CHAPTER 5

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.

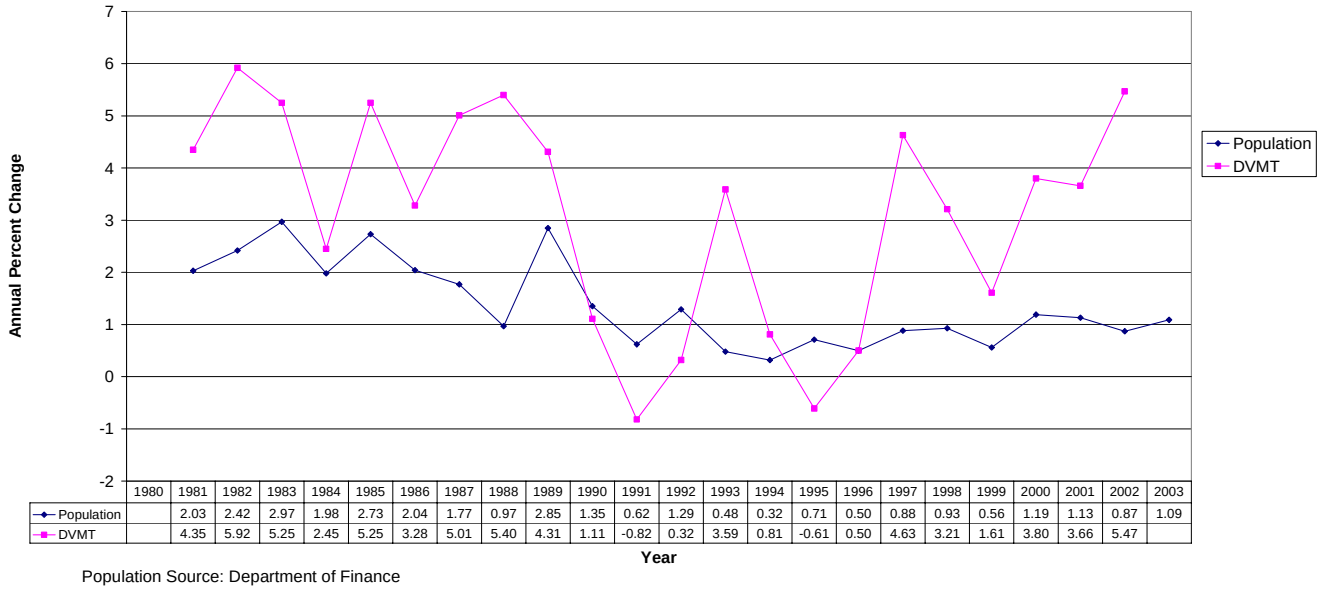
5.2 HISTORICAL TRENDS IN VEHICLE ACTIVITY

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).[1] 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



	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Population		2.03	2.42	2.97	1.98	2.73	2.04	1.77	0.97	2.85	1.35	0.62	1.29	0.48	0.32	0.71	0.50	0.88	0.93	0.56	1.19	1.13	0.87	1.09
DVMT		4.35	5.92	5.25	2.45	5.25	3.28	5.01	5.40	4.31	1.11	-0.82	0.32	3.59	0.81	-0.61	0.50	4.63	3.21	1.61	3.80	3.66	5.47	

