

# CHAPTER 6

## TRANSPORTATION AND LAND USE MANAGEMENT STRATEGIES

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### 6.1 INTRODUCTION

In San Luis Obispo County, as with much of the state, motor vehicles account for over 50% of the emissions of the smog forming pollutants ROG and NOx. State controls on vehicles and the use of cleaner, alternative fuels will continue to provide significant reductions in vehicle emissions. Even with these technological advances, however, California cannot solve its air pollution problems if the growth in vehicle use and congestion experienced over the last three decades continues into the 21st century. According to the EPA, about 90 million Americans live in areas that do not meet federal air quality standards, in large measure the consequence of car and truck emissions.

Since the end of World War II, private auto use has been institutionally supported at all levels of government, with limited development of other transportation alternatives. While this has helped society achieve unprecedented mobility, significant air pollution has also resulted. In recognition of this, the CCAA requires all nonattainment districts to adopt and implement all "reasonably available transportation control measures sufficient to substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip..." (H&SC Sec. 40918). The California Air Resources Board has defined a 'substantial reduction' as holding the rate of growth of vehicle travel in urban areas to the rate of population growth. Thus, the transportation goal of the CAP is to reduce the growth of vehicle trips and vehicle miles traveled (VMT) to the rate of population growth within San Luis Obispo County. Recent data are showing the District is well on its way to achieving this goal.

Transportation Control Measures (TCMs) are controls implemented at the local or regional level to reduce emissions resulting from the use of motor vehicles. TCMs are primarily intended to reduce vehicle use by promoting and facilitating the use of alternative transportation options. In contrast, the vehicle emission control program implemented by the state reduces emissions through manufacturer's improvements for new motor vehicles.

In designing effective control strategies, it is important to understand that vehicle emissions vary with different operating conditions. For instance, starting and driving a cold engine produces higher ROG emissions than any other phase of vehicle operation, because the catalytic converter does not work effectively until normal operating temperatures are reached. In contrast, NOx emissions are highest when the vehicle is warm and operating at freeway speeds. Slow speeds and congestion tend to increase emissions of most pollutants.

Because of these and other factors, short trips (five miles or less) create disproportionately large amounts of ROG emissions, independent of vehicle speed. A five mile trip produces almost as much air pollution as a trip twice as long (14 grams vs. 17 grams). District surveys indicate that over half of all trips made by county residents are less than or equal to 5 miles. Therefore, strategies to induce a shift to less polluting modes for short trips can provide substantial air quality benefits. NOx emissions, however, tend to increase in proportion to trip length and vehicle speed. Thus, measures to reduce miles traveled for longer trips are also important.

A number of recent studies have revealed important information about the transportation choices made by travelers in San Luis Obispo County. Surveys performed by the San Luis Obispo Regional Transit Authority (SLORTA) in 1995 and 1997 documented and Average Vehicle Ridership (AVR) during morning commute hours on all roads in the county of about 1.1 persons per car. This means that approximately 90% of the vehicles driven for those trips have only one occupant. A third, and similar survey, conducted in 2000 reported a countywide AVR of 1.3, a noticeable improvement over the two previous surveys. Likewise, the Highway 101 Major Investment Study (Sept. 1997), commissioned by SLOCOG to explore alternatives to widening State Highway 101 from South County to the City of San Luis Obispo reported a range of peak commute period AVR along the Highway 101 corridor of 1.30 to 1.42. Taken together, the data from the

various surveys seems to indicate growth in the use of alternative commute modes and increasing AVR rates countywide.

While use of alternate transportation modes is increasing, most people today still choose the convenience and apparent economy of the private auto. Research has revealed that the private motor vehicle has long been subsidized. Revenues based on vehicle use cover only 60 percent of the costs of building and maintaining the nation's roads and bridges. John Meyer, Professor of Economics at Harvard University, has estimated that commuters going to work in central business districts in American cities in their own cars directly pay for only about 25 percent of the total cost of their transportation. The other 75 percent is typically borne by society through increased taxes, provision of free parking, lost time due to traffic congestion, accident mitigation, and air pollution.

Development of the highway system has also impacted land use by making rural lands accessible to development, which has led to longer commutes and increased dependence on automobiles. Up to two-thirds of urban land is devoted to the automobile for purposes such as roads, parking lots, driveways, and garages. However, it is very difficult to quantify the social costs of direct and indirect subsidies with any precision because subsidies vary from one region to the next and because some of the costs involve the incalculable loss of human life, health, and lost opportunities.

Any program to reduce motor vehicle emissions must include a comprehensive strategy to reduce the overall number of trips, VMT, and congestion. The TCMs described in this Plan focus on reducing the number of short trips and limiting the growth of VMT to the rate of population increase. Additional long-term reductions are available through implementation of recommended land use planning strategies designed to help reduce dependence on automobiles. Planning documents published by the ARB, the Local Government Commission, and others estimate motor vehicle usage can be reduced by 15% to 30% with implementation of appropriate land use and circulation management programs. In addition, TCMs and land use strategies have benefits beyond emission reductions by improving energy efficiency and relieving traffic congestion.

### 6.2 TRANSPORTATION CONTROL OPTIONS

While the CCAA gives authority to adopt TCMs, districts cannot levy taxes to provide for capital improvements or directly regulate land use decisions. Three implementing mechanisms are available to influence travel behavior:

- Market-based programs created by district rules
- Command and control measures implemented and enforced by a district
- Local agency adoption and implementation of measures under their jurisdiction

**Market-based programs:** operate on the premise that changes in the free market economy can modify individual behavior more effectively and for less cost than government regulation. Market-based controls require little monitoring once in place and can reduce emissions from almost the entire vehicle fleet. Parking pricing is a good example, and one of the primary tools available. Studies of parking fees at private employers show that, in programs where solo drivers are charged the most and carpools pay less or nothing to park, solo driving decreased by 18% to 83%. Monies collected from parking fees can be used to subsidize and expand transit service, or for improvements such as purchasing clean fuel buses. Unfortunately, this approach runs counter to the views of many people, who have come to expect free parking at their destination.

In the mid-1990's the ARB conducted a study to assess the feasibility of implementing market based strategies for reducing vehicle trips and miles traveled. The study concluded that five specific measures held promise for equity among the various economic groups in the state, generating revenue to fund alternative transportation and modifying travel behavior. The options presented include:

- *Congestion Pricing*, where fees would be charged for peak period travel on congested routes;
- *VMT Fees*, which would be collected based on the number of miles driven annually;
- *Emissions Fees*, based on emission levels measured at the biennial smog check;
- *Parking Charges*, imposed on all parking, or only on commuter parking, and applied throughout the day or during peak use periods;
- *Fuel Tax Increases*, would increase the cost of gasoline to the point some drivers would begin to link trips, take more public transit, or buy more fuel-efficient cars.

Of these, parking charges is the only measure that has been implemented to date and that has only been applied in limited regions.

**Command and control:** Command and control measures use a different approach, usually targeting a specific group of people. The most common examples are trip reduction measures, which require employers, schools, or other major trip attractors to reduce trips to their facilities. This approach has also proven effective, but may impose significant costs on the implementing agency and the targeted groups. State law currently prohibits any air district or other jurisdiction from adopting and/or implementing mandatory employer based trip reduction programs unless specifically required by federal law. There is no federal requirement for San Luis Obispo to implement a mandatory program.

**Local agencies:** Local agencies can adopt and implement capital improvement and transit programs recommended in the Plan. Construction of new facilities such as Park and Ride lots, transit stops and bike lanes provide modest, immediate emission reductions by helping people shift from private vehicles to other travel modes. Changes to local land use policies can also provide important air quality benefits in the future by improving the regional jobs/housing balance, planning compact communities, and providing for mixed-use development.

Transportation control measures generally fall into three broad categories:

- ***Demand Management:*** Measures in this category are designed to modify individual travel behavior through incentive programs. Such programs usually focus on motivational methods (financial, convenience, regulatory, etc.) to increase the use of ridesharing, public transit, bicycling, walking and other alternatives to the single occupant vehicle. Implementation can be through district programs, inclusion of applicable strategies in Regional Transportation Plans, improvements in public transit and rideshare matching services, and other supporting strategies.
- ***System Management:*** These strategies emphasize the use of engineering methods to improve traffic flow and the overall performance of the existing transportation system. Typical measures include synchronization of traffic signals, intersection channelization, designation of one-way streets, transit system enhancements, improved parking management, expanded bikeway systems, and development of Park and Ride lots. Implementation is by local and regional transportation providers (local government, transit districts, Caltrans, etc.).
- ***Land Use Planning:*** These measures suggest ways to change the arrangement and distribution of land uses to reduce trips and VMT and make alternative forms of transportation more attractive. They address issues of jobs/housing balance, location of major new traffic generators, and basic travel relationships that exist between the various land use types within and between communities. Implementation is through city and county general plans and ordinances.

