, Santa Barbara, CA 93110-1315.
  - Comments must be received by 5:00 PM on **September 24, 2004**.

Written comments on the Draft Supplemental Environmental Impact Report should be submitted to

- Dr. Ron Tan, APCD Planning and Technology Supervisor,
  - 260 N. San Antonio Rd, Suite A, Santa Barbara, CA 93110-1315
  - Comments must be received by 5:00 PM on **October 11, 2004**.

For more information, please contact Mr. Murphy at 805/961-8857 or Dr. Tan at 805/961-8812.

*Published SB News-Press, Lompoc Record, SM Times 8/25/04; SB Independent 8/26/04*



**NOTICE OF PUBLIC HEARING**  
**2004 CLEAN AIR PLAN and SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT**  
**Thursday, December 16, 2004 – Approximately 2:00pm**  
**Board of Supervisors Hearing Room**  
**105 East Anapamu Street, Fourth Floor**  
**Santa Barbara, California 93101**

The Santa Barbara County Air Pollution Control District will hold a public hearing to consider adoption of the proposed 2004 Clean Air Plan and certification of the Supplemental Environmental Impact Report (SCH No. 9103045) for the 2004 Clean Air Plan.

**SUMMARY:** The Santa Barbara County Air Pollution Control District (APCD) has prepared a Draft 2004 Clean Air Plan and associated Draft Supplemental Environmental Impact Report. As required by the California Clean Air Act, the 2004 Clean Air Plan provides a three-year update to the 2001 Clean Air Plan. Previous plans developed to comply with the California Clean Air Act include the 1991 Air Quality Attainment Plan, the 1994 Clean Air Plan, and the 1998 Clean Air Plan. The 2004 Clean Air Plan includes previously adopted air pollution control measures and newly proposed and further study emission control measures. The 2004 Plan is not required to address any Federal Clean Air Act requirements. The 2004 Clean Air Plan will be submitted to the California Air Resources Board for approval.

Pursuant to the **California Environmental Quality Act (CEQA)**, the APCD has prepared a Supplemental Environmental Impact Report (SCH No. 91031045) for the 2004 Clean Air Plan.

**PUBLIC REVIEW:** The Draft 2004 Clean Air Plan and Supplemental Environmental Impact Report are available at public libraries in Santa Maria, Buellton, Lompoc, Goleta, Santa Barbara, UCSB, on the APCD website at [www.sbcapcd.org](http://www.sbcapcd.org) and at the following three locations:

Air Pollution Control District  
240 N. San Antonio Road  
Suite A  
Santa Barbara

Air Pollution Control District  
301 E. Cook Street, Suite L  
Santa Maria

4<sup>th</sup> District Supervisors  
Office  
401 E Cypress Suite 101  
Lompoc

**WRITTEN COMMENTS:** Written comments on the 2004 Clean Air Plan should be submitted to Tom Murphy, APCD Division Manager, 240 N. San Antonio Road, Suite A, Santa Barbara, CA 93110-1315. In order to be included in the staff report for the Board's action, comments must be received by 5:00 PM on November 29, 2004. For more information, please contact Mr. Murphy at (805) 961-8857.



# **GLOSSARY OF TERMS**

## **A**

**Acute Health Effect:** An adverse health 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<sub>3</sub>):** 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 NO<sub>x</sub> to form ammonium nitrate -- a major PM<sub>2.5</sub> 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>B</b>
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**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 be 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.

<b>C</b>
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**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<sub>10</sub> and PM<sub>2.5</sub>). 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<sub>x</sub>.

**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.

<b>F</b>
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**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<sub>2</sub>S):** 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<sub>x</sub> 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.

<b>M</b>
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**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 phased 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<sub>x</sub>):** A general term pertaining to compounds of nitric acid (NO), nitrogen dioxide (NO<sub>2</sub>), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO<sub>2</sub> 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.

<b>P</b>
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**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<sub>10</sub>):** 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. PM<sub>10</sub> also causes visibility reduction.

**Particulate Matter less than 2.5 microns (PM<sub>2.5</sub>):** 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<sub>2.5</sub> 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 Volatile 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 PM<sub>10</sub>, 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.

<b>S</b>
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**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<sub>2</sub>):** 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<sub>2</sub>. SO<sub>2</sub> and other sulfur oxides contribute to the problem of acid deposition. SO<sub>2</sub> 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<sub>x</sub> 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
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 <sub>2</sub>	Carbon Dioxide
District	Santa Barbara County Air Pollution Control District
DMV	Department of Motor Vehicles
DOG	Department of Oil and Gas (California)
DPR	Department of Pesticide Regulation
DVMT	Daily Vehicle Miles of Travel
EDS	Statewide Emission Data System
EIR	Environmental Impact Report
EPA	Environmental Protection Agency (United States)
ERC	Emissions Reduction Credit
ERF	Environmental Research Foundation
EtO	Ethylene Oxide
FCAA	Federal Clean Air Act

FCAAA	Federal Clean Air Act Amendments
FFV	Flexible Fuel Vehicle
FIP	Federal Implementation Plan
FMVCP	Federal Motor Vehicle Control Program
FROG	Fraction Reactive Organic Gases
FPM10	Fraction Particulate Matter Less Than 10 Microns in Diameter
FTIP	Federal Transportation Improvement Program
FTP	Federal Emissions Test Procedure
GVR	Gasoline Vapor Recovery
H&SC	Health & Safety Code
HAP	Hazardous Air Pollutant
H <sub>2</sub> S	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
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
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 <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
NOV	Notice of Violation
NSPS	New Source Performance Standards
NSR	New Source Review
O <sub>3</sub>	Ozone
OCS	Outer Continental Shelf
OVA	Organic Vapor Analyzer
PAM	Photochemical Assessment Monitoring Station
PAN	Peroxyacetyl Nitrate
PC	Passenger Cars (LDA)
Pb	Lead
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter Less Than 10 Microns in Diameter
ppb	Parts Per Billion
pphm	Parts Per Hundred Million
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration
psi	Pounds Per Square Inch
PSI	Pollution Standards Index
psia	Pounds Per Square Inch Absolute Pressure
PVC	Polyvinyl Chloride
PVRV	Pressure Vacuum Relief Valves
RACT	Reasonably Available Control Technology
RHC	Reactive Hydrocarbons - same as ROG
RMD	Resource Management Department (Santa Barbara County)

ROC	Reactive Organic Compounds - same as ROG
ROG	Reactive Organic Gases - same as ROC
ROP	Rate-of-Progress Plan
RTP	Regional Transportation Plan
RVP	Reid Vapor Pressure
SARA	Superfund Amendment and Reauthorization Act
SBCAPCD	Santa Barbara County Air Pollution Control District
SBCAG	Santa Barbara County Association of Governments
SBMTD	Santa Barbara Metropolitan Transportation District
SBUS	School Bus
SCC	Source Classification Code (for Stationary Sources)
SCCAB	South Central Coast Air Basin
SCCCAMP	South Central Coast Cooperative Aerometric Monitoring Program
scf	Standard Cubic Feet
SCOS	Southern California Ozone Study
SCR	Selective Catalytic Reduction
SHOPP	State Highway Operations and Protection Program
SIC	Standard Industrial Classification Code
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>4</sub>	Sulfates
SOX	Oxides of Sulfur
SOV	Single-Occupant Vehicle
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 21 <sup>st</sup> 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 <sup>3</sup>	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