Population Source: Department of Finance
Daily VMT Source: Caltrans HPMS Program

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

TCM	Description	Project Sponsor	Project/Program Description	Implementation Status	SIP Analysis
1-4	Travel Demand Management	Traffic Solutions	City-County TDM Program	Program On-Going	Yes
	Areawide Ridesharing	Traffic Solutions	County Rideshare Program	Program On-Going	Yes
	Work Schedule Changes	Traffic Solutions/Business	Flexibie Work Hours	Program On-Going	No
5	Public Transportation	SBMTD	Isla Vista - SBCC Express Service	Service On-Going	Yes
		SBMTD	Downtown Waterfront Shuttle Expansion	Service On-Going	Yes
		APCD	Clean Air Express Expansion	Service On-Going	Yes
		City of Santa Maria	SMAT Expansion - 1 30 foot bus	Service On-Going	Yes
		City of Lompoc	Lompoc Transit Expansion - 2 buses & farebox system	Service On-Going	Yes
		City of Solvang	SYVT Expansion - 1 van to establish fixed route service	Service On-Going	Yes
		AMTRAK	Service Expansion from 2 to 4 train stops per day	Service On-Going	Yes
7	Traffic Flow Improvements	Caltrans	Crosstown Freeway Project	Completed	Yes
		County/Caltrans	Rte. 101/ Patterson Avenue I/C	Completed	Yes
		SBCAG/Caltrans	Rte. 101 / La Cumbre Road I/C	Completed	Yes
		SBCAG/Caltrans	Rte. 101 / Storke Road I/C	Completed	Yes
		SBCAG/Caltrans	Rte. 101/ Betteravia Road I/C	Completed	Yes
		County/Caltrans	Rte. 101/Fairview Avenue I/C	Completed	Yes
		City of Santa Maria	Rte. 135/Betteravia Road Intersection	Completed	Yes
		County of Santa Barbara	Hollister Avenue/Fairview Avenue	Completed	Yes
		City of Santa Barbara	Castillo Street/Montecito Street	Completed	Yes
		County of Santa Barbara	Signal Synchonization – Hollister Avenue	Completed	Yes
8	Parking Management	City of Santa Barbara	Residential Parking Program	On-going	No
9	Park-n-Ride Lots	N/A	N/A	N/A	No
10	Bicycle/Pedestrian	City of Santa Maria	Santa Maria Valley Railroad Bikeway	Completed	Yes
		City of Santa Maria	Battles Road Bicycle and Pedestrian Project	Completed	Yes
		City of Solvang	Alamo Pintado Creek Bikeway/Pedestrian Bridge	Partially Completed	Yes
		City of Santa Barbara	SBCC - East Campus Bicycle and Pedestrian Project	Completed	Yes
		City of Santa Barbara	Crosstown East - West Bikelane Couplet	Completed	No
		City of Santa Barbara	Shoreline Drive/Cabrillo Blvd. Bikeway	Completed	No
		County of Santa Barbara	Fairview Avenue Bicycle Lane	Completed	Yes
		County of Santa Barbara	Bradley Road Bikeway	Completed	Yes
		County of Santa Barbara	El Capitan Ranch Bikeway	Completed	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	ITG Program	On-Going	Yes
		APCD	Clean Air Express Expansion	Completed - On-Going	Yes -T-5
		SBMTD	Waterfront Shuttle Service Expansion	Completed - On-Going	Yes -T-5
		SBMTD	Easy Lift Conversion of 5 vans to CNG	Completed - On-Going	Yes
		SBMTD	Gillig Bus Refurbishment	Completed - On-Going	Yes
		SBMTD	AMG Bus Refurbishment	Completed - On-Going	Yes
19	Public Education	APCD	Overall Work Program	On-going	No
		SBCAG	Overall Work Program	On-going	No
CONTINGENCY PLAN					
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./7th 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
CONTINGENCY PLAN					
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	Express Bus Transit Service –Carpinteria–Goleta	101 Def
		MTD/SBCAG	Express Bus Transit Service –Carpinteria–Santa Barbara	101 Def
		MTD/SBCAG	Express Bus Transit Service – Westside SB – Goleta	101 Def
		MTD/SBCAG	Express Bus Transit Service – UCSB Line 24 Extension	101 Def
		SBCAG/VCTC	Enhanced Express Bus Service–Ventura–Carp/SB/Gol	101 Def
			Enhanced Commuter Rail Service Ventura Carp/SB/Gol	101 I-M
			Enhanced Commuter Rail Service North – South Cnty	101 I-M
		SBCAG/Local Agencies	Inter-community Transit Bus Service – North County	TDA
7	Traffic Flow Improvements	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.	101 I-M
		Caltrans/SBCAG	Network Surveillance – CCTV&Loop Detectors on Route 101 between Ventura County Line and Hollister	SHOPP
		Caltrans/SBCAG	Changeable Message Signs – Junction of Route 101/Route 154 (N&S) and Junction of Route 101 and Route 1	SHOPP
		Caltrans/CHP	Traffic Management Center (in SLO) – integrated freeway and arterial control	101 Def
		MTD	Transit Operations – vehicle tracking/passenger counts/electronic fare collection/surveillance and /communications	101 Def
		Caltrans/SBCAG	Smart Call Boxes on Route 101 between Ventura County Line and Hollister	101 Def
8	Parking Management	City of Santa Barbara	Residential Parking Program	N/A
9	Park-n-Ride Lots	City of Carpinteria	Park-n-Ride Lot – Bailard Interchange	Funded 2005 Study
		SBCAG/Caltrans	Countywide – SLO & Ventura Cnty	
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	On-going Efforts	APCD
		SBCAG	On-going Efforts	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).	
CONTNGENCY MEASURES				
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 21st 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)

County	Workers Commuting Into SB County	Workers Commuting Out of SB County	SB County Difference
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)

County	Census 1990 Workers Commuting Into SB County	Census 2000 Workers Commuting Into SB County	1990-2000 Change
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)

County	Census 1990 Workers Commuting Out of SB County	Census 2000 Workers Commuting Out of SB County	1990-2000 Change
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

Modeling Assumptions	Information Source
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
Network		
: 2020 No-Build Network Plus all programmed projects in this table (T III-2)		
State Highways		
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./Cacaque - 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/UVP - 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/UVP - 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.
South County		
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
North County		
UVP - 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.
City of Carpinteria		
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.
City of Santa Barbara		
Las Positas Road/Cliff Drive Intersection Improvement	2005, 2015, 2020	No network changes necessary.
City of Santa Maria		
UVP - 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
Network	2020 Programmed Network plus all planned projects in this table (T III-3).		
State Highways			
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.
SHS	101SB to Jonata Rd./Ave of Flags: Lengthen SB off-ramp, realign I/S	2015, 2020	No network changes necessary.
SHS	RT.246/McMurray at 101 - Relocate off-ramp	2015, 2020	Relocate 246/101 off ramp to join McMurray on
SHS	Rt.166 at Rt.1 - Construct overpass over train tracks	2015, 2020	No network changes necessary.
SHS	Rt.166 at Cuyama - Add turning lanes	2015, 2020	Increase 50 vplph on all LT lanes to Cuyama.
SHS	101SB near Gaviota Tunnel: Realign SB lane horizontal alignment	2015, 2020	No network changes necessary.
SHS1	Rt.135 UVP to Beteravia - Widen to 6 lanes	2015, 2020	Change segments from 4 to 6
SHS1	101/Turnpike I/C - Add RT lane	2015, 2020	Change Turnpike NB on-ramp from 750 to 800 vplph.
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 reconst'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
South County of S.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 ln, 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.
North County of S.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.)
City of Carpinteria			
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.
City of Lompoc			
L3	Central Ave Extension - A St. to Rt246	2015, 2020	Extend Central Ave, 2 lanes, 50 mph, 1,200 vplph capacity.
City of Guadelupe			
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).
City of Solvang			
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.
City of Santa Maria			
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 RGF 2000	2002 RGF 2000	1994 RGF 2005	2002 RGF 2005	1994 RGF 2010	2002 RGF 2010	1994 RGF 2015	2002 RGF 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
VMT	9,575,000	10,148,000	10,718,000	11,288,000	11,683,000
Trip Ends	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[2]. 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.

