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1991 SAN DIEGO REGIONAL AIR QUALITY STRATEGY

JUNE 30, 1992

SAN DIEGO AIR POLLUTION CONTROL DISTRICT 9150 CHESAPEAKE DRIVE SAN DIEGO, CA 92123-1096 (619) 694-3307

TUESDAY, JUNE 30, 1992

SAN DIEGO AIR POLLUTION CONTROL BOARD RESOLUTION ADOPTING REVISED REGIONAL AIR QUALITY STRATEGY

On motion of Member <u>Bilbray</u>, seconded by Member <u>Golding</u> the following resolution is adopted:

WHEREAS, the San Diego County Air Pollution Control District has been designated a nonattainment area by the California Air Resources Board regarding the state air quality standards for smog (measured as ground-level ambient ozone) and particulates, and the Western portion of the District has been designated nonattainment for carbon monoxide and nonattainment-transitional for nitrogen dioxide;

WHEREAS, the California Clean Air Act requires revised air quality plans for smog, carbon monoxide, and nitrogen dioxide be submitted to the Air Resources Board to provide for attainment of the health based air quality standards as expeditiously as practicable:

WHEREAS, the California Clean Air Act requires that revised air quality plans achieve emission reductions from all sources of at least five percent per year until attainment, or include all feasible control measures if the required five percent reductions cannot be obtained;

WHEREAS, the California Clean Air Act requires that each district plan be based upon a determination by the district board that the plan is a cost effective strategy to achieve attainment of the state standards by the earliest practicable date;

WHEREAS, annual emission reductions of five percent are not feasible because industry is already subject to stringent requirements;

WHEREAS, the Revised Regional Air Quality Strategy includes all feasible measures;

WHEREAS, the California Clean Air Act requires specified Transportation Control Measures and an Indirect Source Control program to the extent necessary to attain the state standards;

WHEREAS, the Revised Regional Air Quality Strategy includes Transportation Control Measures, and a regional process to implement an indirect source review program;

WHEREAS, the California Clean Air Act specifies other requirements which are addressed in the Revised Air Quality Strategy consistent with the California Air Resources Board's guidance;

6/30/92 (1, APCB)

WHEREAS, motor vehicles are the predominant source of reactive organic gases, oxides of nitrogen and carbon monoxide in San Diego County, and motor vehicle emissions will have to be substantially reduced to comply with the California Clean Air Act;

WHEREAS, the District is implementing a public information program to reduce motor vehicle emissions;

WHEREAS, market-based measures have the potential to reduce motor vehicle emissions and appropriate enabling legislation should be actively pursued;

WHEREAS, Mexican motor vehicles used in commuting to the San Diego area are a significant source of emissions and are required to be registered in California, but the California Department of Motor Vehicles is not requiring a biennial smog check for these vehicles at the time of registration renewal;

WHEREAS, adequate funding is not identified in the Transportation Control Measure Plan to implement the measures at the optimum level;

WHEREAS, the Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures;

WHEREAS, the California Administrative Code provides that major gasoline suppliers equip some of their retail service stations to sell clean fuels in the South Coast Air Quality management District in 1994-96, and in 1997 statewide;

WHEREAS, an accelerated schedule for the sale of clean fuels in San Diego County is necessary since the Revised Regional Air Quality Strategy does not achieve the required 5% annual emission reductions;

WHEREAS, Chapter 794 (Statutes of 1991) requires the Board to consider specified socioeconomic impact analysis before adopting, amending or repealing any rule or regulation;

WHEREAS, a socioeconomic impact analysis is not required for adopting the Strategy;

WHEREAS, an Environmental Impact Report has been prepared pursuant to the California Environmental Quality Act; and

WHEREAS, a noticed public hearing has been held on the Revised Regional Air Quality Strategy;

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<u>NOW THEREFORE BE IT RESOLVED</u> that the Air Pollution Control Board hereby adopts the Revised Regional Air Quality Strategy dated April 1992 (Strategy), including the SANDAG Transportation Control Measures Plan as revised April 1992 (TCM Plan), and Model Regional Transportation Demand Management Program revised April 1992 (TDM Program), incorporated in Appendix E of the Strategy and described in the Executive Summary dated April 1992, and directs the Air Pollution Control Officer to transmit this resolution and the Strategy to the California Air Resources Board for approval.

<u>BE IT FURTHER RESOLVED</u> that the previously stated TCM Plan is further revised by changing the Employment Traffic Element of the TDM Program to achieve a 1.5 regional average vehicle occupancy by 1999 as follows: (1) to be applicable to employers with 100 or more employees in the first year and employers of 60 or more in the second year, subject to annual review; (2) average vehicle ridership shall mean the number of employees reporting to a work site during the 6:00 to 10:00 a.m. weekday commute period divided by the number of motor vehicles or motor vehicle equivalents driven by these employees to the work site_and shall be extrapolated from returned employee surveys only, but the minimum return rate on employee surveys shall be 75 percent; (3) eliminating increases in average vehicle ridership targets after 1999 and the work program for employers with under 11 employees; (4) the regulation implementing the Employment Traffic Element will be examined in light of any new developments as part of the annual and triennial review of the Strategy as required by state law; (5) provide for multiple site employers to report as provided by the Employer Element to the Air Pollution Control District instead of multiple local agencies; (6) making Level 2 implementation as described without amendments 1, 2, and 3 as previously enumerated, as a contingency measure; (7) that zero- and low-emission vehicles shall receive credit as carpools; and (8) that the Air Pollution Control Officer is directed to propose in rulemaking a definition of "employee" which utilizes full-time equivalents.

<u>BE IT FURTHER RESOLVED</u> that the previously stated TCM Plan is further revised by replacing parking fees with economic differentials; and further that the Air Pollution Control Officer is directed to explore initiation of a reward system for carpoolers in lieu of parking fees for employees who drive to work alone.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to induce local transportation agencies to allow zero- and low-emission vehicles such rewards as free passage on toll roads and use of carpool lanes.

<u>BE IT FURTHER RESOLVED</u> that the previously stated TCM Plan is further revised by changing the College and University Traffic Element of the Transportation Demand Management Program to add issues regarding the college and university student trip reduction program in the record of the public hearing on the adoption of the Revised Regional Air Quality Strategy to the issues to be addressed by the College and University TDM Policy Advisory Committee in consultation with colleges, universities and community colleges during FY 93; and further that colleges, universities, community colleges and high schools shall be included in the phase I implementation of the trip reduction program, and that students shall be required to achieve the 1.5 average vehicle ridership target; and further that the Air Pollution Control Officer is directed to consider during rulemaking a requirement that drive-alone commuters shall help subsidize a transit pass for students through parking fees. _____

<u>BE IT FURTHER RESOLVED</u> that the previously stated TCM Plan is further revised by changing the Goods Movement/Trucking Traffic Element of the Transportation Demand Management Program to include an evaluation regarding restrictions on delivery schedules within the work program to be developed by SANDAG during FY 92-93; and further that the Goods Movement/Trucking Traffic Element shall be a contingency measure.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to support creation of an additional appeals board, with a two-year sunset, exclusively for TCM trip-reductionrelated appeals.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Board finds that the Revised Regional Air Quality Strategy is a cost effective strategy to achieve attainment of the state standards by the earliest practicable date.

<u>BE IT FURTHER RESOLVED</u> that adoption of the Revised Regional Air Quality Strategy does not constitute adoption of any proposed model ordinances incorporated into such Strategy, and the Air Pollution Control Board expressly recognizes that adoption of appropriate new ordinances, rules or regulations will take place at a future date, subject to the required preparation of a socioeconomic analysis and subject to public notice and hearing requirements.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Board requests the Air Resources Board coordinate with the Bureau of Automotive Repair and Department of Motor Vehicles to subject California-registered motor vehicles owned by Mexican residents to the biennial Smog Check program.

<u>BE IT FURTHER RESOLVED</u> that the implementation of rules pertaining to transportation control measures which are part of the Regional Air Quality Strategy is contingent upon action by the Legislature or the Department of Motor Vehicles to bring such California-registered motor vehicles owned by Mexican residents under the smog check program.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Board hereby requests the California Air Resources Board to accelerate the schedule for the sale of clean fuels in San Diego County.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to identify obstructions to, and facilitate the use of, small compressors to allow residents with natural gas service to refuel vehicles.

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<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to work with appropriate state and local agencies, business associations, environmental and other groups to define and gain a statewide consensus on market-based measures, analyze proposals, identify benefits and potential problems, and develop a legislative program for Board consideration.

<u>BE IT FURTHER RESOLVED</u> that every effort must be made to develop a regional consensus to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to call on cities and special districts to cooperate with the Air Pollution Control District and land use divisions of cities and the County of San Diego in developing an appropriate indirect source program.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to seek legislation calling for state and federal assistance for funding mass transportation beyond what is in the new Federal Transportation Plan.

<u>BE IT FURTHER RESOLVED</u> that, concerning A.B.2766 funds, if filing fees are used, such filing fees shall be limited to coverage of administrative costs only.

BE IT FURTHER RESOLVED that the Revised Regional Air Quality Strategy shall include a requirement of installation of solar water heaters or best available technology with new construction, but that a requirement of replacement of solar water heaters upon breakdown be income-based until a tax credit for such heaters is obtained; and further that the Air Pollution Control Officer is directed to develop a strategy for implementation of the solar water heater requirements, and to set a time certain within two years to return to the Board on the requirement for "point of sale" retrofit of solar water heaters.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to return to the Board with draft legislation for obtaining tax credits for solar water heaters and providing incentives for other clean air strategies.

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to draft a strategy for controlling costs of water heater retrofit.

<u>BE IT FURTHER RESOLVED</u> that a cumulative socio-economic impact assessment of measures in the Revised Regional Air Quality Strategy shall be performed. -

<u>BE IT FURTHER RESOLVED</u> that the Air Pollution Control Officer is directed to return to the Board with contingency measures on an annual basis for review or proposed implementation.

PASSED AND ADOPTED by the Air Pollution Control Board of the San Diego County Air Pollution Control District, State of California, this <u>30th</u> day of <u>June</u>, 1992 by the following votes:

AYES: Members Bilbray, Bailey, Golding and Williams NOES: Member MacDonald ABSENT: Members None

STATE OF CALIFORNIA)ss County of San Diego)

I, THOMAS J. PASTUSZKA, Clerk of the Air Pollution Control District, County of San Diego, Sta e of California, hereby certify that I have compared the foregoing copy with the original resolution passe and adopted by said Board at a regular meeting thereof, at the time and by the vote therein stated, which or inal resolution is now on file in my office; that the same contains a full, true and correct transcript therefrom and of the whole thereof.

Witness my hand and the seal of the Air Pollution Control District, County of San Diego, State of California, this 21st day of July, 1992.

THOMAS J. PASTUSZKA Clerk of the Air Pollution Control District

By Lather C Ryan, Deputy

APPROVED AS TO FORM AND LEGALITY COUNTY COUNSEL BY_ DEPUTY

Resolution No. 92-244 6/30/92 (1, APCB)

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1991 SAN DIEGO REGIONAL AIR QUALITY STRATEGY

INTRODUCTION

The San Diego Air Pollution Control District, the regional agency responsible for protecting public health from air pollution in San Diego County, has prepared a revision to the Regional Air Quality Strategy to comply with the California Clean Air Act.

The current Regional Air Quality Strategy, although updated in 1982, is primarily based on federal Clean Air Act of 1977. Unfortunately, the 1978 federal Act did not address air quality problems beyond 1987. Furthermore, Congress failed to address the problem until 1990 when the federal Act was finally amended.

Because of this delay, California adopted the California Clean Air Act of 1988, which requires areas like San Diego to update the Regional Air Quality Strategy in 1991. Unlike the federal Clean Air Act, state law does not set deadlines for attaining standards or impose sanctions for noncompliance. Instead, it is performance based, with performance requirements reflecting the severity of the pollution problem. Generally, provisions of the state Act will meet federal requirements; however, over the next few years it will be necessary to revise the Strategy to meet unique federal mandates.

Air quality standards are established to protect public health. The California Clean Air Act requires the Strategy address both state and federal air quality standards; however, state standards are generally more stringent than federal standards. Furthermore, recent data indicate that the federal standards may not be sufficient to protect public health or, at least, may not do so with an adequate margin of safety.

The state Act's fundamental performance requirement is to reduce emissions by 5% per year, measured from the 1987 base year. While this may be possible in some areas, it will not be in areas like San Diego, where significant emission reduction programs are already in place. If the 5% requirement cannot be met, the Act provides an alternative performance requirement: implementing all feasible measures on a practical schedule.

To assure that the Strategy does not become outdated, the state Act establishes reporting and Strategy revision schedules. Annually, the District must report progress to the state Air Resources Board in meeting the Strategy's control measure implementation schedules. Every three years, the overall effectiveness of the Strategy must be assessed and submitted to the state Board in a report adopted at a public hearing. The District must also revise the Strategy triennially to ensure progress incorporated in the Strategy is maintained, and incorporate new data or projections.

Reflecting the triennial update requirements in the state Act, the Air Resources Board does not require the 1991 Strategy demonstrate when air quality standards will be attained. That will be accomplished in the required first triennial Strategy revision. Accordingly, this Strategy is designed to implement all feasible measures.

Following release of the Draft 1991 Regional Air Quality Strategy by the Air Pollution Control Board in July, public workshops were held in various parts of the County during August and September. Following the workshops, appropriate revisions were made in response to public comment. The Transportation Control Measures Plan (TCM Plan) adopted by the San Diego Association of Governments (SANDAG) was returned to SANDAG in October for necessary revisions. An amended TCM Plan was resubmitted in March 1992. The final Strategy along with the environmental impact report was submitted for Board consideration and adoption in June 1992.

Pursuant to the California Clean Air Act's requirement to reduce emissions starting in 1988, some control measures in the draft Strategy have already been adopted. Implementing the remaining measures will continue based on the adopted implementation schedule. Regulatory development is conducted with full participation by affected industries and the public. District Rules and Regulations implementing the Strategy will be designed to provide the emission reductions required by law, while taking into consideration the cost to regulated businesses. As a result of recent legislation, regulatory development will include a socioeconomic impact evaluation for each new or revised rule or regulation affecting air quality. Regulatory development must consider these impacts, and make a good faith effort to minimize adverse economic impacts.

To assist the reader in understanding conventions in the Strategy, the California Clean Air Act is the state law requiring the 1991 Regional Air Quality Strategy, and is referred to as the Act. Where discussed, the federal Clean Air Act is referred to as the federal Act. The San Diego Regional Air Quality Strategy has evolved considerably from its inception in the 1970's, and this 1991 update is referred to as the Strategy. Where necessary for clarity or to differentiate between previous Strategies, it is also referred to as the 1991 Strategy.