**6.3 DESCRIPTION OF EXISTING PROGRAMS**

**Land Use Planning:** The County of San Luis Obispo and the Cities of Arroyo Grande, Atascadero, Grover Beach, Pismo Beach, San Luis Obispo and Paso Robles have each adopted air quality goals, policies and programs in their General Plans. The land use planning policies include concepts such as mixed-use development, improving jobs/housing balances and planning compact communities.

State law requires that each jurisdiction adopt and maintain a General Plan for future development. Each Plan is required to contain a Circulation Element, among other Elements. Historically, these Elements have focused on the local street and roadway system and did not give equal emphasis to all transportation modes. Increasing public concern over air pollution and support of alternate modes has caused some jurisdictions to place more focus on improving infrastructure for all transportation modes. To this end, the City of San Luis Obispo's Circulation Element of their General Plan now includes measurable mode split objectives, and SLOCOG has added a similar system to the Regional Transportation Plan.

**CEQA Mitigation Programs:** The APCD reviews numerous types of new development projects referred by local jurisdictions, as well as state and federal agencies. Development projects are evaluated for potential air quality impacts, and the District provides mitigation recommendations where appropriate. Typical recommendations include: pedestrian- and bicycle-friendly site design; mixing residential and commercial land uses to reduce vehicle trips; encouraging compact development within existing Urban Reserve Lines; installation of bus turnouts, benches and shelters; density and circulation design modifications; and other measures designed to reduce reliance on motor vehicles. Large development projects and General Plan updates are further evaluated for consistency with the land use planning principles contained in the Clean Air Plan. District staff typically review over 200 urban development projects each year.

**“MOVER” Program:** The District's Motor Vehicle Emission Reduction (MOVER) program is funded through a clean air surcharge on motor vehicle registration fees (AB-2766). Projects eligible for funding must demonstrate that they will reduce air pollution in San Luis Obispo County from motor vehicles, reduce vehicle trips, increase vehicle occupancy, augment existing public education efforts in support of alternative transportation, or otherwise implement the transportation related provisions of the California Clean Air Act of 1988. Project proposals are ranked according to their air quality benefit, cost effectiveness, availability of matching funds, feasibility, and other desirable factors. A screening committee composed of volunteers representing various segments of the community evaluate, rank, and develop funding recommendations. The funding recommendations are then passed on to the District's Board of Directors for final approval.

MOVER funds were originally distributed on an annual cycle. However, the District now distributes MOVER funds every other year to maximize the amount of available funding during a given funding cycle and to reduce program administration overhead. Typical projects funded include transit subsidies, new buses, bike lanes, engine retrofits, clean fuel conversions, ridesharing incentives, electric vehicles and public information projects. As of the date of this document, the District has conducted four MOVER Program Grant cycles as follows:

<b>Grant Cycle</b>	<b>AB2766 Funds</b>	<b>Total Emissions Reduced (Tons)* (ROG/NOx/PM<sub>10</sub>)</b>	<b>Average Cost Effectiveness (\$/Ton)</b>
96/97	\$99,700	30	\$3,323
97/98	\$155,386	17	\$9,140
98-00	\$361,600	44	\$8,216
00-02	\$600,000	70	\$8,571

\*These emission reductions have not been credited as controls in this Plan

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**“CARL MOYER” Program:** The Carl Moyer Program was established during the 1998 legislative session as a bipartisan effort to reduce NO<sub>x</sub> and PM<sub>10</sub> emissions from heavy-duty diesel engines. The program provides grant funds to help finance emission reduction projects targeting heavy duty diesel engines used in on-road, off-road, marine, locomotive, stationary agricultural engines, and other heavy-duty engine applications throughout the state. Participating Districts are required to provide a \$1 match for every \$2 in Carl Moyer Program funding received; money already spent or obligated by districts on projects that would otherwise qualify for Moyer funds can be used to fulfill the match requirement. Eligible projects must meet a NO<sub>x</sub> emission reduction cost effectiveness requirement of \$13,000 per ton or less. The San Luis Obispo County Air Pollution Control District has participated in all four Carl Moyer Program funding cycles as shown in the table below:

<u>Funding Cycle</u>	<u>Moyer Funds</u>	<u>SLOAPCD Match</u>	<u>Total Emissions Reduced (Tons)* (ROG/NO<sub>x</sub>/PM<sub>10</sub>)</u>	<u>Average Cost Effectiveness (\$/Ton)</u>
98/99	\$157,900	\$104,000	27	\$9,700
99/00	\$83,196	\$41,998	45	\$2,782
00/01	\$176,750	\$88,250	60	\$4,417
01/02	~\$75,000	\$37,500	Undetermined	Undetermined

Typical projects funded through this grant program include replacing diesel buses with new natural gas powered buses, re-powering marine vessels with cleaner burning diesel engines, replacement of agricultural pump engines, and purchase new LPG school buses. Overall program cost effectiveness is estimated at under \$5,000 per ton of NO<sub>x</sub> reduced. In addition, the program has resulted in significant reductions of diesel PM, listed by the State in August 1998 as a toxic air contaminant.

**Regional Ridesharing Program:** San Luis Obispo Regional Rideshare is one of many organizations statewide that provide transportation demand management (TDM) and rideshare services. The main elements of the program include assisting in the formation of carpools and vanpools through a match list program, coordinating an employer outreach program, transit promotion and marketing activities, the development of Park and Ride lots, and a program that matches students at Cuesta College and Cal Poly for ridesharing.

**Public Transit Systems:** Currently there are 10 public transit operators in San Luis Obispo County. These include five fixed route providers: Central Coast Area Transit [CCAT], South County Area Transit [SCAT], San Luis Obispo Transit [SLO Transit], Paso Robles Community Area Transit [PRCATS] and Cambria's fixed route system, the "Otter". In addition, there are five demand responsive services: Atascadero Dial-A-Ride (DAR), Paso Robles DAR, Morro Bay DAR, South Bay DAR and Runabout, the regional ADA service provider. Almost all County residents have access to at least one of those services. Private contractors to the public agencies operate most of these services in order to maximize operation efficiencies. Funding agencies typically administer service contracts, oversee service planning and allocate funds among the various providers or contractors.

Over one million rides per year (i.e. the number of boardings) are made on publicly operated systems. Another estimated 800,000 rides are made on privately operated systems managed by social service agencies, non-profit organizations and senior's groups. Those privately run operations supplement the public systems for meeting more specialized travel needs. In addition to the above, several private sector bus companies offer inter-regional fixed-route services; also four private taxi companies provide local and countywide on call services..

Transit operators periodically modify routes and services to more effectively meet the needs of their customers. Such changes are made in response to requests for improved local and regional mobility, better time-efficiency, and greater comfort, as well as from the operator's standpoint to lower costs on the least productive lines. The challenge lies in providing efficient transit services while satisfying these requirements

– especially at a time when transit operating budgets are not necessarily keeping pace with growth in the transit market.

Cal Poly State University provides subsidies to its employees and students enabling discounted or free access to the SLO Transit and CCAT transit systems. Cuesta Community College also provides subsidies to CCAT to allow for enhanced service to that facility. The District has historically co-sponsored the Summer Youth Bus Pass Program, aimed at encouraging youngsters to use public transit.

**Transportation Management Associations (TMA):** A TMA is generally considered a public/private partnership with a strong emphasis on private sector participation. The mission of most TMAs nationwide is to implement various types of TDM strategies, usually aimed at reducing traffic congestion and improving air quality. Ride-On TMA is a non-profit cooperative that works throughout San Luis Obispo county with other transit operators, social service agencies, businesses and the public to provide alternative transportation options, including an on-demand shuttle and vanpool services. Other services include shuttle service to the airport and the train station. The District has provided a number of grants over the years to Ride-On to enhance services capable of reducing automobile use in the County.