2 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)

	1985	1990	1995	2000	2005	2010	2015	2020
Population	2.43	1.79	0.68	0.85	1.79	1.17	1.1	0.69
DVMT	4.63	3.81	0.64	2.32	1.17	1.1	1.04	0.69

Year

Population Source: Actual 1980-2000 Department of Finance; Forecast 2005-2020 SBCAG
Daily VMT Source: Actual 1980-2000 Caltrans HPMS Program; Forecast 2005-2020 SBCAG

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
12-6 AM	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
6-9 AM	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
9-12 AM	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
12-3 PM	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
3-6 PM	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
6-12 PM	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 Defaluts (LHDT1, LHDT2, MHDT, HHDT, LHV, SBUS, UB, MH)

VMT		Starts	
SBCAG % Difference from ARB	**Defaults**	**SBCAG % Difference from ARB**	**Defaults**
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
12-6 AM	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
6-9 AM	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
9-12 AM	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
12-3 PM	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
3-6 PM	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
6-12 PM	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	
SBCAG % Difference from ARB	**Defaults**	**SBCAG % Difference from ARB**	**Defaults**
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
TOTAL	**336,266**	**11,329,000**	**1,582,192**		**2,581,711**

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
12-6 AM	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
6-9 AM	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
9-12 AM	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
12-3 PM	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
3-6 PM	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
6-12 PM	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**	**SBCAG % Difference from ARB**	**Defaults**
5.52		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
TOTAL	**357,549**	**11,968,000**	**1,630,329**		**2,663,543**

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
12-6 AM	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
6-9 AM	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
9-12 AM	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
12-3 PM	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
3-6 PM	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
6-12 PM	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**	**SBCAG % Difference from ARB**	**Defaults**
6.38		19.54	

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

Year: 2020

	Vehicles	VMT	Trip Ends	7G Adj	Trip Starts
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
TOTAL	**373,498**	**12,392,000**	**1,687,803**		**2,759,957**

2020 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
12-6 AM	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
6-9 AM	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
9-12 AM	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
12-3 PM	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
3-6 PM	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
6-12 PM	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)

VMT		Starts	
SBCAG % Difference from ARB	**Defaults**	**SBCAG % Difference from ARB**	**Defaults**
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:

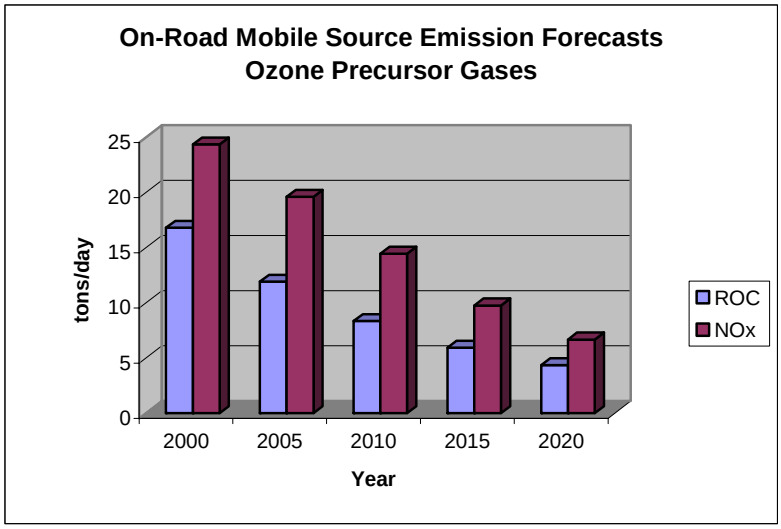
2000 ROC Baseline	16.80 tons/day
2005 ROC Forecast	11.92 tons/day
2010 ROC Forecast	8.34 tons/day
2015 ROC Forecast	5.93 tons/day
2020 ROC Forecast	4.35 tons/day
Total On-Road Mobile Source ROC Emission Decrease 2000 – 2020	**12.45 tons/day**