AIR QUALITY PROGRESS

It is no secret that San Diego County is home to such traditional perceptions of California culture as the majestic Pacific Ocean, set off by sunny skies, sandy beaches, and a mild climate. Located among the smoggiest metropolitan area in the United States to the north, Mexico's second-largest city to the south, and scenic mountains to the east, San Diego County enjoys an economy that has evolved to strength through diversification. America's sixth-largest city is the regional hub of an urbanized coastal plain that includes world-famous tourist attractions, major employment centers, and the largest Naval port in the Free World.

However, the attributes that make this such a desirable place to live are also the primary causes of San Diego County's smog problem. The ample sunshine gracing our beaches also drives the photochemical reactions that create smog. The sea breeze that moderates our climate can sit beneath a layer of warm air, creating a temperature inversion trapping polluted air at ground level. The mountains to the east prevent polluted air from dispersing. These combined factors cause smog concentrations to build up in the trapped air and exceed health-based air quality standards.



Smog is not a pollutant emitted directly into the air but forms in the atmosphere as the result of photochemical reactions involving reactive organic gases and oxides of nitrogen. These two pollutants are precursors to smog and are emitted from motor vehicle, industrial, commercial and household activities. Because photochemical reactions take time to transform precursor emissions

Figure 1

into smog, peak smog concentrations usually occur in the afternoon, a considerable distance downwind from the emission sources. In San Diego County, smog standards are exceeded most frequently in the foothills east of the metropolitan area. The polluted air rises to the base of the marine inversion layer, typically around 2000 feet, where it is blown eastward by the sea breeze and trapped against the foothills. (Figure 1)

SMOG TRANSPORT

Unhealthful smog concentrations in San Diego County are not caused solely by pollution sources in the region. Smog is transported into the San Diego area from the South Coast Air Basin (greater Los Angeles area) during "Santa Ana" wind conditions. Winds blowing toward the southwest transport the South Coast smog out over the ocean, and the sea breeze brings it onshore into San Diego County. (Figure 2) When the transported smog cloud is at ground level, the highest smog concentrations are measured at coastal and near-coastal monitoring sites. When the smog cloud is elevated, coastal sites may be passed over, and the transported smog measured further inland.

No significant smog transport from Tijuana has been detected in San Diego. When the wind blows out of the south, weather conditions include a higher inversion level resulting in lower ground level concentrations.



Figure 2

AIR OUALITY

Smog

The federal Environmental Protection Agency has established a national ambient air quality standard for smog (measured as ground-level ambient ozone) at 12 parts per hundred million (pphm). The California standard is more protective at 9 pphm.

Smog concentrations in San Diego County exceed both the federal and state standards. In 1990, the federal standard was exceeded on 39 days, while the more stringent state standard was exceeded on 139 days. In 1991, the number of days exceeding smog standards fell to their lowest levels since expanded monitoring began in the mid-1970's. The federal standard was exceeded on 26 days, and the state standard on 106 days. While the combination of industrial and motor vehicle pollution controls have provided a steady, significant improvement in air quality, dramatic improvements such as 1991 are usually related to more favorable meteorology.

In 1991, as in 1982, a Pacific Ocean El Niño combined with a major volcanic eruption, affecting weather patterns worldwide. The El Niño increases afternoon inversion heights and average wind speeds, dispersing pollution and reducing smoggy days. High concentrations of volcanic dust clouds significantly reduce sunlight, essential to the photochemical process producing smog. As the El Niño and volcanic influences diminish, the continued influence of growth and smog control measures on air quality will emerge over the next few years as weather patterns return to normal.

Historical air quality data have distinguished between exceedences of the standards predominantly caused by transported pollution versus local emissions. The number of days since 1980 that smog concentrations in San Diego County exceeded the federal and state smog standards due to local San Diego emissions and transported smog from the Los Angeles area is shown in Figures 3 and 4. About 40% of the state smog standard violations, three quarters of the federal standard violations, and all the highest alert level concentrations are caused by transport.



Figure 3 Days Exceeding Federal Smog Standard Local vs Transport

Figure 4 Days Exceeding State Smog Standard Local vs Transport



While the long-term trend is clearly downward for the higher peak concentrations above the federal standard, since 1982 there has been an increasing number of days over the more stringent state standard. Thus, exposure to moderately unhealthful smog concentrations is increasing, even though the more severe peak concentrations are being reduced.

Peak smog concentrations due to local San Diego emissions and transported smog from the Los Angeles area in each year are shown in Figure 5. Peak smog concentrations are from pollution transported from the Los Angeles area. Those annual peak concentrations have reduced from 39 pphm in 1978 to 21 pphm in 1991 due to controls in the South Coast Air Quality Management District. Meanwhile the peak concentrations due to local San Diego emissions have been less severe but remain over the standard, reducing from 17 pphm in 1979 to 14 pphm in 1991.



San Diego is not required to overcontrol emissions to compensate for pollution transported from the South Coast Air Basin. Instead, downwind transport-impacted areas such as San Diego must reduce local emissions below the level at which violations of the state standard would occur in the absence of transport. The upwind source areas are responsible for attaining standards in all areas affected by emissions under their jurisdiction. Thus, while the South Coast Air Quality Management District is required to mitigate smog transported to San Diego from the Los Angeles area, the formidable goal of the San Diego Regional Air Quality Strategy will be to reduce the locally caused peak smog concentration from 14 pphm in 1991 to the 9 pphm state smog standard as expeditiously as practicable.

Other Pollutants

While smog is the most serious air quality problem in San Diego County, there are other air quality problems also facing the region.

Carbon monoxide concentrations exceed state and federal standards in downtown San Diego and Escondido. Western San Diego County is therefore designated a carbon monoxide nonattainment area. Motor vehicles are the source of 90% of the carbon monoxide in San Diego County. Between 1985 and 1989, the state standard was exceeded three or fewer times annually, except in 1989 with five days over the standard. In 1990 the federal eight-hour carbon monoxide standard (9.5 ppm) was not exceeded, the state standard (9.0 ppm) was exceeded on just one day, and neither standard was exceeded in 1991. As a result, the District will recommend requesting the Air Resources Board change San Diego's designation from nonattainment to nonattainment-transitional, indicating attainment of carbon monoxide standard is expected in the next few years without needing to develop additional control measures beyond the motor vehicle control program and transportation control measures.

The federal nitrogen dioxide standard (5 pphm annual average) has not been exceeded since 1977, but western San Diego County is a nonattainment area for the state one-hour standard (25 pphm), based on one violation in both 1987 and 1988. These were the first violations of the state standard since 1982. There have, however, been no exceedences since 1988. Three years of no violations qualifies San Diego to be redesignated as attainment. As a result, the District will recommend requesting the Air Resources Board change San Diego's nitrogen dioxide designation attainment.

Both state and federal particulate matter standards focus on inhalable particulates ten micrometers in diameter or smaller (PM10). The state particulate standards ($50 \mu g/m^3$ twenty-four hour and $30 \mu g/m^3$ annual geometric mean) are not being met; however, the Act does not require a particulate control strategy as part of the 1991 Strategy. San Diego County has met the federal particulate matter standards ($150 \mu g/m^3$ twenty-four hour and $50 \mu g/m^3$ annual arithmetic mean) since they were promulgated in 1987.

Both state and federal standards for sulfur dioxide and lead are being met. The sulfur dioxide standards have never been exceeded. The state and federal lead standards have not been exceeded since 1980.

PREVIOUS CONTROL EFFORTS

Sar. Diego County's original Regional Air Quality Strategy was developed in the early-to-mid-1970's, pursuant to the 1970 federal Act. The emphasis was on controlling photochemical smog. The Strategy was substantially revised in 1979 in response to the 1977 federal Act. The 1979 Strategy reflected a comprehensive air resources management program and included most of the currently adopted smog control measures. The focus was expanded to address other pollutants for which San Diego County exceeded federal standards at the time: carbon monoxide, nitrogen dioxide and particulates.

The 1979 Strategy was limited to only locally generated smog, even though such a provision was not specified in law until the 1988 California Clean Air Act. In approving the 1979 Strategy, the Air Resources Board and the Environmental Protection Agency agreed that San Diego should not be required to overcontrol emissions to compensate for transported pollution.

As required by the 1977 federal Act, the Strategy was updated in 1982. This revision was primarily a "fine tuning" of the 1979 Strategy. Additional reasonably available control measures were added and the stringency of control measures already in the Strategy increased. Pursuant to Environmental Protection Agency policy based on the scientific knowledge of photochemistry in the 1970's, both the 1979 and 1982 Strategies primarily addressed reactive hydrocarbons. Although oxides of nitrogen are also a smog precursor, controls for this pollutant were included only to the extent necessary to maintain the federal nitrogen dioxide standards.

In 1982, a photochemical modeling analysis projected that a 93 ton per day reduction in reactive hydrocarbon emissions from the 1978 base level would be needed by 1987 to attain the federal smog standard on days when local emissions caused peak concentrations. The Strategy was actually designed to achieve a 119 ton per day reduction to provide an adequate margin of safety and to ensure attainment would be maintained through 2000.

Progress Since 1978

In 1978, San Diego was nonattainment for state and federal standards for smog, carbon monoxide, nitrogen dioxide, particulates and lead. Only the sulfur dioxide standards were being met. Since then, the state and federal lead standards and the federal nitrogen dioxide standard have been attained and maintained. The federal particulate standards were revised in 1987, from a total

particulates to a health-based standard for inhalable particulates less than ten microns¹ in diameter. San Diego has not exceeded the new federal standards. Thus, San Diego's current nonattainment problems relate to the state and federal smog and carbon monoxide standards and the state nitrogen dioxide and particulate standards.

The following discussion addresses progress in resolving nonattainment of the smog, carbon monoxide and nitrogen dioxide standards. Baseline 1987 emissions and emission reductions since 1978 are presented in greater detail in the 1987 Baseline Planning Emission Inventory, Appendix A to this Strategy. Particulates are not included because there is little historical data, and they are not required to be addressed in the 1991 Strategy.

<u>Smog</u>

As shown previously in Figure 4, the number of days that locally generated smog exceeded state standards in 1990² is up 60% from 1980, increasing from 53 days in 1980 to 86 days in 1989. In 1991, the total number of days over the standard fell to 106, but this decline was influenced by unusual meteorology and is not representative, as previously discussed. While the number of days with locally generated smog over the standard have increased, locally generated peak smog concentrations have been reduced by 3 pphm from 1979 to 1991. A further 5 pphm reduction is needed to attain the state standard.

 $^{^{1}}$ A micron is 1/1000 of a millimeter.

²Analysis of local versus transport for 1990 is not available.





Because smog is produced by the reaction of reactive organic gases and oxides of nitrogen in the atmosphere, control of these two precursor pollutants is necessary to reduce smog levels. Reactive organic gas emission reductions between 1978 and 1987 are estimated to have been 94 tons per day. As can be seen in Figure 6, on-road motor vehicle controls contributed most of the reductions (93 tons per day). The 9 tons per day reductions provided by industrial controls were mostly offset by emission increases in other stationary sources, such as agriculture and fuel combustion, and other mobile sources, such as ships, aircraft, farm and construction equipment. The 93 tons per day emission reductions projected for attainment were achieved, but the full 119 tons per day reactive organic gas emission reductions projected in the 1982 Strategy were not.

Several factors contributed to the Strategy not achieving the anticipated emission reductions. One factor was the SANDAG Transportation Control Plan contained in the Strategy relied on voluntary actions that achieved only a small portion of the very modest reductions targeted for transportation controls. The measures depended on planned improvements in transit, bicycle facilities and the regionwide carpool matching program to induce people into alternative transportation modes. The projected reductions in vehicle trips and emissions did not occur.

Also, the Smog Check program achieved only half its projected reduction effectiveness. The Environmental Protection Agency had projected a program effectiveness of 25% from inspected vehicles, but subsequent evaluation determined the Smog Check program reduced reactive organic

gases 12.3% in 1987. As a result, program improvements designed to increase emission reductions to 25% were implemented in 1990. Currently, program effectiveness is estimated to be 17%. The federal Environmental Protection Agency is establishing further Smog Check program enhancement requirements. The state Inspection/Maintenance Review Committee is reviewing federal requirements and developing proposed program improvements.

Another possible factor is that control of oxides of nitrogen, also a smog precursor, were not included in the smog strategy: the focus was on reducing reactive organic gases. Unlike reactive organic gases, oxides of nitrogen, the other smog precursor pollutant, has its own state and federal air quality standards. Since the federal nitrogen dioxide standard had not been exceeded since 1977, the 1982 Strategy relied on motor vehicle emission controls, the smog check program, and an industrial new source review program to provide oxides of nitrogen reductions sufficient only to maintain the federal nitrogen dioxide standard. No additional oxides of nitrogen measures were proposed.

As shown in Figure 7, progress in reducing oxides of nitrogen emissions has differed substantially from reactive organic gases. Oxides of nitrogen emissions increased through the early 1980's and then began a continuing decline. Consequently, 1987 emissions were slightly higher than 1978 but do not represent an upward trend. Ineffective voluntary transportation control measures and unanticipated traffic growth (discussed later) contributed greater than anticipated oxides of nitrogen emissions. Also worthy of note is the increase in other mobile sources, such as ships, aircraft, farm and construction equipment. The unanticipated emissions increase may be part of the reason the federal smog standard was not attained in 1987 even though the reactive organic gas emission reductions projected to be necessary were achieved.



While the factors discussed above are relevant, the two major components contributing to the continued nonattainment are motor vehicle emissions and growth, especially growth. A recent reevaluation of motor vehicle emission calculation methodologies has substantially increased evaporative emissions during vehicle operation. These emissions were previously thought to be insignificant.

Further research also indicates there are significant excess emissions from driving cycles not represented during vehicle certification testing, referred to as off-cycle emissions. Preliminary indications are that current methodologies are still underestimating motor vehicle emissions. The results of research regarding off-cycle emissions are projected to be available for the first triennial Strategy update. Because motor vehicles will likely constitute a larger fraction of emissions, programs to reduce motor vehicle use, such as transportation control measures and indirect source control, will be increasingly important.

The crucial factor is that regional growth, especially vehicle travel, outpaced the San Diego Association of Governments (SANDAG) Series 5 growth forecasts the Strategy was designed to address, resulting in unanticipated emissions. In 1987, vehicular travel was 15% greater than the growth forecasts had projected. Growth was even more rapid between 1987 and 1990. Figure 8

illustrates the increasing unanticipated growth, comparing actual regional growth for population, daily vehicle trips, and daily vehicle miles traveled to the growth reflected in the 1982 Strategy.