**Consolidated Transportation Services Agency (CTSA):** In addition to forming the TMA, Ride-On has served as the local Consolidated Transportation Services Agency (CTSA) since 1991. The CTSA is a cooperative effort of local care facilities for the developmentally disabled that, prior to the CTSA, were all running separate programs to transport their clients to work or therapy. Ride-On consolidated these transportation services under one management umbrella and now provides over 1000 rides per day in an efficient and economical operation. They also deliver contract door-to-door services with advance reservations for social services entities, private groups and businesses.

**Parking Management:** The only entities that currently charge for parking are the City of San Luis Obispo and the two public colleges. Parking fees, restrictions, and reduced parking availability are tangible disincentives to auto driving, which encourage the use of alternate transportation. The current parking fees range from \$20/semester at Cuesta College and \$51/quarter at California Polytechnic State University, to \$120/quarter at the downtown parking garages. Short-term parking at the street meters in downtown San Luis Obispo averages about \$1.00/hour.

**System Improvements:** Caltrans, the County, and cities currently utilize a variety of engineering methods to avoid or reduce automobile congestion. These improvements include the use and synchronization of traffic signals, intersection channelization, designation of one-way streets, left and right turn lanes, additional passing lanes, road widening, and elimination or restriction of on-street parking during certain hours on congested streets. These types of improvements are currently being implemented by each jurisdiction on a programmed (project-by-project) basis. The District supports system improvements that also include facilities for transportation modes other than automobiles, such as pedestrian walkways, bike lanes, railways, and transit systems.

### 6.4 FUNDING FOR TRANSPORTATION MEASURES

Funding for transportation projects is derived from federal and state fuel taxes, as well as a percentage of the state sales tax which is redistributed to cities and the county. Funds for transportation control measures and land use planning strategies may be available from the following sources. SLOCOG, as Regional Transportation Planning Agency, is responsible for local programming and allocation of the following federal and state funding sources:

#### **Federal Funding Sources:**

- **Regional Surface Transportation Program (RSTP):** The RSTP was established by California State Statute utilizing Surface Transportation Program Funds identified in Section 133 of Title 23 of the

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United States Code. Approximately 76% (\$225 million per year) of the State's RSTP funds must be obligated to projects which are located within the 11 urbanized areas of California with populations greater than 200,000 people. The apportionment and distribution of funds is based on relative population.

- ***Transportation Enhancement Activities (TEA) Program:*** The Transportation Equity Act for the 21<sup>st</sup> Century was enacted June 9, 1998 as Public Law 105-178. TEA-21 authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 6-year period 1998-2003. TEA-21 builds on the initiatives established in the Intermodal Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation.
- ***Federal Aid Highway Acts of 1973 and 1976:*** Caltrans may appropriate money for construction of pedestrian and bike paths crossing federal lands. Bike projects funded with Federal Aid Highway Act funds are to be commuter transportation oriented rather than for recreation.
- ***FTA Section 5303:*** Provides funding for development of transportation plans and programs in urban areas of the state. The City of San Luis Obispo receives about \$700,000 per year for transit purposes.
- ***FTA Section 5307:*** Is a block grant program which provides financial assistance to operators of urban public transportation systems. As the only designated urban area, the City of San Luis Obispo is the only eligible jurisdiction in the county for these funds.
- ***FTA Section 5309:*** Is a discretionary grant program under the Federal Transit Act to fund projects and programs to support mass transportation.
- ***FTA Section 5310:*** Provides grants to assist private nonprofit corporations and public agencies in providing transportation services to meet the needs of elderly persons and persons with disabilities for whom public mass transportation services are otherwise unavailable, insufficient, or inappropriate.
- ***FTA Section 5311:*** Is a discretionary grant program for public transportation systems in non-urbanized areas, and includes funds for inter-city bus service.

### **State Funding Sources:**

- ***State Transportation Improvement Program:*** The state program to fund transportation projects (STIP) was substantially reformed as a result of legislation in 1997 (SB45, Kopp). The new process aims to empower local and regional agencies with greater flexibility over the use of transportation funding. While decision-making on transportation project approval has “devolved” to regional agencies, the same statutory parameters governing project funding eligibility continue to focus funding on highway, street, road, bikeway, and pedestrian-type projects (per Article XIX) of the state constitution.
- ***Transportation Development Act (TDA):*** In recent years, the county has received about \$8.9 million annually in TDA funds. TDA funds include Local Transportation Funds which originate from a 1/4 of one percent tax on retail sales in the county, as well as State Transportation Assistance (STA) funds derived from the state gasoline tax. STA provides the county up to \$800,000 per year for transit operations. By state law, TDA monies must first be used to provide transit services for "Unmet Needs"; local jurisdictions may then spend the rest on streets and roads. About 20 percent of TDA money is generally used for streets and roads. Since fiscal year 1990/91, two percent of the county's TDA program funds have been allocated specifically for bike and pedestrian projects. In the past five years, nearly \$600,000 has been allocated for bicycle and pedestrian projects.

- **Bicycle Lane Account (BLA):** with the passage of AB 1020, the amount of funds available statewide annually in the BLA has steadily increased from \$360,000 to \$1,000,000 in 1998, \$2,000,000 in 2001, \$3,000,000 in 2003, and \$5,000,000 in 2004 and annually thereafter.

### **Local Funding Sources:**

- **General Fund:** These monies come from the local sales tax, transit occupancy taxes (bed taxes), property taxes, and other sources. Cities may provide matching funds for state and federal grants, conduct joint projects with other local agencies, or construct projects alone.
- **Developer Fees:** Fees could be required to mitigate future air quality impacts from new development, based upon the expected increase in auto emissions. An example of developer fees is the “South County Air Quality Mitigation Fee.” These fees are charged to new residential development in the unincorporated areas of the South County Planning Area.
- **Local Option Gas Tax and Local Sales Tax:** These taxes must be approved by local voters by a two-thirds vote.
- **Tax Increment Financing:** Implemented through the creation of Redevelopment agencies and preparation of a plan for a targeted redevelopment area, these funds become available through the excess tax revenues generated by new development. Projects are financed from other public funds or bonds, then repaid from the increasing amount of newly generated taxes.
- **Vehicle Registration Fees:** Assembly Bill 2766 authorized air pollution control districts to collect a clean air surcharge of up to \$4 per registered motor vehicle. In San Luis Obispo County, one-fourth of these funds are redistributed annually by the District on a competitive grant basis to eligible recipients through the MOVER program for projects to reduce motor vehicle emissions.

Recent state policies will force local jurisdictions to pay an increasing portion of the costs of highway improvements necessitated by local growth. Despite the numerous revenue sources identified above, resources are projected to fall short of overall needs. Using some of these limited funds to aggressively support TCMs could reduce or delay the need for some of the projected roadway improvements.

## 6.5 CONTROL MEASURE EVALUATION AND RECOMMENDATIONS

Slowing the rate of growth in private vehicle use is a major goal of this Plan. Substantial reductions in these trips cannot be achieved, however, without adequate transportation alternatives. Thus, a considerable effort must continue to be made to increase the availability and viability of safe and convenient alternatives to the private auto. To that end, the transportation control measures described in this Plan are all linked, with each measure designed to strengthen and reinforce the other measures.

All TCMs adopted in the 1998 CAP are currently being implemented. Thus, evaluation of the TCMs for this Plan primarily involved a re-examination of the control measures and implementation schedule in the 1998 CAP. Emission reductions from these measures were tabulated to estimate progress achieved since implementation was begun. As shown in the following sections, implementation of the adopted transportation control measures is on-going, and will continue to provide mobile source emission reductions necessary to achieve the state air quality standards.

The control measures evaluated through this process fall into three categories:

1. **Adopted Control Measures:** All TCMs proposed for adoption in the 1998 CAP are currently being implemented and are described further in Section 6.6. Emission reductions already achieved or projected to occur are included as part of the attainment strategy for this Plan.

2. **Measure Proposed for Deferral/Contingency:** This section includes one measure found unnecessary to meet the immediate emission reduction goals of the 2001 Plan. Implementation of this measure was also deferred in the 1998 Plan. The measure will be reconsidered only in the event that reductions from adopted measures are insufficient to achieve attainment within the required time frame. This measure is described in Section 6.7.
3. **Measure Proposed for Deletion from Consideration:** The 2001 Clean Air Plan does not propose deletion of any of the transportation control measures adopted in the 1998 Clean Air Plan.