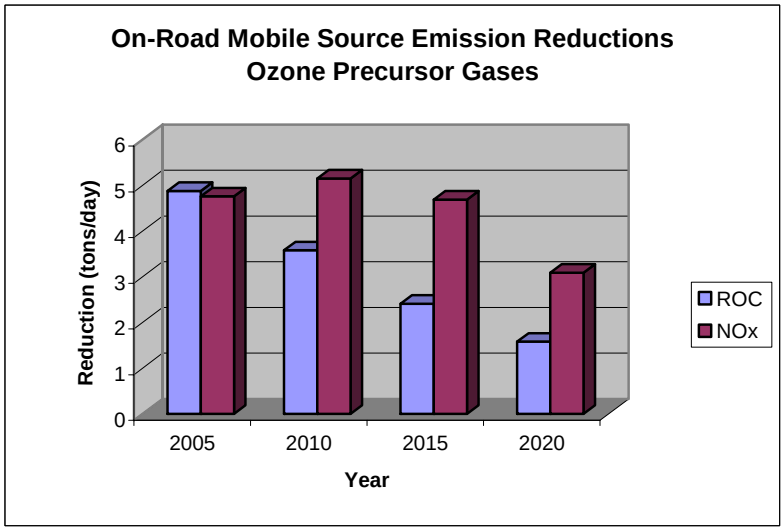
From 2000-2020, NOx on-road mobile source emissions are forecast to decrease as follows:

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	**17.69 tons/day**

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 MOBLE SOURCE EMISSION RESULTS





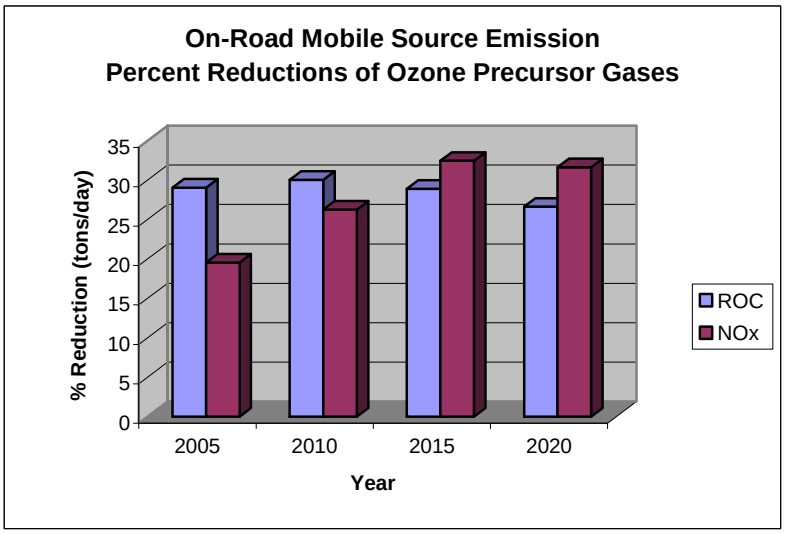
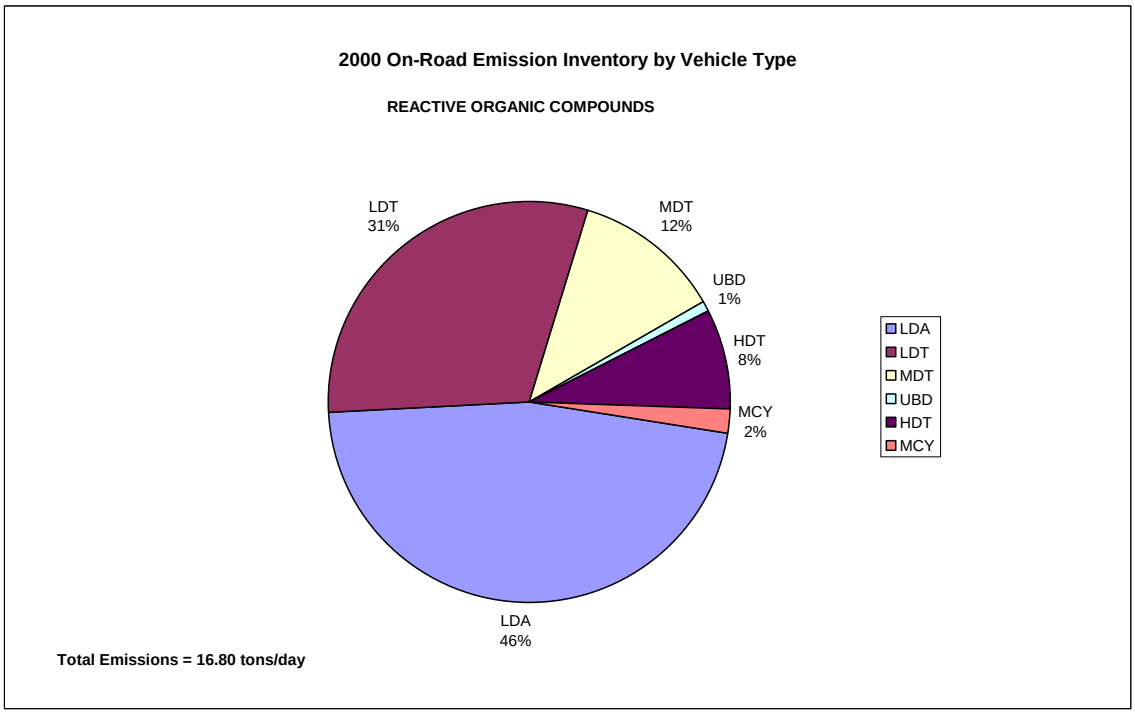