Because the benefits from emission reduction programs can be eroded by unanticipated growth, the Strategy is sensitive to inaccurate growth projections. Regional population forecasts are updated every two years, and always seem to under-predict population growth. Table 1 illustrates the performance of regional growth projections. The Series 5 projections adopted in 1981 and used in the 1982 Strategy underprojected 1987 population by about 80,000, and 1990 by 218,000. The

Series 6 projections adopted in October 1983 similarly underprojected population, in 1987 by about 60,000 and 1990 by 163,000.

Of concern is the continued underestimation of regional growth. The actual population in 1990 exceeds the projected Series 5 growth for 1995. If growth continues consistent with recent trends, the 1995 population projected by Series 6 will be realized in 1991, and for Series 7, upon which the 1991 Strategy is based, in 1992.

Population	1987	1990	1995	2000
Actual	2,247,731	2,498,016		
Series 5	2,167,300	2,280,000	2,473,500	2,647,200
Series 6	2,187,906	2,334,646	2,526,940	2,699,179
Series 7			2,585,134	2,784,200

Table 1Expected and Actual Regional Growth inPopulation, Vehicle Trips and Vehicle Miles Traveled

The unanticipated population increase resulted in increases in associated polluting activities, (e.g., more homes to paint and heat, as well as associated travel increases). Because the difference between the actual and projected growth in trips and travel is greater than the increase in population, trips and travel grew at about twice the rate of population growth as people travelled further and more often. The unanticipated increase in trips and travel diminished the emission reduction benefits from the motor vehicle control program. The rapid traffic growth in San Diego and many areas of the state is why the state Act requires transportation control measures to substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip¹.

Nitrogen Dioxide

San Diego's 1978 nonattainment designation for the federal annual average nitrogen dioxide standard was based on exceedences in 1976 and 1977. From 1978 on, the standard has not been exceeded. Consequently, San Diego was redesignated to attainment for the federal nitrogen dioxide standard in 1981. The state one hour standard has been exceeded on only three days since 1978, one day each in 1981, 1987 and 1988. Because oxides of nitrogen are a precursor to photochemical smog, progress in emission control programs is discussed above with that pollutant.

¹California Health and Safety Code §40919.

Carbon Monoxide

Carbon monoxide levels have remained very close to the state and federal 8-hour standard for over a decade, exceeding the standard by only a small amount just a few times most years. Approximately 90% of carbon monoxide emissions are from motor vehicles, and carbon monoxide emissions were reduced by 15% between 1978 and 1987. As with reactive organic gases and oxides of nitrogen, unanticipated growth undermined much of the effect of motor vehicle controls. Also, the transportation control measures and Smog Check program failed to achieve their intended results. Because carbon monoxide is more tightly linked to motor vehicles than other pollutants, the success of motor vehicle related programs is essential. Therefore, it is not surprising that peak carbon monoxide levels have not dropped appreciably.





EXISTING EMISSION TRENDS

Projected future emission trends in the 1991 San Diego Regional Air Quality Strategy are based on the updated SANDAG Series 7 growth forecasts. It is necessary to use the updated forecasts because unanticipated growth rendered the original Series 7 projections obsolete by 1990. Series 8 forecasts will be based on the 1990 census, but will not be available for incorporation in

the 1991 Strategy. For the first triennial Strategy revision, updated forecasts will be incorporated pursuant to the Act's requirements.

The Act specifies 1987 as the base year for determining emission reductions. Figures 10 through 12 illustrate the projected effect of regional economic and traffic growth, present baseline emission trends and relative contributions of other mobile sources and stationary sources to emission trends with 1987 controls. However, the trends for motor vehicles include emission reductions from some programs adopted after 1987, and cannot be corrected because of the structure of the state Board's methodology for estimating motor vehicle emissions. This results in motor vehicle emissions demonstrating a disproportionate decline, and as a result, the projected baseline emissions for motor vehicles are underestimated. This creates the mistaken impression that baseline controls will lower motor vehicle emissions significantly, while leaving stationary and other mobile source emissions unaffected because no post-1987 controls are included in the trends for those categories.

The graphs show that without new controls, reactive organic gas and oxides of nitrogen emissions will begin increasing due to growth by 2000. Additional control measures are necessary to not only offset the impacts of growth, but continue progress toward attaining the smog standard by reducing emissions from existing levels.







Figure 11 Oxides of Nitrogen Emission Trends (tons per day)





Unless further controls are adopted, stationary sources will become the largest contributor to reactive organic gas emissions in the next decade. Because of motor vehicle emission standards adopted before 1987 that take effect in the early 1990's, motor vehicle emissions, historically the largest contributor to reactive organic gas emissions, will be reduced to less than a 50% contribution before 2000. For oxides of nitrogen and carbon monoxide, however, motor vehicles will remain the long term predominant source.

While motor vehicles will remain the largest contributor to oxides of nitrogen emissions, other mobile sources such as ships, aircraft, farm and construction equipment will emit nearly 60% more than stationary sources by 2010. The contribution of other motor vehicles to reactive organic gases and carbon monoxide will not change significantly.

Because motor vehicles are currently the predominant source of emissions, projected emission trends are highly sensitive to motor vehicle emissions and emission reductions. The emission projections for motor vehicles represent current growth projections and estimation methods. Growth projections have significantly underestimated population and travel related growth over the past decade, as shown earlier when actual growth exceeded projections in the 1982 Strategy. As a result, it is reasonable to assume that the motor vehicle emission projections are optimistic and emission trends and control programs in the 1991 Strategy will be similarly sensitive to unanticipated growth, which will dilute projected emission reductions from motor vehicle controls.

Additionally, advances in methods of quantifying motor vehicle emissions have also proven over the past several years that motor vehicle emissions have been significantly more than previously anticipated. Research is continuing, with indications that current methods still significantly undercalculate motor vehicle emissions. Because motor vehicle emission projections are optimistic and sensitive to unquantified emissions and unanticipated growth, transportation, indirect source, and motor vehicle control measures become more important in controlling smog, as well as attaining and maintaining the carbon monoxide and nitrogen dioxide standards.

THE CALIFORNIA CLEAN AIR ACT

Background

Previous Regional Air Quality Strategies have been developed in response to the federal Act. The Strategy adopted in 1982 anticipated attaining federal smog and carbon monoxide standards by 1987. However, these standards were not attained and federal law was not clear regarding post-1987 requirements.

The lack of expedient Congressional action to re-authorize the federal Act served as the impetus for the California Legislature to address the state's continuing air quality problems. As a result, California adopted the California Clean Air Act¹, which significantly revised Division 26 of the California Health and Safety Code, requiring revised air quality strategies and control measures to attain and maintain the state ambient air quality standards.

The Act established additional responsibilities for the state Air Resources Board and expanded or strengthened state authority over pollution sources more appropriately regulated at the state level. Examples include but may not be limited to providing guidance to local districts, area designation, transport area identification, transport data analysis, consumer product regulations, motor vehicle standards, and transportation control measure guidance for heavy-duty trucks.

Local district responsibilities include but may not be limited to Strategy preparation, revision, and implementation; transportation control measures; a new source review program; an indirect source review program; best available retrofit control technology for existing sources; annual reports summarizing progress toward implementation, including achieved emission reductions; triennial review correcting deficiencies in meeting progress and incorporating new data or projections into the strategy; and submitting strategy revisions to the Air Resources Board.

While local districts are responsible for achieving air quality standards as well as meeting state and federal program requirements, the state Board retains oversight authority. In the event districts fail to adopt or implement adequate programs, the state Board must act.

¹ AB2588, Sher (Ch 1568, Stats 1988).

Area Designation

The state Board is required to establish criteria and designate areas of the state as attainment, nonattainment, or unclassified for air quality standards. The designation criteria¹ were established June 8, 1989,² followed by area designations on June 9, 1989³. An attainment designation in a specified area signifies that the state standard for that pollutant was not exceeded. A nonattainment designation indicates the state standard was exceeded at least once, excluding a violation caused by an exceptional event. An unclassified designation indicates that the data are inadequate to determine whether the area is attainment or nonattainment. Area designations are reviewed annually.

In 1990, the state Board amended the criteria for area designations, adding a new nonattainmenttransitional category. It provides recognition of progress toward attainment, and the potential for long term planning relief for areas close to the standard. To qualify for the new nonattainmenttransitional designation, areas had to show no more than three violations of the applicable standard in the previous calendar year; meteorological conditions must be representative for the area; multiyear air quality and emission data must indicate ambient air quality either has stabilized or is improving; and,the boundaries of the redesignated area must be consistent with established area or sub-area boundaries.

The San Diego Air Basin was designated as attainment for sulfur dioxide, sulfates, and lead; and unclassified for hydrogen sulfide and visibility reducing particles. The basin was designated nonattainment for ozone and suspended particulate matter. The western portion was designated nonattainment for carbon monoxide and nitrogen dioxide and the remaining portion is unclassified for carbon monoxide and attainment for nitrogen dioxide. In 1990, the western portion was redesignated nonattainment-transitional, pursuant to the new criteria.⁴

Transport Area Identification

The Act requires ozone nonattainment areas be designated as receptor/contributor or nonreceptor/non-contributor areas of transported air pollutants⁵. Accordingly, the state Board

¹ Title 17, Art. 3 of Subchapter 1.5, California Code of Regulations.

² California Health and Safety Code §39607(e).

³ California Health and Safety Code, §39608.

⁴ Title 17, California Code of Regulations, §60200(c).

⁵ California Health and Safety Code §39610(a).

identified each district in which transported air pollutants from upwind areas outside the district caused or contributed to a violation of the ozone standard, and identified the district of origin¹.

Strategies for downwind districts are to provide sufficient emission reductions to attain and maintain the standard assuming the absence of transported pollutants². Strategies for upwind districts are to include measures established by the state Board to mitigate the impact on downwind districts. The two principal requirements of upwind districts are to implement programs for new source review and apply best available retrofit control technology affecting 75% of the reactive organic gas and oxides of nitrogen sources contributing to violations of the smog standards in downwind districts. These programs are to be in place by 1994.

The San Diego region is a designated receptor area for transported air pollutants from the South Coast Air Basin³. Accordingly, the Strategy is required to mitigate the air quality impacts caused by local pollution only.

Strategy Requirements

Air Quality Strategies must provide for meeting standards as early as possible and make annual progress towards attainment using all necessary or feasible control measures. The Act established three area classifications based on the time needed to attain the standards: moderate, serious, and severe. Moderate areas are those able to attain the standard by the end of 1994⁴, and serious areas by the end of 1997⁵. Areas unable to attain the standards until after 1997 are classified as severe⁶. The state Board has designated the San Diego region as a severe area for purposes of Strategy development⁷.

Strategies in severe areas are required to contain the following measures⁸:

• A permitting program designed to achieve no net increase in emissions of nonattainment pollutants or their precursors from all permitted new or modified stationary sources;

¹ California Code of Regulations §70500.

² California Health and Safety Code §40912.

³The South Coast Air Basin includes the nondesert portions of Los Angeles, San Bernardino, and Riverside Counties, and all of Orange County.

⁴ California Health and Safety Code §40918.

⁵ California Health and Safety Code §40919.

⁶ California Health and Safety Code §40920.

⁷ Guidance on Estimating Emission Reductions Needed to Attain State Standards and for Determining Area Classifications in Response to the California Clean Air Act, Air Resources Board, October, 1990. ⁸California Health and Safety Code §40920.

- A requirement for implementing best available retrofit control technology¹ to existing stationary sources;
- Reasonably available transportation control measures;
- Transportation control measures to substantially reduce the rate of increase in passenger vehicle trips and vehicle miles travelled per trip;
- Transportation control measures to achieve an average during weekday commute hours of 1.5 or more persons per passenger vehicle by 1999, and no net increase in vehicle emissions after 1997;
- Provisions to develop area source and indirect source control programs;
- Provisions to develop and maintain an emissions inventory system to enable analysis and progress reporting and a commitment to develop other analytical techniques to carry out the reporting requirements for the triennial report;
- Provisions for public education programs to promote actions to reduce emissions from transportation and areawide sources;
- Measures to achieve the use of a significant number of low emission motor vehicles by operators of motor vehicle fleets;
- Measures sufficient to reduce overall population exposure to ambient pollutant levels in excess of the standard by at least 25% by December 31, 1994; 40% by December 31, 1997; and 50% by December 31, 2000, based on average per capita exposure and the severity of the exceedences, using the average level of exposure experienced during 1986-1988 as the baseline.

Individual control measure evaluations are to include emission reductions; cost or range of costs per unit of emissions reduced (cost effectiveness); proposed implementation date; implementing agency; and factors which may alter the potential effectiveness of the control measure, for example, technological feasibility, and enforceability. Air Resources Board guidance suggests the planning forecast should extend through at least the year 2000 to ensure future population and industrial growth will not overshadow air quality gains. The District has adequate data to project trends through 2010.

¹ Best available retrofit control technology as defined in California Health and Safety Code §40406 means an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.

growth will not overshadow air quality gains. The District has adequate data to project trends through 2010.

An annual emission reduction of 5%, averaged over three years, beginning in 1988 is required. If the 5% annual reduction is not achievable, the Strategy must contain all feasible measures, follow an expeditious adoption schedule to achieve the next best level of reduction, and show that every reasonable and necessary step is being taken to achieve state standards.

To achieve an annual 5% incremental emission reduction in ozone precursor emissions, both reactive organic gases and oxides of nitrogen would have to be reduced by 65% by 2000. As shown in Table 2, the projections indicate a reduction in the 1987 baseline by 2000 of 48% and 38% in reactive organic gases and oxides of nitrogen emissions, respectively, not adjusted for growth. For reactive organic gases emissions, this is a shortfall of 17%; for oxides of nitrogen emissions a shortfall of 27%. Accordingly, all feasible measures must be implemented on a practical but expeditious schedule.

	Reactive Organics	Oxides of Nitrogen
Percentage emission reduction required by the California Clean Air Act by 2000 (5% reduction per year from 1987)	65%	65%
Reduction anticipated from ARB new vehicle emission measures by 2000	36%	22%
Reduction from District industrial and area source control measures	5%	8%
Reduction from ARB consumer products control measures	4%	
Reduction from ARB lawn and garden utility equipment and other mobile source control measures	2%	6%
Emission reductions estimated from transportation control measures	1%	2%
Total reduction from ARB area and mobile source measures, District industrial and area source control measures, and transportation control measures	48%	38%
Estimated shortfall in meeting the 5% annual emission reduction requirement	17%	27%

TABLE 2Emission Reduction Percentages forReactive Organics and Oxides of Nitrogen

INSTITUTIONAL STRUCTURE FOR STRATEGY IMPLEMENTATION

Industrial Sources

The Air Pollution Control District is responsible for controlling stationary air pollution sources as provided in state law¹. Pursuant to its charter, the Air Pollution Control District regulations currently address a wide variety of industrial and commercial operations, and require operational controls on a multitude of processes.