Anticipated reductions in Average Daily Trips and VMT expected for the years 1997, 2000, 2003, 2006 and 2015 are presented in Table 6-1. Expected emission reductions from implemented and proposed measures for the same years are shown in Table 6-2. Figure 6-1 is a graphic presentation of the relative emission reductions estimated for each measure in the year 2003. Tailpipe emission controls implemented by ARB have generated and will continue to provide substantial emission reductions into the future. These reductions are already accounted for in the baseline emissions inventory forecasts and are therefore not addressed in these graphics.

The remainder of this chapter presents summary descriptions of all the transportation control measures evaluated for this Plan. Greater detail on each the measure is provided in the technical working papers presented in Appendix D.

### 6.6 ADOPTED CONTROL MEASURES

This section includes measures adopted in previous Clean Air Plans. Emission reductions from these measures are included as part of the attainment strategy for this Plan.

#### Transportation Control Measures

##### *T-1B Campus Trip Reduction Program*

This program is designed to reduce student commute trips to Cal Poly State University and Cuesta Community College. Major program components for each campus include: on-site Transportation Coordinators and transportation information centers, annual surveys of student commute behavior, specific AVR goals for each campus, and implementation of program incentives and disincentives designed to reduce private vehicle trips to campus. Examples of incentives include subsidized transit passes, preferential parking for carpoolers, providing storage facilities to walkers and cyclists, and preferential registration for those who do not drive alone. Typical disincentives are parking pricing and access. Trip reduction efforts for high school students will focus on the public education and information program described in Chapter 9.

Cal Poly has already made significant progress in implementing a student trip reduction program. The University has appointed a full-time "Commuter Services Coordinator" for the campus, designated a transportation information center, and has developed and implemented a Trip Reduction Plan, including transit subsidies, bicycle and pedestrian facility improvements, and telecommuting programs. According to the 1997 Staff/Student Transportation Survey conducted by the Cal Poly Commuter Services Office, Cal Poly met their student AVR goal of 2.0 in 1997 with a very admirable AVR of 3.16. A follow-up survey conducted in the spring of 2001 indicated the student AVR had dropped to 2.49 though still in general compliance with AVR goals. The Cal Poly faculty 2001 workweek AVR was determined to be 1.33, a bit above the county wide average. The District's focus for Cal Poly is to help maintain and improve existing student AVR rates and to improve faculty/staff use of alternative forms of transportation.

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Cuesta College is in the initial stages of implementation; progress to date includes transit subsidies and rearrangement of class schedules to better fit bus schedules. The results of the Cuesta Student Commute Survey conducted in the spring of 2000, indicate a student commute AVR of 1.316, just below the year 2000 target for the campus of 1.5. The District will be focusing on efforts to assist Cuesta College meet the AVR goals presented in this Plan.

Phasing and Implementation Schedule for Schools:

<u>Year</u>	<u>Cal Poly</u>		<u>Cuesta</u>	
	<u>Goal</u>	<u>Actual</u>	<u>Goal</u>	<u>Actual</u>
1997	2.0	3.16	1.35	n/a
2000	2.5	2.49	1.5	1.32
2005	3.0	n/a	2.0	n/a

Note: n/a stands for data Not Assessed

<i>Implementing Agencies:</i>	APCD, Cal Poly, Cuesta
<i>Date of Implementation:</i>	On-going
<i>Cost-Effectiveness:</i>	Not calculated.
<i>Year 2003 Reductions (daily):</i>	
<i>Emissions (tons per day) -</i>	ROG: 0.021    NOx: 0.020    PM <sub>10</sub> : 0.001
<i>Vehicle Miles Traveled -</i>	26,595
<i>Average Daily Trips -</i>	3,011

### ***T-1C Voluntary Commute Options Program***

This measure is designed to reduce the number of commute and other trips made with single occupant vehicles (SOVs) through an outreach effort to employers to encourage voluntary participation in a worksite trip reduction program. Implementation of this measure was begun in 1997, with the development of (1) a marketing plan to identify appropriate strategies for the outreach effort and (2) mechanisms for defining and targeting employers with the highest potential for successful participation. Called the *Transportation Choices Program* (TCP), success is dependent in part on Strategic Partners like Regional Rideshare and Ride-On Transportation jointly promoting transportation options to targeted employers. Alliances with essential and supplemental Service Providers has also been initiated to enhance the viability and convenience of alternative commuting. The primary goal of the measure is to achieve an average AVR of 1.35 at 20% of facilities in the county with 50 or more employees.

Primary program elements include:

- Contact all employers in the county with more than 20 employees via direct mail to explain program and gauge interest.
- Site visits to all employers with more than 50 employees over 5 year period to explain services offered and benefits of participation.
- Site visits to business clusters with a combined total of greater than 50 employees in one geographic location
- Develop and promote incentives, including a "Lucky Bucks" program, to encourage program participation by employers and their employees.
- Conduct employee surveys, assist in plan development and provide training, promotional materials and ongoing assistance to participating employers.
- Develop and implement a media and public relations plan to reinforce program message with the general public. Radio, television and print media will be used where effective.

<i>Implementing Agencies:</i>	APCD, Regional Rideshare, Ride-On Transportation
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<i>Date of Implementation:</i>	On-going
<i>Cost-Effectiveness:</i>	Not calculated
<i>Year 2003 Reductions (daily):</i>	
<i>Emissions (tons per day) -</i>	ROG: 0.028 NOx: 0.025 PM <sub>10</sub> : 0.001
<i>Vehicle Miles Traveled -</i>	39,689
<i>Average Daily Trips -</i>	3,101

### ***T-2A Local Transit System Improvements***

The focus of this measure is on improving local transit service and infrastructure to increase ridership by enhancing the convenience and overall viability of the system. Key elements of the measure include an ongoing improvements to bus boarding areas, development of multi-modal centers, service expansion, and replacement of older diesel transit buses with new diesel-powered vehicles meeting ARB's October 31, 2002 emission certification standards or CNG vehicles meeting one of ARB's optional emission credit standards. The main goal of this measure is to maintain the rate of transit ridership growth throughout the county above the countywide population growth rate. Between 1990 and 1999, the County population grew by 11.3% from 217,163 to 241,600. Between 2000 and 2010, the population of the County is projected to increase by approximately 15%. As described below, the ridership of all three of the local fixed route transit systems operating in the county exceeded county population growth over the past decade.

San Luis Obispo Transit, operated by the City of San Luis Obispo, is the largest transit system in the county with an annual ridership of around one million passengers per in 2000. Between 1991 and 2000, SLO Transit ridership increased by 61% from 651,620 to 1,047,054. Much of the ridership increase and high patronage experienced by SLO Transit is the result of effective transit subsidies that target the students and faculty of Cal Poly State University. In addition, SLO Transit has added two CNG-powered buses to its fleet. The District has, and will continue to work with Cal Poly to ensure the continuance of the transit subsidies into the future.

The South County Area Transit system (SCAT) services the Five Cities area of southern San Luis Obispo County. Between 1991 and 2000, annual system ridership increased by 59% from 90,265 in 1991 to 143,602 in 2000. During the school year, south-county area high school students account for a considerable portion of the morning and afternoon commuter ridership. SCAT and the regional transit system CCAT are both administered by the San Luis Obispo Regional Transit Authority (SLORTA).

Operation of the Paso Robles Community Area Transit (PRCAT) was initiated August 1, 1994. Between 1995 and 2000, annual system ridership increased by 38% from 30,532 in 1995 to 42,087 in 2000. Ridership peaked in 1997 at 61,133 but declined to its current level due in part to significant farebox increases that have since been repealed. System ridership is anticipated to increase in the future as long as farebox rates remain competitive.

Emissions reductions shown below are for new trips captured through implementation of this measure only, not those expected to occur as a result of T-1B and T-1C.

<i>Implementing Agencies:</i>	SLO Transit, SCAT, PRCAT
<i>Date of Implementation:</i>	On-going
<i>Cost-Effectiveness:</i>	Few additional costs are expected to result from adoption of this measure. Implementation costs are part of the existing programs for the local transit system budgets.
<i>Year 2003 Reductions (daily):</i>	
<i>Emissions (tons per day)-</i>	ROG: 0.008 NOx: 0.005 PM <sub>10</sub> : 0.001
<i>Vehicle Miles Traveled -</i>	5,492
<i>Average Daily Trips -</i>	1,373

***T-2B Regional Public Transit Improvements***

San Luis Obispo Regional Transit Authority (SLORTA) operates the regional fixed route system, Central Coast Area Transit (CCAT). The focus of this measure is to improve regional transit service and infrastructure with the goal of increasing ridership rates in excess of countywide population growth rates. CCAT's ridership has risen by over 95% from 143,871 in 1991 to 281,504 in 2000. Over that same time period, the county population grew by just over 11%. System improvements include infrastructure improvements, service expansion, and operational changes.