FIGURE 5-4 2000 ON-ROAD EMISSSION INVENTORY BY VEHICLE TYPE



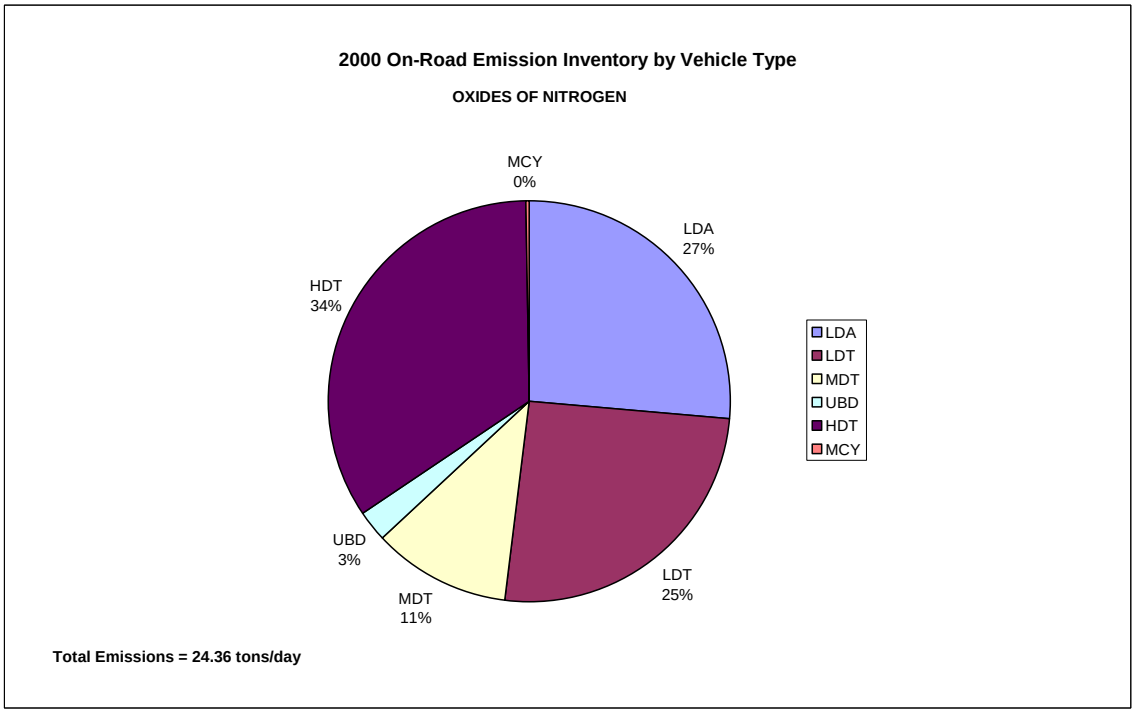
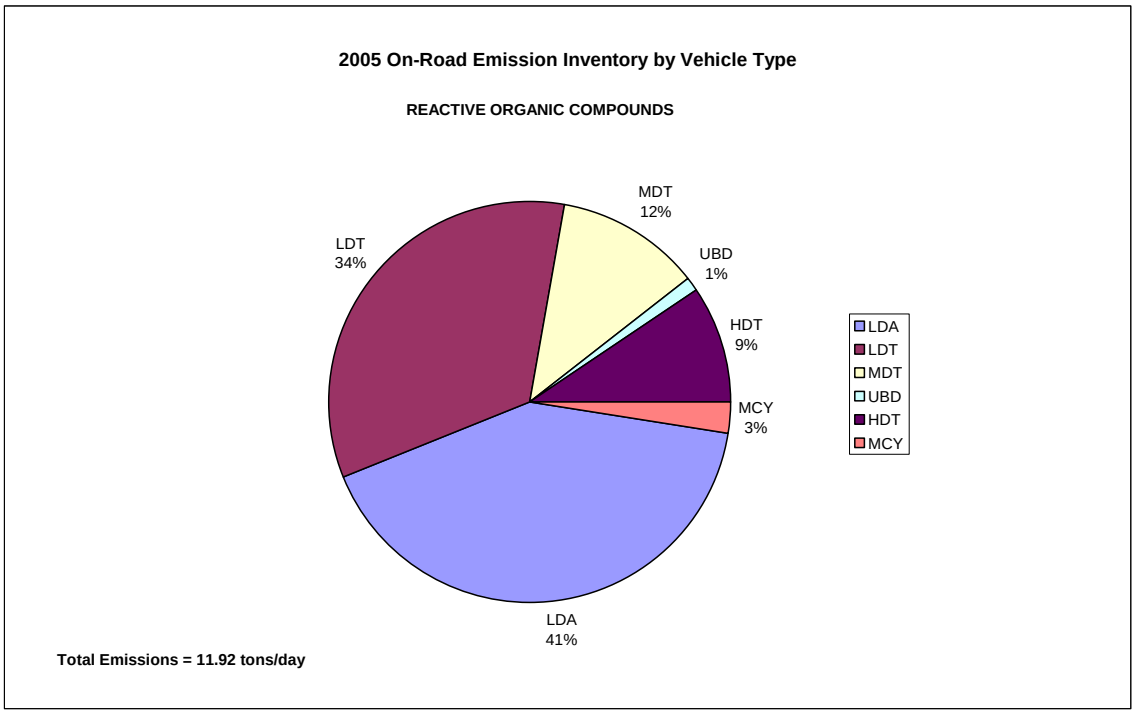