The District's governing board is the San Diego County Board of Supervisors acting as the Air Pollution Control Board. The Air Pollution Control Board adopts District Rules and Regulations, and is accountable to all residents of San Diego County.

The California Air Resources Board is the state air pollution control agency, with local oversight responsibilities. The state Board adopts statewide regulations and policies, and has substantial oversight authority. In the event any District fails to comply with state or federal requirements, the Air Resources Board may adopt, implement, and enforce the necessary regulations.

Areawide Sources

Areawide sources are individually small, but have a significant cumulative impact because there are so many. Examples include consumer products, residential hot water heaters, and home furnaces.

Historically, both the state Board and the local districts had authority to regulate various areawide sources. The Act redefined that authority, requiring the state Board address certain classes where consistent, statewide regulation seemed practical, and leaving local districts responsible for the remainder. Two specific categories explicitly delegated to the state Board are consumer products² and small utility engines³. Examples of consumer products include floor waxes, detergents, automotive products, and household cleaners. Examples of small utility engines include lawn mowers, chain saws, edgers, and trimmers.

¹California Health and Safety Code, Division 26.

²California Health and Safety Code §41712.

³California Health and Safety Code §43018.

Mobile Sources

The state Board establishes emission standards for motor vehicles, and regulates other motor vehicle related activities, such as aftermarket parts certification and fuel standards.

Under its charter in state law, the state Board began regulating motor vehicle emissions in the 1960's, ahead of federal efforts to do so. Recognizing California's unique air quality problems, the federal Act allows California to set its own vehicle emission standards as long as they are at least as protective of public health as federal requirements. Historically, California's motor vehicle emissions controls have generally been more stringent than the federal program.

While the state Act did not amend the existing institutional structure for regulating vehicle emissions, it directed the state Board to implement programs necessary to reduce reactive organic gas emissions by 55% and oxides of nitrogen emissions by 15% by 2000. The state Board's blueprint for future motor vehicle emission control strategies is contained in the biennial California Motor Vehicle Control Plan, updated in 1990.

Some measures included in the Plan have already been adopted, such as the low emission vehicle program requiring manufacturers to meet increasingly stringent fleetwide average emission standards, Phase I reformulated gasoline and emission standards for utility equipment. In the near term, the state Board will consider controls on large farm and construction equipment, marine vessels, and off-highway vehicles. Other programs with longer lead times include subjecting light duty diesel vehicles to the Smog Check program, retrofitting heavy duty diesel buses with traps for particulate control, and controlling emissions from driving cycles not represented during vehicle certification testing, referred to as off-cycle emissions.

Transportation Control Measures

The broad definition of transportation control measures encompasses a wide variety of measures to reduce vehicle trips, use, miles travelled, idling, or traffic congestion for the purpose of reducing emissions¹. To facilitate program development, Air Resources Board guidance² divides these measures into two broad categories: regulatory, and transportation system measures. As the name implies, regulatory measures can be implemented through District regulations or local government ordinances. They can be used to regulate traffic flow or affect individual travel choices.

¹California Health and Safety Code §40717.

²California Clean Air Act Transportation Requirements Guidance, Air Resources Board, February, 1990.

Regulatory measures such as employer based trip reduction rules, trip reduction rules for other sources that attract trips, and management of parking supply and pricing are considered reasonably available by the state Board.

Transportation system measures are implemented by transportation providers, such as local governments, transit districts, and the California Department of Transportation (CALTRANS). They generally support regulatory measures by increasing alternative travel mode options. These measures are outside the direct jurisdiction of the District and cannot be accomplished alone by any single local or regional government. As a result, they must be implemented in the context of the regionwide transportation planning and implementation process.

Transportation system measures are typically classified as short or long term, reflecting the lead time necessary for implementation. Examples of short term measures include transit service improvements, high occupancy vehicle bypass ramps or lanes, and bridge tolls. Long term measures include fixed rail transit systems, regional high occupancy vehicle system construction, and long range land development policies supporting vehicle trip reductions.

The Act assigned the ultimate responsibility for adopting, implementing and enforcing regulatory transportation control measures to local districts¹. However, the Act also recognized that coordination with cities and regional transportation planning agencies was important. Accordingly, an institutional framework was included for developing transportation control measures to assure maximum local government participation.

Specifically, in the San Diego region, the District adopts Criteria to guide the development of transportation control measures and the San Diego Association of Governments (SANDAG) adopts a transportation control measure plan, which the District reviews for consistency with the Criteria. If the plan adopted by SANDAG does not meet the Criteria, the District is obligated to propose and adopt an alternative plan².

The Act also allows districts to delegate implementation and enforcement of regulatory measures to cities or the County if they adopt a program consistent with the regulations adopted by the District. To support regional consistency, the District and SANDAG have a Memorandum of Agreement to insure consistency between transportation plans, including Congestion Management Plans required by state law, and the Regional Air Quality Strategy.

¹California Health and Safety Code §40717.

²California Health and Safety Code §40717(d).

Indirect Source Review

Nonattainment areas are required to develop programs for controlling indirect sources¹. An indirect source is any facility, building, structure or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant for which there is a state ambient air quality standard². Examples may include employment sites, shopping centers, schools, sports facilities, parking facilities, residential, commercial, and industrial development.

Current development, hence urban form, is focused heavily on accommodating the automobile, at the expense of less polluting transportation modes. This has created a dependence on the automobile, causing 88% of regional trips to be made by automobile. While transportation control measures will reduce motor vehicle related emissions associated with existing development, reviewing new or modified indirect sources will provide the opportunity for new development designs to reduce the dependence on automobiles, and be more pedestrian-oriented as well as compatible with transit and other alternative modes.

Although the District will develop the indirect source review program, regional participation is essential. Accordingly, the Air Pollution Control Board's Transportation Control Measure Criteria include a regional development and implementation process prepared in consultation with and accepted by the Regional Growth Management Technical Committee, which includes city managers and planning directors from throughout the region. The structure included in the Criteria provides:

- The Air Pollution Control Board will adopt an indirect source control regulation requiring evaluation and mitigation of individual land use development projects.
- A condition for delegating the regulation to local land use agencies in the Cities, County, and Port District will be their adopting an air quality element into the local general plan or an air quality program that conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality elements be adopted as individual elements of general plans, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.

¹California Health and Safety Code §40917.

²Executive Summary, California Clean Air Act Guidance on the Development of Indirect Source Control Programs, California Air Resources Board, July 1990, p. 5.
- Air quality elements for general plans will be developed for implementation as a part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.
- Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.
- If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Quality Strategy, deficiencies will be identified and transmitted to the Regional Growth Management Board.
- Indirect source review program development and implementation shall be completed by 1994.

To facilitate indirect source program development, the Air Pollution Control Board approved a three phase effort to research land use related policy options for elected officials. The research effort will culminate with a proposed indirect source program released in late 1992, developed in consultation with local industry, community planning groups and land use agencies. Public workshops and educational efforts targeting local officials will be conducted, and the final regulatory program developed through this interactive process will be submitted to the Board for adoption.

PUBLIC PARTICIPATION

Because revising the Regional Air Quality Strategy will affect the entire community, extensive public participation is needed to provide community input during Strategy development. To fill this vital role, the Air Pollution Control Board established the Air Quality Strategy Development Committee in February 1989, to provide community input to the Board and District while developing the 1991 Strategy. The Committee will also participate when revisions are prepared to fulfil federal requirements.

The Committee is comprised of eleven groups representing various segments of the community, with three members in each group. Appointments are made by the Air Pollution Control Board. Table 3 lists member organizations.

 Table 3

 Air Quality Strategy Development Committee

Regulated Industry

Construction Industry Federation Industrial Environmental Association of San Diego County United States Navy

Service Industry/Shopping Centers

Board of Realtors North County Fair Hospital Council of San Diego and Imperial Counties

Transportation Planning/Implementing Agencies

CALTRANS City of San Diego San Diego Association of Governments (ex officio)

Transit Agencies

San Diego Trolley, Inc. North County Transit Development Board San Diego Metropolitan Transit Development Board

Table 3 Air Quality Strategy Development Committee (cont'd)

Schools/Universities

San Diego State University San Diego Unified School District Southwestern Community College District

Major Employee/Teachers Unions

American Federation of State, County and Municipal Employees California Teachers Association San Diego and Imperial Counties Labor Council

Major Downtown/Area Businesses & Associations

Greater San Diego Chamber of Commerce San Diegans, Inc. Business Resource Network

Employers/Institutions with Successful Trip Reduction Programs

San Diego Gas & Electric Company San Diego Trust & Savings University of California, San Diego

Civic/Community Groups

American Lung Association Chicano Federation of San Diego County League of Women Voters, San Diego County

Environmental Groups

Clean Air Coalition Environmental Health Coalition Council of Environmental Organizations

Professional Organizations

National Association of Enrolled Agents San Diego County Bar Association [To Be Selected in behavioral science]

The Committee has become familiar with air quality issues and has the strong foundation necessary to provide community input regarding the comprehensive Regional Air Quality Strategy. The Committee has reviewed industrial and areawide control measures, and provided comment and guidance to the District and Board regarding the Strategy. The Committee also reviewed the Transportation Control Measures Plan adopted by SANDAG, was apprised of District concerns and issues regarding the Plan, and has reviewed District amendments to the Plan. The culmination of the Committee's efforts will be a revised regional air quality strategy adopted by the Board, developed with community involvement, and providing a realistic blueprint for clean air in the next decade.

Public participation in the Strategy development process was expanded from the Committee to include public workshops. Following release of the draft Strategy by the Board, the District conducted public workshops across San Diego County to receive public comment. Where appropriate, the draft tactics and Strategy were revised where appropriate to reflect public input. Following public workshops, the proposed Strategy was submitted to the Air Pollution Control Board for consideration and adoption.

Public participation will also play a vital role in Strategy implementation. As part of the implementation process, the District proposes regulations to implement Strategy control measures. Affected parties are notified at the beginning of the regulatory development process that regulations affecting their operations are being considered by the District. A public meeting is being held to allow consultation with the District regarding the proposed regulation. Following the workshops, the proposed regulation is amended as appropriate pursuant to public comment and submitted to the Board for consideration and adoption. If extensive revisions to the proposed regulation are appropriate, an additional workshop is held prior to Board consideration.

The public participation process was expanded as a result, of recent legislation (AB 2061, Polanco) signed into law effective January 1992. It requires Districts to assess specified socioeconomic impacts of the adoption, amendment, or repeal of a rule or regulation that will significantly affect air quality or emission limitations. A socioeconomic impact assessment is not required for the Revised Strategy, but is required when implementing regulations are recommended for Board consideration. A good faith effort must be made to minimize adverse socioeconomic impacts. As a result, the required analyses will be performed and considered during regulatory development.

In addition to community participation, the Act mandates a public education program to promote actions to reduce emissions from stationary and areawide sources and promote the implementation of transportation control measures¹. In short, a comprehensive public information program is required to promote community awareness and action.

¹California Health and Safety Code §40918.

The District has had a public information office for several years with primary emphasis on education and a modest smoking vehicle program. In 1990, the office expanded with increased emphasis on media relations, publications, and a broader community outreach through a speakers bureau and participation in community events.

The public outreach program has four major objectives to support the Strategy:

- Increase public awareness of California Clean Air Act requirements for the decade ahead and promote programs and activities people can do to improve air quality, including transportation control measures;
- Provide community health advisories and improve community awareness of environmental pollution health problems and issues;
- Increase community awareness of the need to rideshare and ways to reduce trips and miles traveled;
- Assist business with training and marketing support to implement trip reduction programs.

The Strategy's stationary source control measures will impact most segments of industry. The public outreach program will address compliance with new control requirements and focus on small businesses through brochures, seminars and information packages mailed to regulated industrial groups. Cooperative projects will be pursued with other public agencies involved in environmental issues (water, hazardous waste, recycling). An initial project could be a brochure/directory on who to contact for different environmental services.

A specific program for the employer-based trip reduction regulation will target businesses, including a training program for employee transportation coordinators, materials on successful creative rideshare and trip reduction programs, and seminars on implementation techniques and compliance. Pre-training seminars will be held prior to sending out survey forms to acquaint employee transportation coordinators with the program, survey techniques and analysis.

Following an extensive public opinion survey, a community information program will be developed to encourage motor vehicle trip reductions during daily activities. Specific strategies will include media news stories and editorial contacts, public service announcements, video programs for television, school and community presentations, an expanded speakers bureau, greater participation in public events and fairs, and media advertising. A quarterly newsletter and targeted special reports will be distributed to appropriate key community and business leaders.

The District has a toll free number for the public to report smoking vehicles, providing a tangible and personal way for citizens to be involved in cleaning up the air. About 1,500 calls are received monthly. Smoking vehicle owners are sent a letter advising they repair their vehicle. In cooperation with the California Highway Patrol, expansion of the program will include a wider distribution of smoking vehicle report forms, radio and television public service announcements, and media news stories.

The public outreach program will be implemented according to the following schedule:

July 1992

• Industry and small business communications plan completed and staff hired. Brochure and seminar schedule developed.

October 1992

• Overall plan developed for employer trip reductions completed. Transportation public information specialist hired and RPF contract awarded to develop a training program for employee transportation coordinators. Survey pre-training begins.

November 1992

• Contract awarded for a public opinion survey and the development of a community outreach program.

March 1993

• Smoking vehicle program expansion plan completed and implemented.

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May 1993

• Community outreach plan reviewed and approved. Program implementation begins.

PROPOSED SMOG STRATEGY

The state Board has designated the San Diego region as a severe smog area for purposes of Strategy development¹. Strategies in severe areas are required to meet the following requirements²:

- Reduce emissions of reactive organic gases and oxides of nitrogen³ each by 5% annually from 1987 levels, or contain all feasible measures following an expeditious adoption schedule to achieve the next best level of reduction⁴;
- No net increase in emissions from all permitted new or modified stationary sources;
- Best available retrofit control technology⁵ applied to existing stationary sources;
- Reasonably available transportation control measures;
- Substantially reduce the rate of increase in passenger vehicle trips and vehicle miles travelled per trip;
- Achieve an average during weekday commute hours of 1.5 or more persons per passenger vehicle by 1999, and no net increase in vehicle emissions after 1997;
- Provisions to develop area source and indirect source control programs;
- Provisions to develop and maintain an emissions inventory system to enable analysis and progress reporting and a commitment to develop other analytical techniques to carry out the reporting requirements for the triennial report;
- Provisions for public education programs to promote actions to reduce emissions from transportation and areawide sources;
- Measures to achieve the use of a significant number of low emission motor vehicles by operators of motor vehicle fleets;

¹ Guidance on Estimating Emission Reductions Needed to Attain State Standards and for Determining Area Classifications in Response to the California Clean Air Act, Air Resources Board, October, 1990.