In addition, the measure recognizes inter-city rail improvements as a trip reduction strategy. The key recommendations include boarding area improvements, better service to statewide transportation providers (such as Amtrak), increasing bus frequency during commute hours, providing service to northern Santa Barbara County, and developing express runs to major destinations such as Cuesta College.

The measure supports the voluntary trip reduction program by providing commuters with a practical alternative to driving, and is consistent with the Regional Transportation Plan. Reductions shown here are for new trips captured as a result of implementing this measure, and not those expected to occur as a result of T-1B and T-1C.

<i>Implementing Agencies:</i>	SLOCOG, SLORTA, and Caltrans
<i>Date of Implementation:</i>	On-going
<i>Cost-Effectiveness:</i>	Few additional costs are expected to result from adoption of this measure. Implementation costs are part of the existing programs for the local transit system budgets.
<i>Year 2003 Reductions (daily):</i>	
<i>Emissions (tons per day)-</i>	ROG: 0.004 NOx: 0.003 PM <sub>10</sub> : 0.000
<i>Vehicle Miles Traveled -</i>	5,683
<i>Average Daily Trips -</i>	444

***T-3 Bicycling and Bikeway Enhancements***

The goal of this measure is to achieve a county-wide average bicycle mode share of 5% by 2005. To effectively encourage the modal shift to bicycles, a comprehensive program to promote bicycle use was adopted in the 1991 Clean Air Plan. Since adoption, the following progress has been made to construct needed bikeways and provide support facilities throughout the county:

- Several funding sources have provided critical resources for bikeway construction, including \$6 million of Proposition 116 funds, and 2% of all TDA funds (approximately \$80,000 per year).
- Caltrans has installed bicycle lockers at most of the eleven park and ride lots in the county, and CCAT and SLO Transit have installed bicycle racks on all buses.
- Bicycle plans have been prepared and adopted by San Luis Obispo County, as well as the Cities of San Luis Obispo and Paso Robles.
- Sections of the Bob Jones City to the Sea Bikeway linking the City of San Luis Obispo, Avila Beach, and areas in between, have been completed with significant financial resources identified for remaining portions awaiting construction. Avila Beach attracts approximately 1,000,000 visitors a year and the bike path is seen as an integral element in the overall bicycle infrastructure in the area.

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This measure supports the Voluntary Trip Reduction Program (T1C) by providing a safe and inexpensive way for employees to commute to work or school. In addition, bike infrastructure improvements will increase safety and convenience for those riders not affected by T-1C. The measure also facilitates cycling for shopping and other trip purposes.

This measure provides the largest expected reductions in emissions from any TCM, supports T-1B and T-1C, and is consistent with the Regional Transportation Plan.

<i>Implementing Agencies:</i>	Cities, County, and Caltrans.
<i>Date of Implementation:</i>	On-going
<i>Cost-Effectiveness:</i>	Not calculated
<i>Year 2003 Reductions (daily):</i>	
<i>Emissions (tons per day)-</i>	ROG: 0.120 NO <sub>x</sub> : 0.067 PM <sub>10</sub> : 0.051
<i>Vehicle Miles Traveled -</i>	46,201
<i>Average Daily Trips -</i>	25,667

### **T-4 Park and Ride Lots**

Park and Ride (P&R) lots provide a staging area for ridesharing activities. The most common use of P&R lots in San Luis Obispo County is as a meeting point for car- and vanpoolers. Transit connections are available at some lots within a short walk, and bike lockers are available at most lots; however, the primary use is for automobile parking.

In San Luis Obispo County, P&R lots are administered by Caltrans and SLOCOG. In 1998 there were eleven Park and Ride lots in the County providing 255 spaces. Today, there are fourteen Park and Ride lots with 372 total available spaces. The three new lots constructed since 1998 have been developed along the Highway 101 corridor north of Cuesta Grade to help mitigate congestion impacts associated with the Cuesta Grade widening project.

Use of a park and ride lot will generally reduce the length of a commute trip, but not eliminate the trip. This reduces running exhaust and evaporative emissions, which make up about 44% of ROG emissions and 72% of NO<sub>x</sub> emissions from light duty vehicles and trucks. However, if a P&R lot is served by commuter transit or shuttle service, and adequate bicycle storage facilities are available on-site, P&R lots can reduce both VMT and motor vehicle trips. Therefore, the goal of this measure is to improve the trip reduction potential of P&R lots by providing commuter transit service and adequate bicycle storage to existing and future P&R lots in the county.

<i>Implementing Agencies:</i>	Caltrans, SLOCOG, and local jurisdictions.
<i>Date of Implementation:</i>	On-going
<i>Cost-Effectiveness:</i>	Not calculated
<i>Year 2003 Emission Reduction:</i>	Expected emission reductions have been accounted for in T-1B and T-1C, which assume development of support facilities. Since this is primarily a supporting measure, no separate emission reductions are credited here.

### **T-5 Motor Vehicle Inspection and Control Programs**

The Motor Vehicle Inspection Program (MVIP) is a biennial, comprehensive inspection and testing program of emissions control devices on privately owned gasoline powered motor vehicles. Commonly known as the "Smog Check" program, it is designed to ensure that emission control devices on motor vehicles continue to function properly. Inspection of vehicle emission control systems is required as a condition of vehicle re-

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registration. This program was adopted by the District Board in 1989 and began its first phase of implementation in July, 1990.

The Motor Vehicle Control Program (MVCP) is a statewide program of phased tailpipe and evaporative emission controls which have and will continue to significantly reduce motor vehicle emissions in coming years. No actions are required of the District to implement this program; the ARB is charged with this responsibility. The CCAA requires the ARB to adopt all controls necessary to reduce mobile source ROG emissions by 55% and NO<sub>x</sub> emissions by 15% by the year 2000. The Act also provides the ARB with the additional authority to regulate in-use vehicle performance; motor vehicle fuel specifications; and emission standards for light, medium, and heavy-duty on-road motor vehicles, motorcycles, off-highway equipment greater than 175 hp and non-preempted off-road equipment smaller than 175 hp. Table 6-3 lists ARB's adopted, proposed, and planned regulations for reducing emissions from mobile sources.

<i>Implementing Agency:</i>	MVIP is administered by the Bureau of Automotive Repair. The MVCP is administered by the ARB.
<i>Date of Implementation:</i>	Implementation of both programs began in 1990.
<i>Cost-Effectiveness:</i>	N/A.
<i>Year 2003 Emission Reduction:</i>	Included in baseline emission projections.

### **T-6 Traffic Flow Improvements**

This control measure focuses on traffic flow improvements and “traffic-calming” to improve the flow of all transportation modes. Traffic-calming refers to a full range of methods designed to improve the flow of non-motorized transportation by slowing down the speed of motorized traffic. Traffic-calming is generally used in residential areas on non-arterial local streets and roads.

The goal of this measure is to improve the road system and infrastructure in a way that increases its efficiency, reduces emissions, and supports the other Transportation Control Measures in this Plan. Traffic flow improvements help keep traffic moving smoothly during peak hours when the road system is near its capacity, such as during commute periods or on holidays. The County and local jurisdictions can implement changes that may reduce stop-and-go conditions and associated vehicle emissions on roads lacking efficient channelization, signalization, one-way streets, and/or synchronized signals. Peak hour traffic management should also increase pedestrian and bicyclist safety.

Traffic congestion is often a disincentive to driving, and can cause mode shifts to transit, especially when trip times become equalized because of priority treatment for transit. However, intentionally causing congestion is not recommended here. On the contrary, this measure focuses on reducing localized emission problems by reducing congestion. Research does show that adding significant additional capacity to the road system, such as freeway widening, can actually increase rather than reduce emissions. Therefore, large road widening projects are discouraged until all strategies to reduce trips and VMT are implemented.

Expected reductions have been accounted for in T-2A, T-2B and T-3, which assume development of support facilities. Since this is primarily a supporting measure, no separate emission reductions are credited here.