FIGURE 5-5 2005 ON-ROAD EMISSION FORECAST BY VEHICLE TYPE



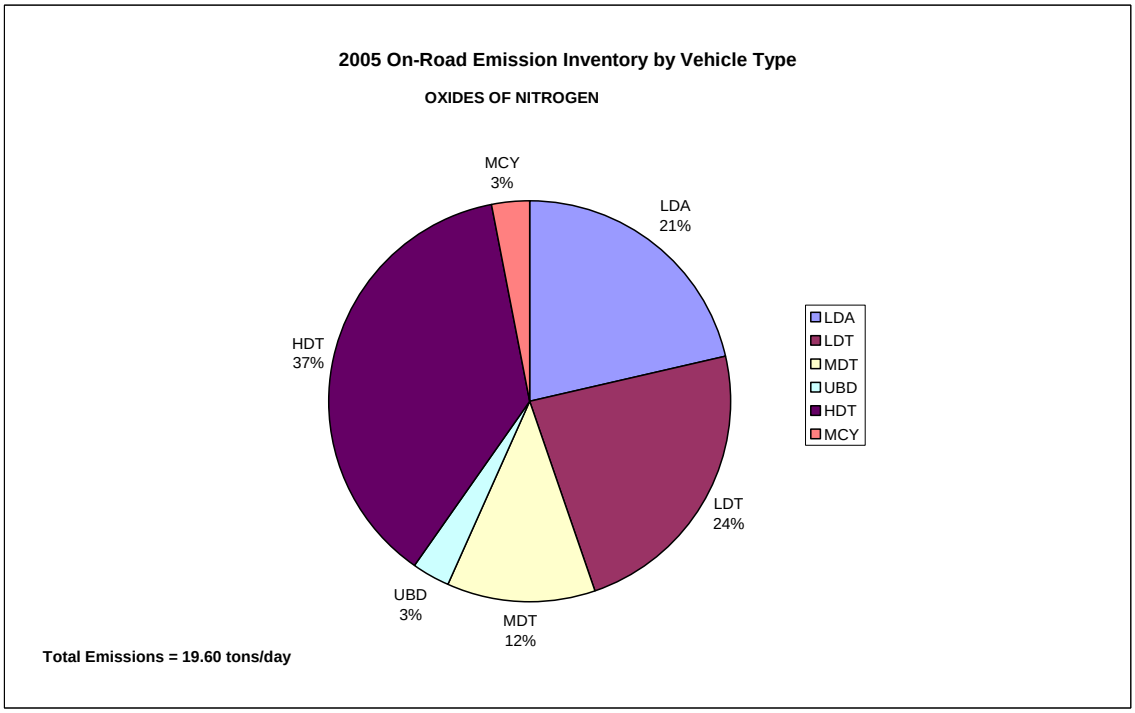
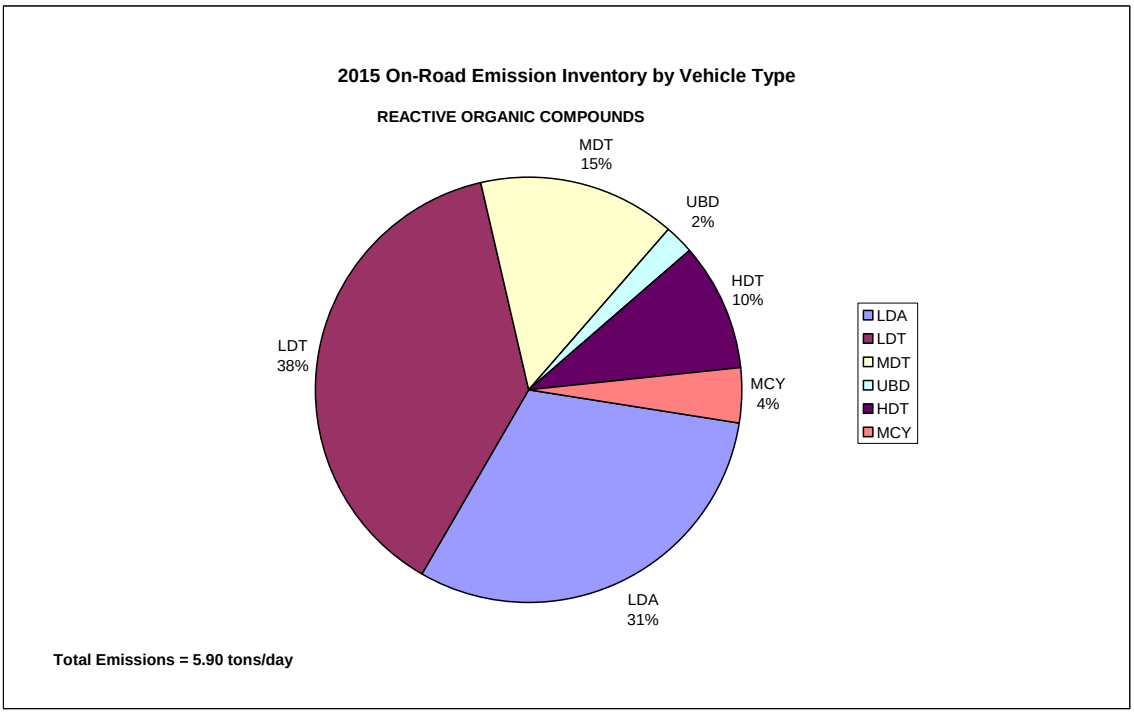