²California Health and Safety Code \$40920, except as otherwise noted.

³The state Board has classified smog precursor emissions as reactive organic gases and oxides of nitrogen.

⁴California Health and Safety Code §40914.

⁵ Best available retrofit control technology as defined in California Health and Safety Code §40406 means an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.

Measures sufficient to reduce overall population exposure to ambient pollutant levels in excess of the standard by at least 25% by December 31, 1994, 40% by December 31, 1997, and 50% by December 31, 2000, based on average per capita exposure and the severity of the exceedences, using the average level of exposure experienced during 1986-1988 as the baseline.

Individual control measure evaluations are to include emission reductions; cost or range of costs per unit of emissions reduced (cost effectiveness); proposed implementation date; implementing agency; and factors which may alter the potential effectiveness of the control measure, for example, technological feasibility and enforceability. Air Resources Board guidance suggests the planning forecast should extend through at least the year 2000 to ensure future population and industrial growth will not overshadow air quality gains. The District has adequate data to project trends through 2010.

The required 5% annual emission reductions cannot be achieved, so the Strategy must contain all feasible measures, follow an expeditious adoption schedule to achieve the next best level of reduction, and show that every reasonable and necessary step is being taken to achieve state standards.

The Air Resources Board has published a current list of feasible measures for district information, attached as Appendix B to the Strategy. Districts must justify excluding any feasible measure but need not include measures for which there are no sources in the region.

While the Act ultimately requires a demonstration that the smog standard will be attained and maintained, attainment demonstrations are not required for the 1991 Strategy revision. The state Board considers it sufficient to meet the Act's expeditious progress requirements. The attainment demonstration will be required in the first triennial Strategy update.

An attainment demonstration for smog in severe areas requires an urban photochemical air quality model. To initiate implementation, the District has contracted for application of a photochemical model for San Diego. The initial phase of model acquisition included an extensive air quality study during the summer of 1989. Temporary monitoring stations were established to supplement the existing network, augmented by air quality sampling from aircraft, ships, and remote island locations. The \$1.2 million monitoring program was necessary to provide the model with initial air quality levels and to verify model accuracy.

Model development must comply with state Board requirements, and before it can be fully implemented, the model must pass state Board verification testing. As soon as model development and testing are complete, Strategy analysis will begin. The photochemical modeling capability to prepare the attainment demonstration may not be available until late 1992 or early 1993, precluding its use prior to adopting the Strategy. Because the attainment demonstration is not required until the first triennial Strategy revision, the state Board has indicated Strategy development should not be delayed pending application of the air quality model.

Stationary and Areawide Source Control Measures

The District has evaluated emission reductions from individual source control measures, or tactics, for stationary and areawide sources. The tactics focus on reducing reactive organic gases and oxides of nitrogen, the two pollutants that react in the atmosphere to form photochemical smog. Reducing oxides of nitrogen will also help the region attain and maintain the state nitrogen dioxide standard.

While industry in San Diego has already been subject to stringent requirements, consideration must be given to every feasible measure. As a result, tactics affecting a spectrum of emission sources ranging from large industrial facilities to lighter fluid for backyard barbecues have been evaluated, categorized as industrial, areawide, and energy conservation measures and listed by the pollutant controlled. Most tactics will require local implementation, although the state Board has adopted some statewide measures to meet California Clean Air Act mandates.

Applying best available retrofit control technology to existing sources is required to limit emissions based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.¹ Consistent with the state Board's guidance, the tactics include best available retrofit control technology as determined by the District.

A continuing process has been established to determine best available retrofit control technology on a statewide basis through a Technical Review Group, consisting of the Air Resources Board, Environmental Protection Agency, and districts. In the future, the strategy will be revised to encompass measures reflecting future best available retrofit control technology determinations. Where best available retrofit control technology has already been adopted, it has been incorporated in the tactics.

¹ California Health and Safety Code §40406

The stationary source control measures in the Strategy are listed in the following tables by their proposed year of adoption. A comprehensive listing of all stationary source control measures by proposed year of adoption is attached as Appendix C to the Strategy. The four principal factors considered in selecting control measures and their adoption schedule are cost-effectiveness, emission reduction potential, similarity with other proposed control measures, and local or state determination of best available retrofit control technology.

The emission reductions for individual tactics are based on best currently available information. The emission reduction benefit of the tactics could change if rules implementing the tactics are different in scope. This is not an unusual occurrence because regulatory development encompasses a far more detailed analysis and usually new information. Also the results of a socioeconomic impact analysis required by a new state law may affect the results since the law requires a good faith effort be made to minimize adverse socioeconomic impacts.

Some operations may result in savings, while others have emission reduction costs. The costeffectiveness of some control measures is given as a range because some operations are affected differently by current regulations. Some cost-effectiveness ranges include control alternatives unlikely to be implemented by affected industries because of their cost, such as control devices for coating operations in lieu of complying coatings.

Measures already adopted by the District and the state Board are listed in Table 4.

Control Measure	Pollutant	Emission <u>Reduction</u> *	Cost <u>Effectiveness</u> **
Consumer Products (ARB)	ROG	6.30	Savings-\$1.70
Marine Coatings	ROG	0.50	Savings-\$6.40
Wood Product Coatings	ROG	0.73	Savings-\$18.34
Polyester Resin Operations	ROG	0.83	\$0.04
Small Utility Engine Controls (ARB)	ROG	2.67	\$0.08-\$12.00
Deodorants and Antiperspirants (ARB)	ROG	0.34	\$0.50 - \$1.20
Kelp Processing Operations	ROG	0.17	\$1.02
Metal Parts and Products Coatings	ROG	0.56	\$1.67 - \$2.25
Ethylene Oxide Sterilizers	ROG	35.1***	\$5.00 - \$175
Barbecue Grill Ignition (ARB)	ROG	0.04	\$0.01 - \$1.04
*Emission Reductions in tons per day **Cost-effectiveness in \$/pound ***Emission Reductions in pounds per day			

Table 4Control Measures Adopted Since 1987

Reactive organic gas control measures continue to provide significant reductions at reasonable costs. The cost-effectiveness range for the measures adopted by the District are fairly consistent, with the exception of ethylene oxide sterilizers. Controlling these sterilizers is an Air Toxic Control Measure, and adoption is required by state law. Ethylene oxide is a reactive organic gas, reducing these toxic emissions also helps reduce smog. Because this measure is required to reduce toxic emissions, it is not used in determining Strategy cost-effectiveness.

Table 5 lists the control measures scheduled for adoption in 1992.

Control Measures S	cheduled for Adop	ption in 1992	
Control Measure	Pollutant	Emission <u>Reduction</u> *	Cost <u>Effectiveness</u> **
Paint and Ink Manufacturing	ROG	0.48	\$1.06
Electrical Generating Steam Boilers	NOx	7.32	\$3.86
New Source Review	ROG NOx CO	***	***
*Emission Reductions in tons per day			

Table 5

Cost-effectiveness in \$/pound * Reductions and Cost-effectiveness are currently unknown.

The control measure for paint and ink manufacturing provide cost effective reactive organic gas emission reductions. The regulation for electrical generating steam boilers implements emission reductions equivalent to selective catalytic reduction. Because the regulation currently being developed applies to electrical generating boilers, three other large boilers are not affected by the proposed regulation.

The requirement for a permitting program designed to allow no net increase in nonattainment pollutants or their precursors from new and modified stationary sources¹ is being addressed through the new source review program. The state Board published guidance for new source review² developed in consultation with a California Air Pollution Control Officers Association task force. The guidance sets forth recommendations for permits, best available control technology, emission mitigation, program design, mitigation criteria, banking, and emissions tracking. Because new source review affects only new or modified permitted sources, determining emission

¹ Health and Safety Code §40919.

² Permitting Program Guidance for New and Modified Stationary Sources in Nonattainment Areas, Air Resources Board, July 1990.

reductions from the 1987 baseline cannot be accomplished. Reductions, cost and cost effectiveness are to be addressed during regulatory development.

Table 6 lists the control measures scheduled for adoption in 1993.

		Emission	Cost
Control Measure	<u>Pollutant</u>	Reduction*	Effectiveness**
Automotive Refinishing	ROG	1.31	Savings-\$2.20
Adhesives	ROG	0.22	\$0.26 - \$10.00
Marine Coating Operations	ROG	***	***
Underground Gas Tank Decommissioning and Soil Decontamination	ROG	0.55	\$9.71 - \$10.00
Industrial and Commercial Boiler Controls	NOx	0.16	\$0.30-\$22.27
Large Nonutility Boilers	NOx	0.05	\$21.42-\$28.36
*Emission Reductions in tons per day			

Table 6				
Control Measures Scheduled for Adoption in	1993			

"Emission Reductions in tons per day

**Cost-effectiveness in \$/pound

***Rule adoption to implement Best Available Retrofit Control Technology. Reductions and Cost-

effectiveness are currently unknown.

Control measures for automotive refinishing and adhesives continue to provide cost effective reactive organic gas emission reductions. The control measure for marine coating operations is scheduled to implement recently adopted best available retrofit control technology requirements by the state Board. Cost effectiveness and emission reductions beyond the currently adopted control measure have not yet been determined.

The control of emissions from industrial and commercial boilers will implement best available retrofit control technology requirements adopted by the Technical Review Group. The control measure for large nonutility boilers completes adoption of the control measure for selective catalytic reduction for large boilers. However, only three boilers are currently operating in this category. Their capacity factors are very low, inflating cost-effectiveness for selective catalytic reduction. Because of the high cost of selective catalytic reduction for the corresponding small NOx benefit, more cost effective control options for these boilers may be proposed during regulatory development and the emission reductions not entirely be realized.

The control measure for soil decontamination and underground gasoline tank decommissioning will address emissions associated with remedial operations resulting from leaking storage tanks.

While the cost-effectiveness values are higher than other scheduled or adopted reactive organic gas control measures to date, control is necessary to help mitigate the release of toxic compounds, odors, as well as reducing a smog precursor.

Table 7 lists the control measures scheduled for adoption in 1994.

		Emission	Cost
Control Measure	<u>Pollutant</u>	Reduction*	Effectiveness**
Solvent Cleaning Operations	ROG	1.06	Savings-\$3.85
Wood Product Coatings	ROG	0.14	Savings-\$18.34
Plastic, Rubber, Composite and Glass Coatings	ROG	0.17	\$0.26-\$1.97
Can and Coil Coatings	ROG	0.31	\$0.85-\$ 1.80
Polyester and Epoxy Resin Operations	ROG	0.08	\$0.04
Turbines	NOx	0.64	\$0.63-\$6.36
*Emission Reductions in tons per day **Cost-effectiveness in \$/pound			

Table 7 Control Measures Scheduled for Adoption in 1994

The control measures solvent cleaning operations will continue to provide significant reductions, although the cost-effectiveness will vary based on application. Control measures for wood products; plastic, rubber composite and glass coatings; and can and coil coating operations continue to provide cost effective reactive organic gas emission reductions. Rulemaking for polyester and epoxy resin operations will be necessary to ensure the current control measure is consistent with best available retrofit control technology requirements.

The control measure for turbines reflects the District's determination of best available retrofit control technology, Scenario 1 in the tactic. The District will continue to monitor research, development, and demonstration of turbine controls to meet the technology forcing Scenario 2 alternative adopted by the South Coast AQMD. Scenario 2 may be proposed later should it prove achievable and reliable.

Table 8 lists the control measures scheduled for adoption in 1995.

		Emission	Cost
Control Measure	<u>Pollutant</u>	Reduction*	Effectiveness**
Bakeries	ROG	0.22	\$3.14 - \$3.45
Foam Blowing and Plastics Expanding	ROG	0.20	\$0.90
Semiconductor Manufacturing	ROG	0.07	\$4.00 - \$4.90
Lean Burn Engines	NOx	0.61	\$1.60-\$38.20
Residential Low-NOx Water Heaters	NOx	2.50	\$1.53
Commercial Low-NOx Water Heaters	NOx	0.12	\$8.12
New Residential Solar Hot Water Heaters	NOx	0.38-0.54***	\$44 - \$131
Retrofit Residential Solar Hot Water Heaters	NOx	1.68 - 2.43	\$49 - \$146
New Commercial Solar Hot Water Heaters	NOx	0.01***	Savings - \$158
*Testes Deductions in term and det			

Table 8Control Measures Scheduled for Adoption in 1995

*Emission Reductions in tons per day

**Cost-effectiveness in \$/pound

*** Emission reductions from new buildings in 2000

The proposed rulemaking for lean burn internal combustion engines is scheduled to implement an anticipated best available retrofit control technology determination based on selective catalytic reduction. The high-end cost effectiveness represents selective catalytic reduction on engines that are either small or have low capacity factors. More cost-effective control options may be considered during regulatory development.

The control measure for bakeries represents the first controls proposed for this class of source. The tactic targets large bakeries, where cost-effective controls can be implemented. The specific threshold defining large bakeries will be established and the potential for less costly control of smaller bakeries will be explored during regulatory development.

The control measure for foam blowing and plastics expanding would reduce emissions of reactive organic gases used as blowing agents. It would also help reduce any chlorofluorocarbons (CFC's) still used as blowing agents. Control measure adoption for various semiconductor manufacturing and assembly processes is also scheduled.

The control measures for residential and commercial low-NOx water heaters would prohibit the sale or installation of uncontrolled water heaters. For commercial applications, the control measure requires facilities with residential style water heaters to use similar low-NOx water heaters.

The solar energy tactics represent control measures that will reduce smog precursor and globalwarming emissions, and conserve energy through reduced dependence on nonrenewable resources. The solar hot water heating measures for new residential and commercial applications require all new construction use solar hot water heaters or best available technology to supplement conventional heaters. The emission reductions shown in Table 8 are projected for 2000. The costeffectiveness shown for these measures is calculated solely on smog and carbon monoxide benefits. If adjusted for other benefits, cost-effectiveness is substantially less. Because these measures apply only to new buildings, they mitigate emissions from growth, providing no reductions from 1987 levels. Retrofitting existing homes with solar hot water heaters or best available technology will provide emission reductions from 1987 levels, and help reduce natural gas use from existing homes. Emission reductions associated with reduced power plant loads from retrofitting electric hot water heaters are not included in the emission reduction or cost effectiveness calculations.

The emission reductions listed for water heating control measures are not additive, reflecting only the stand alone emission reductions for each control measure. When implemented concurrently, reductions will be less. The emission reductions for solar are given as a range, reflecting the variations in solar energy from individual installations.