<i>Implementing Agency:</i>	Local Public Works Departments and Caltrans
<i>Date of Implementation:</i>	On-going
<i>Cost-Effectiveness:</i>	Not calculated
<i>Year 2003 Emission Reduction:</i>	N/A.

***T-8 Teleworking, Teleconferencing, and Telelearning***

Rapid advances in personal computer capability and the advent of video and on-line services have made these technologies ideal trip reduction strategies. As more homes have personal computers, and more businesses provide information services to their customers, it has become practical for employees to work from their homes or a satellite facility near their home. The strategy of “moving the work, not the worker” will have far-reaching and positive effects on air quality and congestion. This control measure seeks to reduce emissions by promoting telecommuting for any employee whose job can accommodate working from home.

Video-conferencing also provides far-reaching positive impacts for air quality and congestion. Through computer technology, business travel can be reduced by conducting meetings via video hook-up with colleagues across town or across the country. Telelearning can reduce travel to campuses by making educational courses available locally and to students who are too far away to attend classes. Two-way, interactive video can allow an instructor to conduct classes with a nation-wide, or worldwide audience without the students needing to travel to the campus. In 2000, the District’s Board of Directors approved a \$70,000 grant through the Guadalupe Air Quality Mitigation Fund to the City of Guadalupe to develop and implement a telelearning/teleconferencing system as means of reducing automobile trips.

Many employers in San Luis Obispo County already have, or are experimenting with teleworking programs for their employees. The District coordinates with SLOCOG, Regional Rideshare, Caltrans, and other agencies to promote and inform the general public of the benefits of teleworking, provide businesses with educational information on developing and implementing teleworking programs, and training for employees and managers on how to run a teleworking program. Since this is primarily a supporting measure, no separate emission reductions are credited here.

<i>Implementing Agency:</i>	APCD
<i>Date of Implementation:</i>	On-going
<i>Year 2003 Emission Reduction:</i>	N/A

**Land Use Planning Strategies**

Several important resources have allowed cities to grow as they have: abundant land, convenient automobile transportation, and cheap energy. However, these resources are becoming scarce. Clean air, for example, is not an unlimited resource, and traffic congestion cannot be solved simply by building more and wider roads.

To plan urban growth in a way that protects clean air and permits convenient travel within and among communities requires a new way of looking at the urban growth process. In particular, we must recognize that air quality, land use, and circulation cannot be considered as separate issues. The relationship among them must be reflected in plans and programs administered by cities, the County and the District.

As urban development is spread out over the landscape, the distance between home and work, school, medical care, shopping facilities, recreation and personal services becomes greater. A dispersed development pattern increases our reliance on automobile travel which, combined with longer trips, results in more air pollution.

Land use and circulation management programs can reduce dependence on the automobile and enhance the viability of transit, ridesharing, biking and walking. The following policy recommendations are strategies designed to achieve these objectives. Detailed descriptions of these measures, including specific implementation mechanisms, are provided in Appendix E to this document. Emission reductions and cost-effectiveness have not been quantified due to the long lead times and funding commitments required by each implementing agency.

### *L-1 Planning Compact Communities*

Spread-out communities require longer travel distances between home, work, school and shopping. In general, the more compact a community is, the lower its number of vehicle trips and miles traveled. Maintaining compact city and village areas reduces reliance on the automobile by enhancing the viability of public transit and maximizing the potential for walking and bicycling to work, shopping, and other destinations. In the end, vehicle use and emissions are reduced.

It is not envisioned that communities should become uniformly dense. Instead, dwelling units for those who prefer higher density living should be clustered in urban core areas and village centers, thus creating a market for convenience retailing and services that contribute to the richness of an urban life-style. As commercial facilities become integrated into residential areas in a mixed-use development pattern, the need to use an automobile for routine trips diminishes. The challenge is to encourage development at densities high enough to support these goals without causing undue congestion.

#### *Policies:*

- Cities and unincorporated communities should be developed at higher densities that reduce trips and travel distances and encourage the use of alternative forms of transportation.
- Urban growth should occur within the urban reserve lines of cities and unincorporated communities. Rural areas of the county should be maintained as open space, agricultural lands and very low density residential development (20 acre or larger parcel size).
- Local planning agencies should encourage transit use by planning neighborhoods and commercial centers at densities to allow for convenient access to and use of local and regional transit systems.

### *L-2 Providing for Mixed Land Use*

Segregation of land uses often increases reliance on the private vehicle, unless the segregated uses are in close proximity and safe pedestrian and bicycle paths exist. Locating residential, commercial and service facilities in close proximity to one another encourages walking and other nonpolluting forms of transportation. This decreases trips, VMT and associated vehicle emissions. Communities should allow a mixture of land uses that enables people to walk or bicycle to work or to purchase necessary household items or service, at locations convenient to their neighborhood. Even in some predominantly residential areas, allowing or even mandating some commercial uses can reduce the number and length of auto trips without significantly altering the character of the neighborhood.

Mixed land use is also a strategy for achieving compactness in urban development. While conventional zoning typically results in the spatial separation of different land uses, mixed use recognizes that some land uses are functionally compatible with one another and need not be physically separated. An example of mixed-use development is a ground level commercial use with residential uses above.

#### *Policy:*

- The mixing of compatible commercial and residential land uses should be encouraged when it will reduce dependence on the automobile, or it improves the balance between jobs and housing.

### *L-3 Balancing Jobs and Housing*

Travel from home to work accounts for about one-quarter of all private vehicle trips in a typical urban area; in rural areas this travel component is even higher. The length and location of these trips are important factors

in determining the type of transportation alternatives available to the commuter and the quantity of air pollutants generated. If the average travel distance between the home and workplace is relatively long, emissions from private vehicles increase and non-motorized travel alternatives are less viable.

In cities and unincorporated communities in this county, there are local imbalances between job availability and housing opportunities. Job-rich communities, such as San Luis Obispo, have more land allocated for jobs than for housing all those who work there. Conversely, housing-rich communities, such as Los Osos, do not have enough land allocated to provide jobs for all residents. An imbalance between jobs and housing results in longer travel distances between home and work and, consequently, more air pollution from cars.

It may not be possible to achieve a jobs-housing balance in all communities because of their size, population characteristics or limited resources. However, it is desirable to narrow the gap between jobs and housing, or at least make sure that it does not increase.

A Jobs/Housing Balance Study completed by SLOCOG identified key issues and recommended strategies to support the goal of reducing VMT through balancing the economic environment and the supply of affordable housing within the region. In addition, the study provides a good source of baseline information for jurisdictions' efforts to achieve the goals of this measure.

*Policy:*

- Within cities and unincorporated communities, the gap between the availability of jobs and housing should be narrowed and should not be allowed to expand.

### ***L-4 Circulation Management***

The primary goal of the recommended Circulation Management Policies and Programs is to encourage the design and construction of the county's transportation system in a manner that supports alternative travel modes and decreases reliance on single occupant motor vehicles. To this end, improving accessibility for all travelers, not just drivers, is the primary transportation objective.

*Policies:*

- Jurisdictions should adopt the concept of improved accessibility as a planning goal and as a means to coordinate land use and transportation planning efforts.
- Agencies should focus transportation funds on facilities and promotional programs that support transit, ridesharing, bicycling, and walking before focusing funds on capacity expansion for congestion relief.
- Local planning agencies should encourage walking by planning for existing and new residential and commercial areas to include a safe and interconnected street system with adequate sidewalks and/or pedestrian trails.
- Local planning agencies should develop pedestrian- and bicycle-friendly design standards that apply to all residential and commercial projects.
- Local planning agencies should endorse the concept of managing the supply of automobile parking as a means to support and promote the use of alternative transportation modes.
- Jurisdictions should support actions to reduce single occupant vehicle trips by adopting programs which encourage or require new commercial and industrial development projects to provide facilities and amenities which reduce reliance on private vehicle use and support the use of alternative transportation.

- Local jurisdictions, the APCD and the Council of Governments should coordinate actions and cooperate in pursuing the implementation of the land use and circulation management programs proposed in this document. The Clean Air Plan and local General Plans should be used as a means to achieve coordinated implementation of these programs.

### ***L-5 Communication, Coordination and Monitoring***

Changes in land use and circulation planning will be necessary to maintain clean air in the county over the long term. These same changes, however, will also provide benefits in reduced traffic congestion. It is very important to the long-term success of the Clean Air Plan that local and regional jurisdictions and the District work together to achieve these mutual goals. The measures in this section provide a framework for reducing the growth of VMT and maintaining clean air. Implementing them requires close coordination and cooperation among jurisdictions.