FIGURE 5-6 2015 ON-ROAD EMISSION FORECAST BY VEHICLE TYPE



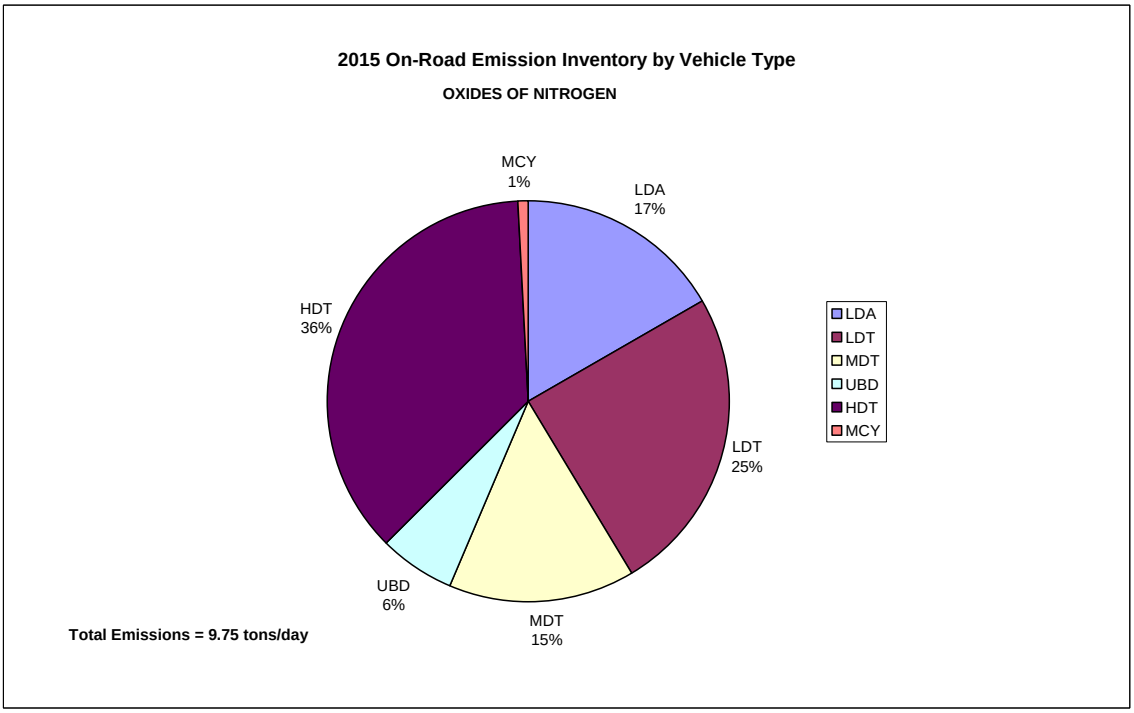
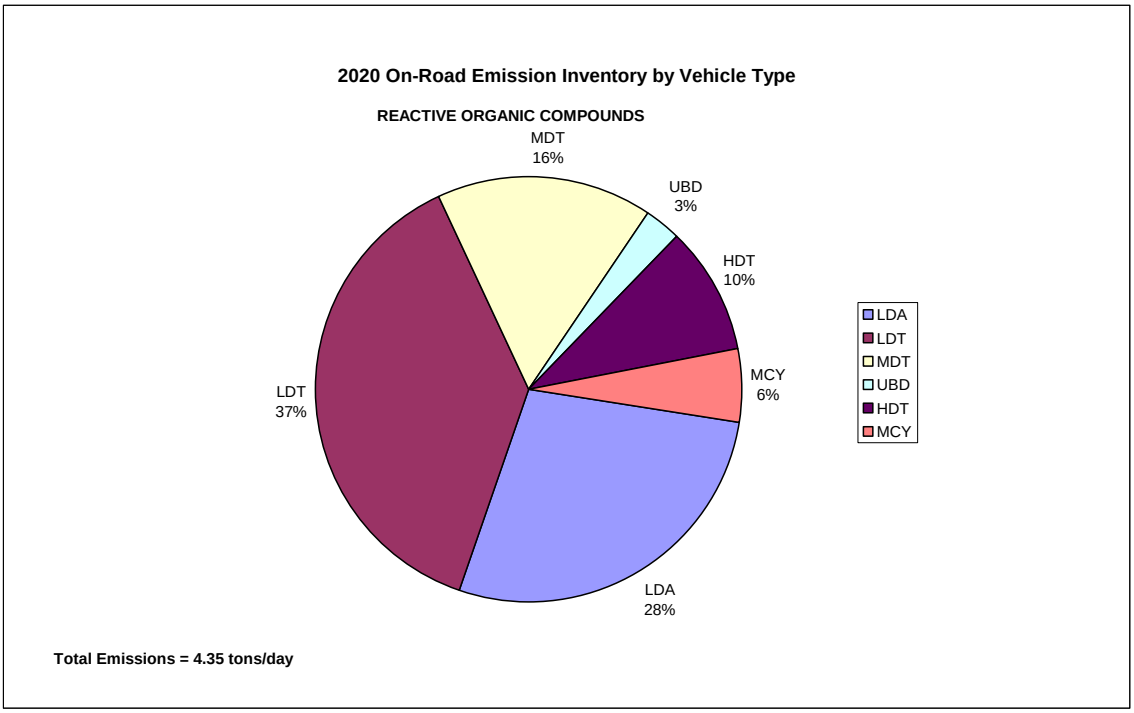
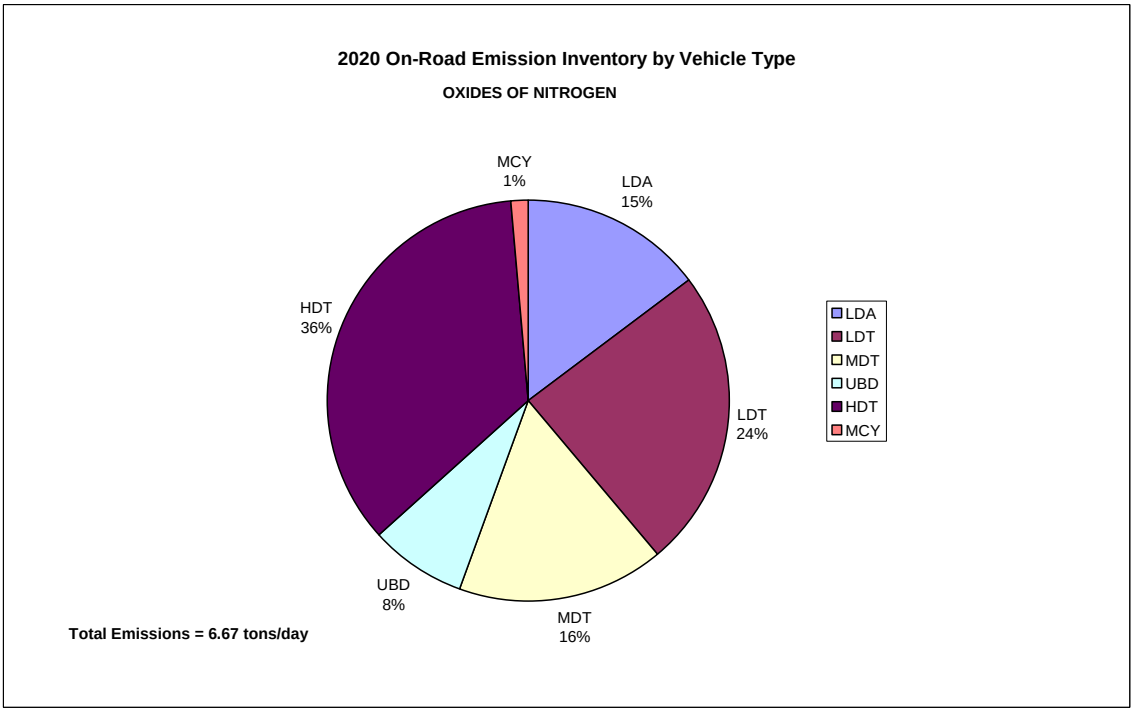