Table 9 lists the control measures scheduled for adoption in 1996.

Control Measure	Pollutant	Emission <u>Reduction</u> *	Cost <u>Effectiveness</u> **
Petroleum Dry Cleaning	ROG	0.04	\$0.68 - \$1.27
Commercial Charbroiling	ROG	0.52	\$1.62
Bulk Gasoline Storage Tank Degassing	ROG	1.90	\$6.10-\$17.00
Stationary Internal Combustion Engines (200-500 hp)	NOx	1.59	\$0.14-\$0.81
Stationary Internal Combustion Engines (50-200 hp)	NOx	0.78	\$0.21-\$2.61
*Emission Reductions in tons per day **Cost-effectiveness in \$/pound			

Table 9 Control Measures Scheduled for Adoption in 1996

The control of small internal combustion engines addresses a source of oxides of nitrogen emissions with little current controls. Some engines are controlled because they are required to

install Best Available Control Technology when several are located at one site. However, many single engine sites are currently permitted with little or no control. Because some facilities have only recently been required to obtain permits to operate and others are not currently issued permits to operate, their emissions and the potential emission reductions are tentative. Further information will be developed during regulatory development.

For petroleum dry cleaners, the control measure requires additional controls for larger operations. There are only about six petroleum dry cleaning facilities remaining in San Diego, with one large facility being operated by the U.S. Navy.

Commercial charbroiling operations will become subject to regulation in 1996, requiring emission reductions from certain cooking operations at eateries. These operations are currently controlled occasionally only to mitigate public nuisances.

Controls for bulk gasoline storage tank degassing will likely not have much impact on summertime emissions from the cleaning of these large tanks because except for emergencies, these operations are prohibited during the peak smog season under existing regulations. Emission reductions listed are only when subject operations occur, and do not represent reductions in daily inventory. While the emission reductions will occur primarily during the off season, San Diego does experience a significant number of days over the smog standard outside the peak smog season. The emission reductions shown are for control of these operations on days when they occur, and not on a consistent daily basis.

Table 10 lists the control measures scheduled for adoption in 1997.

Control Measure	Pollutant	Emission Reduction*	Cost <u>Effectiveness</u> **
Marina Fueling Operations	ROG	0.02	\$0.57 - \$7.68
Groundwater Decontamination	ROG	<0.01	\$15.88 - \$26.40
Residential Low-NOx Furnaces	NOx	1.01	\$5.76
*Emission Reductions in tons per day			

Table 10 Control Measures Scheduled for Adoption in 1997

**Cost-effectiveness in \$/pound

The control measure for marina refueling operations will reduce emissions from pleasure craft refueling by requiring a vacuum assist system be installed at marina gasoline dispensers. Vacuum assist systems are currently installed at some gasoline stations.

Control of emissions from groundwater decontamination would help reduce the impact of removing gasoline or other hydrocarbon contamination from underground water through aeration. This will also mitigate toxic air emissions and odor complaints. These operations are currently regulated through District nuisance provisions. This tactic establishes a source specific rule, clarifying requirements.

The control measure for residential low-NOx furnaces would require that all new and replacement natural gas fired central furnaces be low emission units. This would help mitigate emissions from growth, as well as existing units when no longer serviceable. Because central furnaces are typically used during the winter heating season, the emission reductions will occur primarily during the off season. However, San Diego does experience significant smog standard violations outside the peak smog season. In addition, state nitrogen dioxide standard violations typically occur during winter months, and this control measure will help attain and maintain that standard.

Table 11 lists six control measures not included in the adoption schedule.

		Emission	Cost
Control Measure	Pollutant	Reduction*	Effectiveness**
Substitute Cleanup Solvents	ROG	0.73	negligible - \$0.26
Architectural Coatings	ROG	0.37	Savings-\$6.40
New Solar Pool Heaters	NOx	<0.1***	Savings - \$4,800
Retrofit Solar Pool Heaters	NOx	0.01 - 0.03	Savings - \$4,800
New Solar Spa/Hot Tub Heaters	NOx	< 0.01***	\$74 - \$4,657
Retrofit Solar Spa/Hot Tub Heaters	NOx	0.01 - 0.02	\$78 - \$5,433
*Emission Reductions in tons per day			

Table 11 Unscheduled Control Measures

**Cost-effectiveness in \$/pound

*** Emission reductions from new buildings in 2000

The control measure for substitute cleanup solvents will reduce emissions associated with coating operations. The requirements of this control measure will be integrated with individual regulations for specific coating operations. As a result, there is no separate adoption schedule. The control measure for architectural coatings is not included in the adoption schedule because of pending court challenges to a similar control measure adopted in the South Coast Air Basin. It remains possible that the control measure will be revised as a result of the current legal challenge, and adoption will be scheduled following the resolution of litigation.

The tactics for solar pool and spa heating were originally intended for pools and spas for singleand multi-family dwelling units only. However, issues regarding regulation of public pools, such as in multi-family establishments, and potential emissions from commercial pool heating operations have caused the District to reexamine this approach. Additionally, there are complexities regarding pool/spa combinations requiring further consideration. The District will develop a work program to address emissions from all pool and spa heating operations. Pending completion of the work program, the District is not scheduling regulatory development implementing solar heating requirements for pools and spas. The work program will be completed in 1993, at which time scheduling of regulatory development will be reconsidered.

The Act requires tactics in the Strategy be ranked in order of cost-effectiveness, from the least cost effective to the most¹. Table 12 includes the required list.

¹California Health and Safety Code §40922.

Control Measure	Pollutant*	Emission Reduction**	Cost Effectiveness***	Adoption Year
Consumer Products (ARB)	ROG	6.30	Savings-\$1.70	Currently Adopted
Automotive Refinishing	ROG	1.31	Savings-\$2.20	1993
Solvent Cleaning Operations	ROG	1.06	Savings-\$3.85	1994
Marine Coatings	ROG	0.50	Savings-\$6.40	Currently Adopted
Wood Product Coatings	ROG	0.73	Savings-\$18.34	Currently Adopted
Wood Product Coatings	ROG	0.14	Savings-\$18.34	1994 ¹
New Commercial Solar Hot Water Heaters	NOx	0.012	Savings - \$158	1995
Barbecue Grill Ignition (ARB)	ROG	0.04	\$0.01 - \$1.04	Currently Adopted
Polyester Resin Operations	ROG	0.83	\$0.04	Currently Adopted
Polyester and Epoxy Resin Operations	ROG	0.08	\$0.04	1994 ¹
Small Utility Engines (ARB)	ROG	2.67	\$0.08-\$12.00	Currently Adopted
Stationary I C Engines (200-500 hp)	NOx	1.59	\$0.14-\$0.81	1996
Stationary I C Engines (50-200 hp)	NOx	0.78	\$0.21-\$2.6 1	1996
Plastic, Rubber, Composite and Glass Coatings	ROG	0.17	\$0.26-\$1.97	1994
Adhesives	ROG	0.22	\$0.26 - \$10.00	1993
Industrial and Commercial Boiler Controls	NOx	0.16	\$0.30-\$22.27	1993
Deodorants and Antiperspirants (ARB)	ROG	0.34	\$0.50 - \$1.20	Currently Adopted
Marina Fueling Operations	ROG	0.02	\$0.57 - \$7.68	1 997
Turbines	NOx	0.64	\$0.63-\$6.36	1 994
Petroleum Dry Cleaning	ROG	0.04	\$0.68 - \$1.27	1 996
Can and Coil Coatings	ROG	0.32	\$0.85-\$1.80	1994
Foam Blowing and Plastics Expanding	ROG	0.20	\$0.90	1995
Kelp Processing Operations	ROG	0.17	\$1.02	Currently Adopted
Paint and Ink Manufacturing	ROG	0.48	\$1.06	1992

Table 12 Strategy Tactics Ranked by Cost Effectiveness

^{*} ROG-Reactive Organic Gases - NOx-Oxides of Nitrogen - CO-Carbon Monoxide. ** Emission Reductions from 1987 baseline, except as otherwise noted. *** Cost Effectiveness in \$/pound of emissions reduced. ¹Rule adoption to implement Best Available Retrofit Control Technology.

²Emission reductions from new buildings in 2000.

		Table 12	2
Strategy	Tactics	Ranked by	Cost-effectiveness
		(Cont'd))

Control Measure	Pollutant*	Emission Reduction**	Cost Effectiveness***	Adoption Year
Residential Low-NOx Water Heaters	NOx	2.50	\$1.53	1995
Lean Burn Engines	NOx	0.61	\$1.60-\$38.20	1995
Commercial Charbroiling	ROG	0.52	\$1.62	1996
Metal Parts and Products Coatings	ROG	0.56	\$1.67 - \$2.25	Currently Adopted
Bakeries	ROG	0.22	\$3.14 - \$3.45	1995
Electrical Generating Steam Boilers	NOx	7.32	\$3.86	1992
Semiconductor Manufacturing	ROG	0.07	\$4.00 - \$4.90	1995
Ethylene Oxide Sterilizers	ROG	35.11	\$5.00 - \$175	Currently Adopted
Residential Low-NOx Furnaces	NOx	1.01	\$5.76	1997
Bulk Gasoline Storage Tank Degassing	ROG	1.90 ²	\$6.10-\$17.00	1996
Commercial Low-NOx Water Heaters	NOx	0.12	\$8.12	1995
Underground Gas Tank Decommissioning and Soil Decontamination	ROG	0.55	\$9.71 - \$10.00	1993
Groundwater Decontamination	ROG	<0.01	\$15.88 - \$26.40	1997
Large Nonutility Boilers	NOx	0.05	\$21.42-\$28.36	1993
New Residential Solar Hot Water Heaters	NOx	0.38 - 0.54 ³	\$44 - \$ 131	1995
Retrofit Residential Solar Hot Water Heaters	NOx	1.68 - 2.43	\$ 49 - \$ 146	1995
Marine Coating Operations	ROG	4	4	1993
New Source Review	ROG/ NOx/CO	5	5	1992

^{*} ROG-Reactive Organic Gases - NOx-Oxides of Nitrogen - CO-Carbon Monoxide.

^{**} Emission Reductions from 1987 baseline, except as otherwise noted.

^{***} Cost Effectiveness in \$/pound of emissions reduced.

¹Emission reductions in pounds per day. Already been implemented as an Air Toxic Control Measure.

²Except emergencies, these operations occur only a few days annually and allowed only outside peak smog season. ³Emission reductions from new buildings in 2000.

⁴Rule adoption to implement Best Available Retrofit Control Technology. Reductions and Cost Effectiveness are currently unknown.

⁵Reductions and Cost Effectiveness are currently unknown.

Industrial and Areawide Tactics Considered During Strategy Development

During development of the Strategy, a wide variety of tactics were evaluated and considered. These tactics are presented in the following sections by pollutant and whether they are industrial, areawide, or energy conservation measures. Tactics in the strategy are drawn from these control measures.

Industrial Controls - Reactive Organic Gases

Industrial tactics will require the use of paints and solvents with increasingly lower organic content, forcing manufacturers and users alike to work together to produce alternative formulations for all applications. Also, higher efficiency application technologies will be required, reducing the coatings loss from overspray. Cleanup operations will require closed systems to maximize solvent recovery and reuse, thus decreasing emissions. Recordkeeping requirements will require industry track the use of polluting materials, facilitating compliance determinations. These procedures should also help industry track costs, reduce waste, and comply with other recordkeeping requirements.

Measures reducing organic emissions from manufacturing and cleaning processes are also included. Reformulated materials, new control requirements, or more efficient use of existing control systems will reduce emissions from manufacturing and processing operations. Controlling both large bulk and small underground gasoline storage tank decommissioning will help mitigate additional emissions associated with gasoline storage and handling. Reducing emissions resulting from the process of removing gasoline from contaminated soil and groundwater will help mitigate pollution in the short term as older, leaking tanks are removed and replaced with more leakresistant tanks as part of the statewide program to upgrade underground storage tanks. The control of ethylene oxide from sterilizer operations is being required as an air toxic control measure, and will also reduce organic emissions. Controls on bakeries will help reduce emissions associated with bread making operations, which are currently uncontrolled. Following is a summary of the tactics:

<u>Substitute Cleanup Solvents</u>. Cleanup solvents are used to clean and maintain equipment used in coating processes. Examples include 1,1,1-trichloroethane and methylene chloride. Methylene chloride is currently classified by the Environmental Protection Agency as a probable human carcinogen and by the Air Resources Board as a toxic air contaminant. 1,1,1-trichloroethane contributes to the depletion of the stratospheric ozone layer. This tactic requires a lower volatile

organic compound content for cleaning solvents and improved solvent handling procedures, specifically: clean-up solvents with a low volatile organic compound content; enclosed systems and/or reclamation systems in cleaning operations for all coating application equipment; proper storage and disposal of solvent-laden cleaning materials; and, proper recordkeeping. The emission reduction potential is 0.73 tons per day and the cost-effectiveness is negligible to \$0.26 per pound.

Solvent Cleaning Operations. Solvent cleaning and degreasing uses non-aqueous solutions to remove dirt, residues and particles from metal and nonmetal parts. Solvents typically used include petroleum distillates, and halogenated organic compounds, such as trichlorotrifluoroethane (CFC-113), perchloroethylene, methylene chloride, and trichloroethylene. This tactic requires emission controls and permits for currently exempt degreasers and cold cleaners and additional controls for currently permitted degreasers. Control elements include: compliance with standards and permits for currently exempt degreasers; increased freeboard ratio for open-top vapor degreasers; freeboard chillers for open-top and conveyorized vapor degreasers; carbon adsorption controls for vapor degreasers emitting 10 tons per year or more; and, proper recordkeeping. The emission reduction potential is 1.06 tons per day and the cost-effectiveness ranges from a savings to industry to a cost of \$3.85 per pound.

<u>Can and Coil Coatings</u>. This tactic requires zero volatile organic compound content can end sealing compounds in can coating operations for human food containers, and the use of zero volatile organic compound content primers and topcoats in coil coating operations or an add-on control device. The emission reduction potential is 0.31 tons per day and the cost-effectiveness ranges from \$0.85 per pound for reformulation to \$1.80 per pound for control equipment.

<u>Metal Parts and Products Coatings</u>. This tactic would tighten current controls by requiring volatile organic compound emission limits on some previously exempt coatings; low volatile organic compound content solvents for stripping, surface preparation and cleanup materials; coating processes or application equipment with high transfer efficiency; enclosed systems for cleaning and washing operations; and, improved record keeping. The emission reduction potential is 0.56 tons per day and the cost-effectiveness ranges from \$1.67 to \$2.25 per pound.