#### *Policy:*

- Local jurisdictions, the APCD and the Council of Governments should coordinate actions and cooperate in pursuing the implementation of the land use and circulation management programs proposed in this document. The Clean Air Plan and local General Plans should be used as a means to achieve coordinated implementation of these programs.

## **6.7 MEASURES PROPOSED FOR DEFERRAL/FURTHER STUDY**

One further study measure from the 1995 CAP was found unnecessary to meet the emission reduction goals of the 1998 Plan and was recommended for deferral. This measure is still recommended for deferral, to be reconsidered only in the event that reductions from adopted measures are insufficient to achieve attainment within the required time frame.

### ***T-12 Fleet Operator Clean Fuels Program***

Regulations adopted by the state require the integration of 'clean fueled' vehicles into the vehicle fleets in southern California according to a set schedule. Such vehicles would likely be fueled by natural gas, methanol, or electricity. This control measure would require replacement vehicles purchased for commercial and government vehicle fleets to include a set percentage of clean-fueled vehicles.

*Discussion:* This measure is proposed for deferral because the availability of clean fueled vehicles and support facilities for moderate nonattainment areas like San Luis Obispo county is uncertain at this time.

## **6.8 MEASURES PROPOSED FOR DELETION FROM CONSIDERATION**

There are no transportation or land use control measures proposed for deletion under the 2001 Plan.

## **6.9 SUMMARY**

The effectiveness and level of emission reduction accomplished by any one transportation control measure depends on several factors. Implementation by responsible agencies may vary for reasons beyond the direct control of planners and engineers. Changes in external factors such as the rate of population growth, the mix

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of employment type, funding availability and transportation costs (especially fuel) will influence the effectiveness of the measures.

In general, a well designed package of TCMs will increase the effectiveness of each individual measure because they tend to function synergistically. This is because each measure is at least partially dependent on other measures in the Plan. For example, subsidized transit passes resulting from the trip reduction programs (T-1B, T-1C) are expected to increase transit ridership. The transit improvement measures (T-2A, T-2B) are designed to provide the facilities necessary to serve these and other new riders. To achieve the emission reductions required by the CCAA, it is necessary to continue the implementation of the integrated program of complementary measures described in this Plan.

**Table 6 - 1**

**EXPECTED REDUCTIONS IN AVERAGE DAILY TRIPS (ADT)  
AND DAILY VEHICLE MILES TRAVELED (VMT)**

CONTROL MEASURE	ADT					VMT				
	1997	2000	2003	2006	2015	1997	2000	2003	2006	2015
T-1B	1,805	2,237	3,011	3,968	8,103	11,329	17,166	26,595	35,942	71,095
T-1C	843	2,381	3,101	3,211	3,500	10,788	30,480	39,689	41,106	42,593
T-2A	1,142	1,298	1,373	1,593	2,371	4,569	5,192	5,492	6,370	9,485
T-2B	352	392	444	509	702	4,503	5,012	5,683	6,515	8,991
T-3	5,943	6,337	25,667	37,896	45,767	10,698	11,407	46,201	68,213	82,381
Total Reduced	10,089	12,645	33,596	47,177	60,443	41,887	69,257	123,660	158,146	214,545
Travel Without CAP	957,768	1,039,848	1,128,066	1,211,290	1,462,891	5,398,000	5,803,000	6,235,000	6,675,000	7,999,000
% Reduced	1.1%	1.2%	3.0%	3.9%	4.1%	0.8%	1.2%	2.0%	2.4%	2.7%

Note: 'Travel Without CAP' is the projected ADT and VMT for light duty autos (LDA) and light duty trucks (LDT) that would have occurred without the influence of the CAP.

**Table 6 - 2**

**EXPECTED EMISSION REDUCTIONS  
FROM TRANSPORTATION CONTROL MEASURES  
IN TONS PER DAY**

CONTROL MEASURE	ROG					NO <sub>x</sub>					PM <sub>10</sub>				
	1997	2000	2003	2006	2015	1997	2000	2003	2006	2015	1997	2000	2003	2006	2015
T-1B	0.017	0.019	0.021	0.023	0.019	0.015	0.017	0.020	0.025	0.028	0.0003	0.0004	0.0006	0.0008	0.0014
T-1C	0.011	0.026	0.028	0.024	0.013	0.011	0.026	0.025	0.024	0.018	0.0002	0.0006	0.0007	0.0008	0.0008
T-2A	0.009	0.009	0.008	0.008	0.005	0.007	0.006	0.005	0.005	0.005	0.0001	0.0001	0.0001	0.0001	0.0002
T-2B	0.005	0.004	0.004	0.004	0.002	0.005	0.004	0.003	0.003	0.002	0.0001	0.0001	0.0001	0.0001	0.0001
T-3	0.037	0.036	0.120	0.146	0.084	0.022	0.021	0.067	0.088	0.060	0.0002	0.0002	0.0010	0.0014	0.0016
<b>Total Reductions</b>	0.079	0.094	0.181	0.205	0.123	0.060	0.074	0.120	0.145	0.113	0.0009	0.0014	0.0025	0.0032	0.0041
<b>Emissions w/o CAP</b>	7.31	6.17	4.92	3.76	1.84	9.03	7.80	6.61	5.64	4.30	0.17	0.17	0.17	0.19	0.21
<b>% Reduced</b>	1.1%	1.5%	3.7%	5.5%	6.7%	0.7%	0.9%	1.8%	2.5%	2.6%	0.5%	0.8%	1.5%	1.7%	2.0%

Notes:

1. Measures T-4 and T-6 primarily support the Trip Reduction Program. Emission reductions from these measures are accounted for in T-1B and T-1C.
2. Emissions reductions for T-5 are calculated by ARB and included in the baseline emissions inventory. These reductions are therefore not quantified here.
3. PM10 emission reductions are based only on exhaust, tire wear, and break wear and do not account for reduced entrained roadway dust.

Table 6-3

## ARB MOBILE SOURCE CONTROL STRATEGIES

	Description	Agency	Adoption	Implementation	Emission Reductions
<b>M2</b>	<b>LEV II:</b> Further emission reductions from cars, light-trucks, sport utility vehicles and minivans. Long-term measure with statewide benefits. Only South Coast took credit in the SIP.	ARB	2000	2004-2007	Large
<b>M3</b>	<b>Medium-Duty Vehicles:</b> Accelerated introduction of medium-duty ULEVs.	ARB	1995	1998-2002	Medium
<b>M4</b>	<b>Incentives for Clean Engines:</b> Incentives for early intro of clean heavy-duty engines.	ARB	----	1998-2002	Small
<b>M5</b>	<b>CA Heavy-Duty NOx Standard:</b> Lower NOx standard for heavy-duty trucks and buses in California.	ARB	1998	2004	Large
<b>M6</b>	<b>National Heavy-Duty NOx Standard:</b> Lower NOx standard for federal heavy-duty trucks and buses.	U.S. EPA	1998	2004	Large
<b>M8</b>	<b>Heavy-Duty Gasoline Vehicle Standard:</b> Tighter standards on heavy-duty gas vehicles (e.g. RVs).	ARB	1995	2004	Small
<b>M9</b>	<b>CA Heavy-Duty Off-Road Diesel Equipment:</b> Tighter standards for off-road diesel equipment. Long-term measure only credited in South Coast.	ARB	2000	2000-2005	Large
<b>M10</b>	<b>National Heavy-Duty Off-Road Diesel Equipment:</b> Tighter standards for off-road diesel equipment preempted from state control. Long-term measure only credited in South Coast.	U.S. EPA	1998	2000-2005	Large
<b>M11</b>	<b>CA Heavy-Duty Off-Road Gas/LPG Equipment:</b> Standards for off-road gas/LPG equipment.	ARB	1998	2001-2004	Large
<b>M12</b>	<b>National Heavy-Duty Off-Road Gas/LPG Equipment:</b> Standards for off-road gas/LPG equipment preempted from state control.	U.S. EPA	2002 (anticipated )	2004	Large
<b>M13</b>	<b>Marine Vessel Standards:</b> Federal assignment to reduce emissions from marine vessels.	U.S. EPA	1999	2000	Medium
<b>M14</b>	<b>Locomotive Engine Standards:</b> Federal assignment to reduce emissions from locomotives and establish a fleet average for locomotives in the South Coast.	U.S. EPA	1997	2000-2010	Large
<b>M15</b>	<b>Aircraft Standards:</b> Federal assignment to reduce aircraft emissions. Only credited in South Coast.	U.S. EPA	---	---	Small