FIGURE 5-7 2020 ON-ROAD EMISSION FORECAST BY VEHICLE TYPE





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 it 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 NOx 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[3], 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).

3 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

Analysis Year	% Change in Vehicles	% Change in Starts	% Change in VMT
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

Title : Santa Barbara County Avg 2000 Summer Default Title
Version : Emfac2002 V2.2 Apr 23 2003 ** WIS Enabled **
Run Date : 02/12/04 14:13:24
Scen Year: 2000 -- Model Years: 1965 to 2000
Season : Summer
Area : Santa Barbara County Average
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						
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	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	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.02
Start Ex	0.25	1.72	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 Ex	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 Ex	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	0.43	2.72	0.16	1.72	1.88	6.45	8.33	0.61	0.07	24.36
Carbon Dioxide Emissions (000)																				
Run Exh	0.06	2.22	0.01	2.29	0.07	1.57	0.02	1.66	0.02	0.73	0.04	0.79	0.01	0.10	0.11	0.67	0.78	0.07	0.01	5.59
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01
Start Ex	0.01	0.10	0.00	0.11	0.01	0.07	0.00	0.08	0.01	0.03	0.00	0.03	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.22
Total Ex	0.07	2.31	0.01	2.40	0.08	1.64	0.02	1.74	0.03	0.76	0.04	0.82	0.02	0.10	0.12	0.68	0.80	0.07	0.01	5.83
PM10 Emissions																				
Run Exh	0.00	0.07	0.01	0.08	0.00	0.05	0.01	0.07	0.00	0.02	0.01	0.03	0.00	0.00	0.00	0.15	0.16	0.01	0.00	0.34
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	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	0.07	0.01	0.09	0.01	0.06	0.01	0.07	0.00	0.02	0.01	0.03	0.00	0.00	0.00	0.16	0.17	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
BrakeWr	0.00	0.07	0.00	0.07	0.00	0.04	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.14
Total	0.01	0.19	0.01	0.21	0.01	0.13	0.01	0.15	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.18	0.18	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	0.03	0.00	0.04	0.00	0.02	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.06	0.06	0.00	0.00	0.15
Fuel Consumption (000 gallons)																				
Gasoline	9.21	246.97	0.00	256.18	10.08	176.16	0.00	186.25	3.44	80.39	0.00	83.84	3.02	12.00	15.02	0.00	15.02	1.57	1.03	543.88
Diesel	0.00	0.00	1.17	1.17	0.00	0.00	2.15	2.15	0.00	0.00	3.36	3.36	0.00	0.00	0.00	60.89	60.89	4.74	0.00	72.30

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						
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	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	0.01	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	0.08	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
BrakeWr	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							
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	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						
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	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						
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Gasoline Trucks Non-cat	Gasoline Trucks Cat	Gasoline Trucks Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.03
Start Ex	0.00	0.32	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
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	0.23	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	0.00	0.48	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