<u>Plastic and Rubber Products Coating</u>. This tactic would require the following measures for plastic parts, glass, rubber, and composite materials surface coating operations: low volatile organic compound content coatings; add-on control or process changes as alternatives to low volatile organic compound coatings; low volatile organic compound requirements for solvents used in surface preparation and cleanup materials; processes or equipment with high transfer efficiency application; enclosed systems in cleaning and washing operations; improved maintenance and

operating procedures; and, proper record keeping. The emission reduction potential is 0.17 tons per day and the cost-effectiveness ranges from \$0.26 to \$1.97 per pound.

<u>Wood Products Coating</u>. This tactic would improve the current provisions of Rule 67.11 by requiring elimination of the 500 gallon annual usage exemption, use of low volatile organic compound coatings, and use of add-on control equipment as an alternative to low volatile organic compound coatings. The emission reduction potential is 0.87 tons per day and the cost-effectiveness ranges from a savings to a cost of \$18.34 per pound.

<u>Automobile Refinishing</u>. This tactic would tighten existing controls by requiring: limit of volatile organic compound content of primers, topcoats, and solvents; coating application processes or equipment with high transfer efficiency; enclosed systems for cleaning and washing operations; improved operational procedures and equipment maintenance; and, proper record keeping. The emission reduction potential is 1.31 tons per day and the cost-effectiveness ranges from a savings to a cost of \$2.20 per pound.

<u>Marine Coatings</u>. Ships due for maintenance are inspected and refinished by placing them in dry dock, removing marine parasites and failed finish, preparing the refurbished surface, and applying a new finish. This tactic requires a reduced solvent content in all coatings and cleanup materials used on marine vessels and closed applicator cleaning systems for coating operations during marine vessel construction and repair. The emission reduction potential is 0.50 tons per day and the cost-effectiveness ranges from a savings to a cost of \$6.40 per pound.

<u>Adhesives</u>. Adhesives are used in many industries and on various substrates. They are designed to connect two or more similar or dissimilar materials together, and may contain different types of resins, glues and solvents. This tactic requires: a volatile organic compound content limit in adhesives; add-on control devices, such as carbon adsorbers or incinerators; increased transfer efficiency for spray gun operations, roll coaters, and hand applications; a volatile organic compound content limit in clean-up solvents; enclosed systems for the clean-up of tools and coating equipment; and, improved recordkeeping. The emission reduction potential is 0.22 tons per day and the cost-effectiveness ranges from \$0.26 to \$10.00 per pound.

<u>Semiconductor Manufacturing</u>. Electronic products manufacturing consists of semiconductor manufacturing and electronic packaging. Semiconductor manufacturing includes all processing leading to the production of integrated circuits. Electronic packaging includes the assembly of integrated circuits onto printed circuit boards. This tactic requires add-on control devices for ceramic chip manufacturing, use of lower volatile organic compound content cleaning materials or

lower vapor pressure materials for tool and equipment cleaning, improved housekeeping practices for handling of organic materials; and, proper recordkeeping. The emission reduction potential is 0.07 tons per day and the cost-effectiveness ranges from \$4.00 to \$4.90 per pound.

<u>Kelp Processing Operations</u>. This tactic proposes to revise Rule 67.10 for kelp processing and bio-polymer manufacturing operations to increase the required control efficiency from 90% to 95%. Currently installed control equipment has already demonstrated a 95% efficiency level. The emission reduction potential is 0.17 tons per day and the cost-effectiveness is \$1.02 per pound.

Foam Blowing and Plastics Expanding. Polymeric cellular products are manufactured using blowing agents to expand raw material to a lower density cellular product. Significant portions of the blowing agents are released to the atmosphere during manufacturing and curing. Only low level amounts are released over a long period. This tactic requires either the use of alternate blowing agents or the installation of an emission collection system. Post manufacturing emissions must be collected and vented to a control device during the storage of the final product. Use of alternative blowing agents, such as chlorofluorocarbons, would result in negligible reactive organic gas emissions. The emission reduction potential is 0.20 tons per day and the cost-effectiveness is \$0.90 per pound.

<u>Bakeries</u>. This tactic requires a 90% reduction of the reactive organic gas emissions from large bakery operations. Control options include add-on catalytic and thermal incinerators. The specific threshold defining which large bakeries will be subject to control will be determined during regulatory development. The emission reduction potential is 0.22 tons per day and the costeffectiveness ranges from \$3.14 to \$3.45 per pound.

Groundwater Decontamination. Groundwater contamination results from accidental spills, illicit dumping, improper disposal practices, inadequately designed landfills, and leaking storage tanks and pipelines. Decontamination by means of air stripping removes contaminants from the groundwater and transfers them into the air. Add-on control equipment reduces this cross-media impact. This tactic requires: venting of organic compounds emitted from air stripping operations through a control device; alternate use of a water phase carbon adsorption system resulting in negligible airborne emissions; performance tests; monitoring; and, recordkeeping. An exemption from add-on controls for operations with emissions under specified limit is provided following a public health risk screening assessment. The emission reduction potential is less than 0.01 ton per day and the cost-effectiveness ranges from \$15.88 to \$26.40 per pound.

Underground Gas Tank Decommissioning and Soil Decontamination. This tactic proposes special procedures for removing underground storage tanks and for soil decontamination resulting from accidental spills or illegal dumping. Reactive organic gas emissions occur as a result of tank and pipeline excavation and treating soil contaminated by leaking underground storage tanks and pipelines. This tactic proposes: control of aeration or on-site treatment or soil remediation systems, by using a catalytic oxidizer, incinerator or carbon adsorption system; covering contaminated soil prior to treatment; decommissioning of underground tanks to follow procedures to minimize reactive organic gas emissions; twenty-four hour notification upon detection of contaminated soil. An exemption from add-on controls for operations with emissions under specified limit is provided after a public health risk screening assessment. The emission reduction potential is 0.55 tons per day and the cost-effectiveness ranges from \$9.71 to \$10.00 per pound.

Bulk Gasoline Storage Tank Degassing. This tactic proposes to restrict uncontrolled degassing and require emission control during cleaning and decommissioning of above ground gasoline storage tanks above 25,000 gallon capacity. This tactic requires: degassing of storage tanks by carbon adsorption, refrigeration or venting to a gasoline vapor recovery system; continuous and rapid process of emptying and/or refilling of floating roof tanks; and, four-week notification prior to the start of the cleaning or decommissioning operation. While these operations are currently restricted to the non-peak smog season and occur only occasionally, San Diego does experience significant days over smog standards during the off-season, and the emission reduction potential for days when these operations occur is significant. The emission reduction potential during these operations is 1.90 tons per day and the cost-effectiveness ranges from \$6.10 to \$17.00 per pound.

Paint and Ink Manufacturing. Paint and printing ink manufacture includes grinding and mixing the pigment and other ingredients which include volatile organic compounds. Emissions occur when tanks are opened, ingredients added, equipment cleaned, and during accidental discharges. This tactic requires: covered mixing tanks with lids opened only when necessary operations are being conducted, such as adding ingredients or taking samples; add-on control devices, such as carbon adsorbers, thermal incinerators, or refrigerated condensers; clean-up solvents with a low volatile organic compound content; solvent reclamation and enclosed systems for cleaning tools and equipment; and, proper recordkeeping. The emission reduction potential is 0.48 tons per day and the cost-effectiveness is \$1.06 per pound.

Polyester Resin Operations. This tactic requires material and process changes to reduce styrene emissions. It includes: polyester resin material containing no more than 35% by weight of monomer or vapor suppressed resin, or, closed mold systems resulting in less than 4% loss of

volatile organic compounds; low volatile organic compound solvents or reclamation systems for clean-up solvents; spraying equipment with higher transfer efficiency, such as electrostatic spray, high-volume low-pressure, airless and air-assisted airless equipment; enclosed systems for cleanup materials and resins; closed containers for solvent-laden rags and waste materials; and, proper record keeping. The emission reduction potential is 0.83 tons per day and the cost-effectiveness is \$0.04 per pound.

Polyester and Epoxy Resin Operations. This tactic would eliminate the exemption for facilities with a combined consumption of polyester resins and cleanup solvents of less than 10 gallons per day. Requirements for controlling cleanup solvents would also be applied to epoxy resin operations. This tactic includes: enclosed systems for cleanup materials, and closed containers for storage of cleanup materials, resins, solvent-laden rags and waste materials; reclamation systems for clean-up solvents where solvent can be recycled or low volatile organic compound cleaning materials can be used; polyester resin material containing no more than 35% by weight of monomer or vapor suppressed resin, or, closed mold systems resulting in less than 4% loss of volatile organic compounds; high transfer efficiency spraying equipment, such as electrostatic spray, high-volume low-pressure, airless and air-assisted airless equipment; proper record keeping; and, add-on controls for large operations. The emission reduction potential is 0.08 tons per day and the cost-effectiveness is \$0.04 per pound.

<u>Petroleum Dry Cleaning</u>. This tactic lowers the petroleum solvent usage exemption limit and increases the reactive organic gas emission control level for large petroleum-based solvent dry cleaning facilities. The exemption limit would be reduced from 2,000 gallons per year to 260 gallons per year. Facilities using 260 to 2,000 gallons per year would be required to achieve an 80% emission control level from dryer operations. Facilities using more than 2,000 gallons per year would have to reduce dryer emissions by 90%. The emission reduction potential is 0.04 tons per day and the cost-effectiveness ranges from \$0.68 to \$1.27 per pound.

<u>Ethylene Oxide Sterilizers</u>. These sterilizers are a source of reactive organic gases, chlorofluorocarbons, and toxic air contaminants. Ethylene Oxide is used to kill microorganisms on heat, moisture, and radiation sensitive materials. During and following sterilization, virtually all the ethylene oxide is emitted to the atmosphere. This tactic is also an Air Toxic Control Measure adopted by the Air Resources Board that the District is required to adopt, pursuant to the toxic air contaminant identification and control process. The tactic requires basic equipment modifications, and/or alternative sterilization techniques to reduce ethylene oxide emissions. It includes: eliminating emissions from sterilizer exhaust vacuum pump working fluid wastewater streams; leak-free operation of contaminated air piping, ducting, fittings, valves, or flanges; installing

control equipment on the exhaust of sterilizers and aerators; testing new equipment and periodic source testing thereafter; recordkeeping and reporting of ethylene oxide use; and, controlling emissions from sterilizer door openings and/or stored, sterilized medical products in aeration rooms. The emission reduction potential is 35.1 pounds per day and the cost-effectiveness ranges from \$5 to \$175 per pound.

Areawide Source Controls - Reactive Organic Gases

Areawide sources are generally individually small and widely dispersed. However, in large numbers their contribution to the region's air quality problem is significant. The Air Resources Board has adopted statewide regulations providing emission reductions from deodorants, consumer products, and small utility engines. Consumer products ranging from air freshener to windshield washer fluid will be required to develop and implement alternative formulations. The state program for small utility engines will require everything from weed whackers to ride-along mowers to control emissions. Some controls will increase fuel economy. These tactics are included to ensure that the benefits from the statewide program are evaluated and included in the plan.

Other examples of areawide sources are commercial charbroiling operations including cooking operations at some fast food restaurants, as well as other eateries. Controls have been installed on some restaurants in response to public nuisance complaints. These controls are also effective in reducing organic emissions that occur when fats draining from meat are burned. Another example is requiring vapor recovery at marinas selling gasoline. Also, strengthening architectural coatings requirements will provide further reductions from painting homes and other structures, using product reformulations similar to industrial tactics. Following is a summary of the tactics:

<u>Deodorants and Antiperspirants</u>. The Air Resources Board adopted regulations limiting the reactive volatile organic compound content of underarm deodorants and antiperspirants sold in California. The greatest effect may be to eliminate reactive organic compounds from use as aerosol propellants. Manufacturers may elect to remove aerosol spray deodorants and antiperspirants from the market in California, with their market share being taken over by low-emitting nonaerosol alternatives. The emission reduction potential is 0.34 tons per day and the cost-effectiveness ranges from \$0.50 to \$1.20 per pound.

<u>Commercial Charbroiling</u>. This tactic would control emissions from charbroilers at restaurants and eating establishments. Charbroilers typically consist of a direct flame heating source such as

natural gas, charcoal, or wood, and a grated grill on which the food is cooked. Because the grill is open, grease and juices from the food drop onto the flame, resulting in particulate matter and reactive organic gas emissions. The proposed control strategy consists of installing electrostatic precipitators on grill exhaust stacks followed by either a carbon adsorber or an afterburner. The emission reduction potential is 0.52 tons per day and the cost-effectiveness is \$1.62 per pound.

<u>Small Utility Engine Controls</u>. Utility engines are used for lawn, garden and general utility applications. The Air Resources Board adopted regulations mandating sharp cuts in smogproducing emissions from small utility engines, allowing ample time for manufacturers to refine existing pollution controls for application to smaller engines. This tactic establishes new exhaust emission standards for 1994 and subsequent model year lawn, garden and utility engines. Beginning in 1999, replacement engines for pre-1994 equipment must comply with the 1994 emission standards. An increased control level is also required for new equipment in 1999. The emission reduction potential is 2.67 tons per day for reactive organic gases emissions, but there will be an increase of 0.21 tons per day for oxides of nitrogen emissions. The cost-effectiveness range is \$0.08 to \$12.00 per pound.

<u>Consumer Products</u>. The Air Resources Board has adopted regulations to reduce volatile organic compound emissions from sixteen consumer products. The regulations require reformulated products for household, institutional and commercial use to be less photochemically reactive. Initial standards are effective in 1993 and 1994. Additional standards with future effective dates were also set to provide manufacturers with sufficient lead time to reformulate and revise manufacturing processes. The emission reduction potential is 6.30 tons per day and the cost-effectiveness ranges from a savings to a cost of \$1.70 per pound.

<u>Architectural Coatings</u>. This tactic would require lower solvent content limits for previously exempt and currently controlled categories and additional reductions in the future from currently controlled categories. The tactic includes redefining coatings to include substrate or application-purpose qualifications; restricting industrial maintenance finishes to use only on demanding industrial, commercial, or institutional services; and requiring volatile organic compound contents to be printed on the container labels. The emission reduction potential is 0.37 tons per day and the cost-effectiveness is a savings of \$6.40 per pound.

<u>Marina Refueling Operations</u>. This tactic would require a vacuum assist gasoline vapor recovery system to be installed at marina fuel docks for controlling hydrocarbon emissions while fueling marine vessels, most of which are pleasure craft. The emission reduction potential is 0.02 tons per day and the cost-effectiveness ranges from \$0.57 to \$7.68 per pound.