	Description	Agency	Adoption	Implementation	Emission Reductions
<b>M16</b>	<b>Marine Pleasurecraft Standards:</b> Federal assignment to reduce emissions from marine pleasurecraft (outboard motors, jet skis and jet boats).	U.S. EPA	1996	1998-2006	Medium
<b>M17</b>	<b>Additional Reductions from Heavy-Duty Vehicles:</b> Additional reductions through in-use compliance programs or incentives. Only credited in South Coast.	ARB	2004 (anticipated)	2005-2010	Small
<b>CP2</b>	<b>Mid-Term Consumer Products:</b> New emission standards for consumer products which were not previously regulated.	ARB	1997 1999	2000-2005	Small/ Medium
<b>CP3</b>	<b>Aerosol Paint Standards:</b> Emission standards for aerosol paints.	ARB	1995 1998	1996 2002	Small
<b>CP4</b>	<b>Long-term Measures:</b> Long-term strategies for emission reductions from consumer products and aerosol paints. Only credited in South Coast.	ARB	2005 (anticipated)	2009	Large
	<b>Enhanced Inspection and Maintenance:</b> Implementation of Smog Check II program.	BAR	1995	1996-2002	Large
	<b>Pesticides:</b> Reduce VOC emissions from agricultural and commercial/structural pesticides.	DPR		through 2005	varies by District
<b>New</b>	<b>Combustion Chamber Deposits:</b> Emission reductions as a result of fewer combustion chamber deposits due to the use of additives in cleaner-burning gasoline.	ARB	1998	----	Large
<b>New</b>	<b>Heavy-Duty Off-Cycle Settlement:</b> Settlement with six heavy-duty diesel engine manufacturers.	ARB	----	----	Large
<b>New</b>	<b>Marine Pleasurecraft:</b> Additional reductions from marine pleasurecraft beyond national standard.	ARB	1998	2001-2008	Large
<b>New</b>	<b>Motorcycle Standards:</b> Adopt more stringent on-road motorcycle standards.	ARB	1998	2000-2004	Small
<b>New</b>	<b>Phase 3 Gasoline Specifications</b>	ARB	1999	2003	Medium
<b>New</b>	<b>Lower-Emission School Bus Replacement and Retrofit Program</b>	ARB	2000	2001	Small
<b>New</b>	<b>Low-Sulfur Diesel Fuel Requirements</b>	U.S. EPA/ ARB	pending	consistent with U.S. EPA	Large
<b>New</b>	<b>Heavy-Duty Diesel Truck Emission Standards</b>	U.S. EPA/ ARB	pending	2007	Large
<b>New</b>	<b>Inboard Marine Engine Standards</b>	ARB	2001	2006	Small

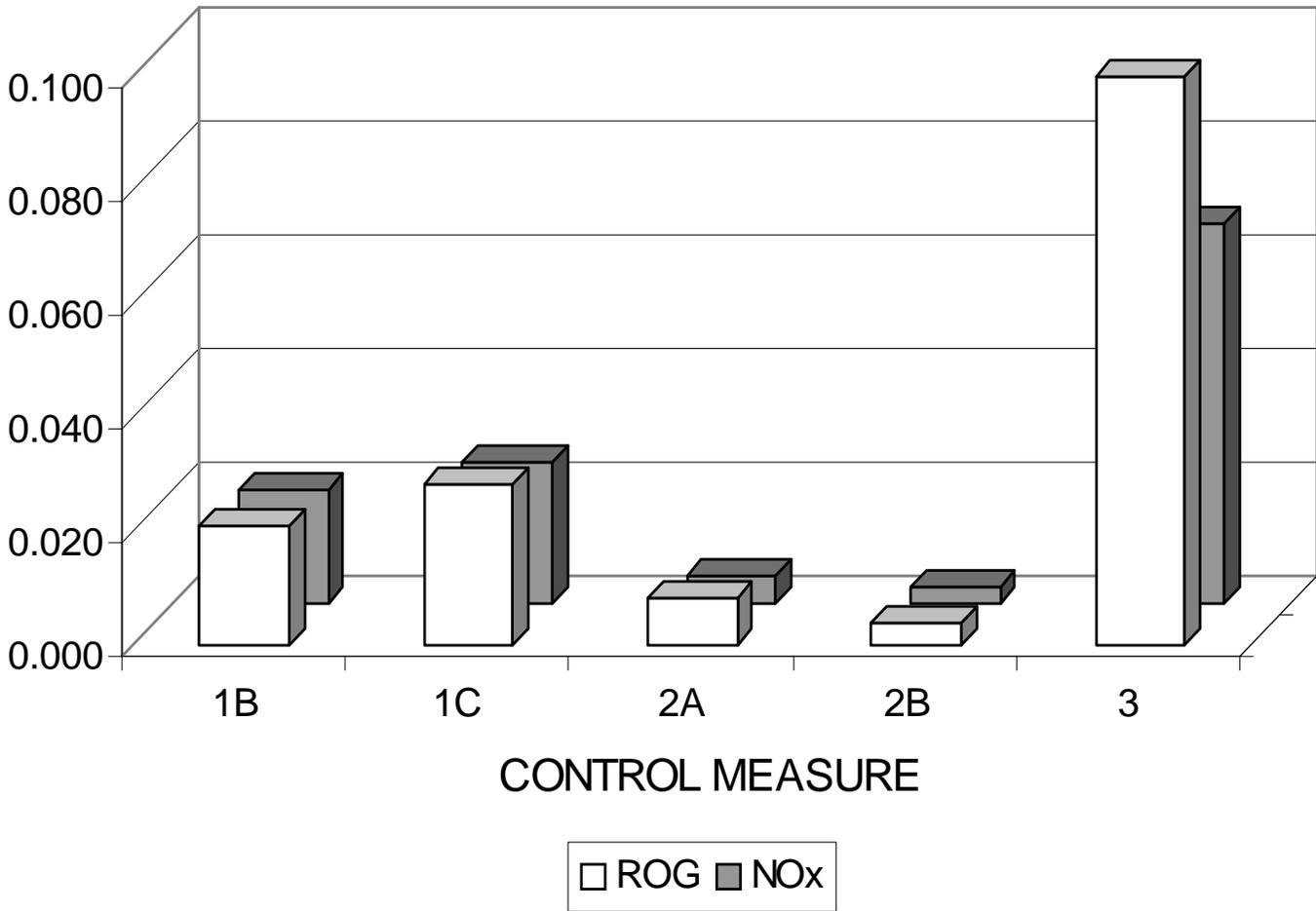
<b>Settlement</b>	<b>Gas Spillage:</b> Reduce spillage associated with fueling lawn and garden equipment.	ARB	1999	2001	Large
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	<b>Description</b>	<b>Agency</b>	<b>Adoption</b>	<b>Implementation</b>	<b>Emission Reductions</b>
<b>Settlement</b>	<b>Consumer Products:</b> Phase 2 of Mid-Term Measures.	ARB	1999	2003	Medium
<b>Settlement</b>	<b>Urban Transit Buses:</b> Require new urban transit buses to meet tighter emission standards.	ARB	2000	2000	Small
<b>Settlement</b>	<b>Enhanced Vapor Recovery:</b> Enhance existing gasoline nozzle vapor recovery systems	ARB	2000	2004	Medium
<b>Settlement</b>	<b>Architectural Coatings:</b> Suggested Control Measure for architectural coatings.	ARB	2000	2001-2003	Small
<b>Settlement</b>	<b>Medium/Heavy-Duty Gasoline Vehicles:</b> Adopt more stringent standards.	ARB	2000	2005	Small
<b>Settlement</b>	<b>Clean Fuel for Locomotives:</b> Require the use of cleaner fuel for locomotives in California.	ARB	pending	pending	Small

Figure 6-1

**ESTIMATED EMISSIONS REDUCTIONS  
FROM TRANSPORTATION CONTROL MEASURES**

TONS PER DAY REDUCED IN 2003



Note: Most of the reductions for measures 2A and 2B are accounted for in measures 1B and 1C.