Barbecue Grill Ignition. Starter fluid is a petroleum distillate used to ignite charcoal and wood in outdoor barbecue grills. This tactic has been adopted by ARB, and prohibits the sale of any material and/or method used to ignite barbecue charcoal unless the evaporative and reactive organic gas emissions resulting from the ignition are less than or equal to 0.02 pound of reactive organic gases per start. Alternatives to using starter fluid include electric starters, chimneys using paper tinder, propane and natural gas. The emission reduction potential is 0.04 tons per day and the cost-effectiveness ranges from \$0.01 - \$1.04 per pound.

Industrial Controls - Oxides of Nitrogen

Oxides of nitrogen emissions are also responsible for smog formation, and industrial control measures to reduce these emissions have been evaluated. Stationary sources represent approximately 15% of this pollutant's regional emissions, with most coming from electrical generation. In the past, smog control efforts have focused on reactive organic gas emissions. As a result, the largest industrial sources of oxides of nitrogen have only minimal controls; thus providing a good source of future emission reductions. In addition to large electrical generating boilers and turbines, there are smaller boilers, turbines, and internal combustion engines that can reduce emissions by means of advanced controls.

Pollution control systems represent one control method. Requiring the use of alternative fuels can also reduce oxides of nitrogen emissions. Allowing the use of only natural gas or methanol would provide emission reductions. Requiring the installation of fuel cells to replace aging electrical generating equipment is a long-term technology forcing measure that shows great promise for enormous reductions.

Six of the following tactics require controls for electrical generating utility and large steam production external combustion boilers with a heat input rating greater than 100 million Btu per hour. Controls for oxides of nitrogen emissions are categorized as combustion modification or flue gas treatment. The benefits of the six tactics are not additive. The Strategy will likely rely on one control option of the six tactics evaluated.

Combustion modifications reduce oxides of nitrogen emissions by inhibiting the formation of oxides of nitrogen during the combustion process. Low-NOx burners and flue gas recirculation fall into this category. Flue gas treatment systems control oxides of nitrogen emissions after they have been formed by the combustion process. Selective catalytic reduction, selective non-catalytic

reduction, and urea injection fall into this category. A seventh tactic is also evaluated proposing methanol as an alternative fuel to reduce oxides of nitrogen emissions from large boilers.

<u>Low-NOx Burners</u>. Low-NOx burners control air and fuel mixing for optimum combustion by controlling the direction and quantity of fuel and air streams at the burner throat. This reduces the pollutant by creating a combustion process with low peak temperatures and low excess air. No decreases in boiler efficiencies occur. Carbon monoxide emissions may increase unless the oxygen levels are carefully adjusted and maintained. The emission reduction potential is 3.45 tons per day and the cost-effectiveness is \$0.64 per pound.

<u>Flue Gas Recirculation</u>. Flue gas recirculation mixes the exhaust combustion products, which contain low oxygen levels, with incoming air prior to combustion. The recirculated combustion products dilute the oxygen concentration and lower the peak flame temperature resulting in a significant pollutant reduction. The emission reduction potential is 2.60 tons per day and the cost-effectiveness is \$2.02 per pound.

Low-NOx Burners and Flue Gas Recirculation. This tactic reduces oxides of nitrogen emissions by inhibiting their formation during the combustion process. This is achieved by decreasing peak flame temperatures, controlling the distribution of air and fuel within the burners (thereby reducing the oxygen available for combustion), or a combination of the two. The low-NOx burner and flue gas recirculation control measures are combined to provide additional emission reductions. The emission reduction potential is 5.17 tons per day and the cost-effectiveness is \$1.40 per pound.

<u>Selective Catalytic Reduction</u>. Selective catalytic reduction is a flue gas treatment system that injects ammonia into the exhaust stream. The ammonia laden exhaust stream then flows through a catalyst that aids the reaction of the pollutant with ammonia. Elemental nitrogen and water are reaction by-products. Ammonia emissions may also occur if there is an incomplete reaction. The emission reduction potential is 7.37 tons per day and the cost-effectiveness is \$4.06 per pound.

<u>Selective Non-Catalytic Reduction</u>. The selective non-catalytic reduction process also injects ammonia in the flue gas stream. However, unlike selective catalytic reduction, there is no catalytic reaction. Instead, ammonia reacts with the pollutant at high flue gas temperatures to form elemental nitrogen and water. Ammonia emissions may occur if the reaction is inadequate. The emission reduction potential is 4.32 tons per day and the cost-effectiveness is \$1.13 per pound.

<u>Urea Injection</u>. Urea, a compound consisting of nitrogen, hydrogen and oxygen, is injected into the exhaust gas stream to absorb nitrogen dioxide indirectly as nitrous acid forming ammonium

nitrate, elemental nitrogen and carbon dioxide. Particulate matter emissions may increase due to the ammonium nitrate formed as part of the process. The emission reduction potential is 5.20 tons per day and the cost-effectiveness is \$0.87 per pound.

Methanol Fuel for Large Boilers. This tactic requires methanol as a substitute for diesel fuel or as a dual fuel in utility electrical generation and large steam producing boilers. Boilers can either be fired exclusively on methanol, or in a dual-fuel mode. Methanol combustion occurs in the boiler section with the highest temperature and potential for oxides of nitrogen production. However, methanol combustion temperature is lower than that of natural gas or fuel oil resulting in a lower level of oxides of nitrogen emissions. In the dual-fuel mode, methanol is fired in appropriate burners, while conventional fuels are burned in the others. Compared to fuel oil, methanol also produces much less particulate emissions and virtually no oxides of sulfur emissions. The emission reduction potential is 3.28 tons per day and the cost-effectiveness ranges from \$4.00 to \$5.00 per pound.

<u>Methanol Fuel for Stationary Diesel Engines</u>. This tactic requires substituting methanol for diesel fuel in stationary diesel engines. The viability of methanol for larger size engines common in stationary operations is conceptually possible; however, some technical difficulties have been encountered in fuel delivery and injection systems including inadequate ignition. Some metals, plastics and elastomers used in these systems are not compatible with methanol. Installing additional methanol storage facilities and piping systems using methanol compatible materials may also be needed. The emission reduction potential is 0.03 tons per day and the cost-effectiveness is \$0.50 per pound.

<u>Methanol Fuel for Turbines</u>. This tactic requires substituting methanol for diesel fuel in stationary gas turbines. These turbines are mostly employed in cogeneration projects, and utility standby or peaking units and emergency power generators. The methanol combustion temperature is lower than natural gas or fuel oil, so oxides of nitrogen emissions are reduced. In addition, water injection can further reduce the combustion temperature. Converting a turbine to methanol requires some modifications. Methanol has a heating value about half that of natural gas or oil, doubling the fuel needed to obtain the same electrical output and requiring a larger fuel pump. The emission reduction potential is 0.85 tons per day and the cost-effectiveness ranges from \$6.30 to \$9.50 per pound.

<u>Selective Catalytic Reduction for Lean Burn Engines</u>. This tactic requires selective catalytic reduction as add-on control technology for lean burn engines operating on landfill, digester, or natural gas. The lean burn engine is a piston engine relying on lean combustion to reduce oxides

of nitrogen. Selective catalytic reduction is a control technique based on the catalytic reaction between the oxides of nitrogen formed in the combustion process and ammonia injected into the engine exhaust. The flue gas and ammonia mix pass through layers of catalyst, and convert oxides of nitrogen to elemental nitrogen and water. The complete control system would include a continuous emission monitoring system. The emission reduction potential is 0.61 tons per day and the cost-effectiveness ranges from \$1.60 to \$38.20 per pound.

<u>Combustion Emission Limits</u>. This tactic would require all new and existing stationary combustion equipment emit at a rate no greater than burning gaseous fuel, like natural or liquefied petroleum gas. It would have the same air quality benefit as banning liquid and solid fuel combustion in stationary sources with the advantage of not artificially limiting the choice of available fuels. Emission limitations would be targeted to each specific type of combustion equipment based on an emission concentration limit (i.e., parts per million, grams per brake horsepower-hour) instead of an emission rate limitation (pounds per hour). The emission reduction potential is 1.66 tons per day and the cost-effectiveness is \$35.00 per pound.

Industrial and Commercial Boiler Controls. This tactic requires low excess air, low-NOx burners, flue gas recirculation, selective catalytic reduction, or selective non-catalytic reduction for permitted commercial and industrial boilers with heat input ratings less than 100 million Btu per hour. Low excess air firing reduces the oxygen concentration in the flame zone, inhibiting the oxidation of free nitrogen and reducing oxides of nitrogen formation. To insure that the smaller quantity of oxygen available for combustion mixes completely with the fuel, low excess air burners have better air-fuel mixing characteristics than conventional burners. The emission reduction potential is 0.16 tons per day and the cost-effectiveness ranges from \$0.30 to \$22.27 per pound.

<u>Fuel Cells Replacing Internal Combustion Engines</u>. Fuel cells are electrochemical devices that convert fuel and air directly into electrical energy via chemical reaction. This tactic proposes to replace internal combustion engines used to generate electricity with phosphoric acid fuel cells. However, most existing engine driven electrical generators in this category can not be replaced by fuel cells units. Phosphoric acid fuel cells cannot be used in small cogeneration operations because of low heat output. Since the fuel cells take fours hours to startup, they cannot be used for emergency generation. Since fuel cells are not portable, they are not suitable replacements for portable engine driven generator units. Fuel cells also cannot replace resource recovery engines burning digester gas. The emission reduction potential is 0.01 tons per day and the cost-effectiveness is \$66.00 per pound.

<u>Fuel Cells Replacing Utility Boilers</u>. This tactic proposes to replace existing utility boilers having heat inputs greater than 100 million Btu/hr with phosphoric acid fuel cells. Despite high capital costs, fuel cells are attractive for several reasons. First, fuel is converted directly to electricity, unlike conventional utility boilers that first generate steam to drive turbine-generators. Second, electrical and thermal efficiencies are higher for fuel cells than for utility boilers. Third, fuel cells have inherently low emission rates of oxides of nitrogen, carbon monoxide, particulate matter, and oxides of sulfur. The emission reduction potential is 9.44 tons per day and the cost-effectiveness is \$1,040.00 per pound.

<u>Stationary Internal Combustion Engines (50 - 200 Horsepower</u>). This tactic requires combustion modifications or flue gas treatment for new and existing, currently nonpermitted internal combustion engines that have maximum power output ratings of 50 to 200 horsepower. Fuel economy is a primary concern for engines in this size range. They are usually operated close to stoichiometric conditions (rich-burn) without any type of emissions control. Nonselective catalytic reduction, currently the best available control technology for rich-burn engines, is the proposed control method for natural gas-fired engines. The control technology for diesel-fired engines is limited to ignition retard. The emission reduction potential is 0.78 tons per day and the cost-effectiveness range is \$0.21 to \$2.61 per pound.

Stationary Internal Combustion Engines (200 - 500 Horsepower). This tactic requires retrofit controls for new and existing internal combustion engines that have maximum power output ratings of 200 to 500 horsepower. Fuel economy is a primary concern for engines in this size range. They are usually operated close to stoichiometric conditions (rich-burn) without any type of emissions control. Nonselective catalytic reduction, currently the best available control technology for rich-burn engines, is the proposed control method for natural gas-fired engines. The control technology for diesel-fired engines is limited to ignition retard and turbocharging with after cooling. The emission reduction potential is 1.59 tons per day and the cost-effectiveness range is \$0.14 to \$0.81 per pound.

<u>Turbines</u>. This tactic requires combustion modifications or flue gas treatment to control NOx emissions from existing gas turbine engines. Emission limits, based on the size of the turbine, are applied based on two alternatives. One uses Best Available Retrofit Control Technology as defined by the Air Resources Board. The other considers future effective emission levels adopted in South Coast Air Quality Management District Rule 1134. The emission reduction potential is 0.64 tons per day and the cost-effectiveness range is \$0.63 to \$6.36 per pound.

Areawide Source Controls - Oxides of Nitrogen

Oxides of nitrogen emissions from areawide sources can be reduced through improved products found in most homes and small scale commercial buildings. Water heaters found in homes and most small commercial buildings can be replaced with low-NOx varieties already required and marketed in the South Coast Air Basin.

<u>Residential Low-NOx Water Heaters</u>. This tactic requires new and replacement natural gas-fired water heaters in multi- and single-family homes to meet an emission limit of 40 nanograms per joule. Sales of new and replacement water heaters would be limited to those equipped with low-NOx burners. Emission reductions will occur as low-NOx water heaters are installed in new homes and existing units no longer serviceable are replaced. The emission reduction potential is 2.50 tons per day and the cost-effectiveness is \$1.53 per pound.

<u>Commercial Low-NOx Water Heaters</u>. This tactic applies to commercial buildings using natural gas-fired residential-type water heaters, and requires new and replacement equipment to meet the residential NOx emission limit of 40 nanograms per joule. Sales of new and replacement water heaters would be limited to those equipped with low-NOx burners. Emission reductions will occur as low-NOx water heaters are installed in new buildings and existing units no longer serviceable are replaced. The emission reduction potential is 0.12 tons per day and the cost-effectiveness is \$8.12 per pound.

<u>Residential Low-NOx Furnaces</u>. This tactic requires new and replacement natural gas-fired central furnaces in multi- and single-family homes to meet an emission limit of 40 nanograms per joule. Sales of new and replacement water heaters would be limited to those equipped with low-NOx burners. Emission reductions will occur as low-NOx water heaters are installed in new homes and as existing units that are no longer serviceable are replaced. Emission reductions would occur in the nonpeak smog season. The emission reduction potential is 1.01 tons per day and the cost-effectiveness is \$5.76 per pound.

Energy Conservation - Oxides of Nitrogen

Oxides of nitrogen emissions can be reduced through energy conservation in most homes and small scale commercial buildings. Some control measures provide the added benefit of reducing energy demand and dependence on imported energy. Solar energy can provide all of the energy needed for swimming pool heating, and more than half the energy needed for heating commercial and domestic hot water, and hot tubs and spas. Heat pumps can also help reduce emissions and energy demand by pulling heat from outdoors and using it to heat indoors, rather than burning fuel to provide the heat.

<u>Solar Pool Heaters</u>. Solar energy can provide all energy needed to heat swimming pools. This tactic requires high-efficiency pool heaters or solar equipment on all new heated swimming pools and to replace existing natural gas-fired pool heaters upon home resale. Emission reductions will be phased in as high-efficiency heaters or solar heating systems are installed. There is no growth in emissions for new heated swimming pools. The emission reduction ranges from 0.01 to 0.03 tons per day. The cost-effectiveness ranges from a savings to a cost of \$4,800 per pound.

<u>Solar Spa/Hot Tub Heaters</u>. This tactic requires high-efficiency spa heaters or solar equipment on all new residential hot tubs and spas and to replace existing residential natural gas-fired hot tub and spa heaters upon home resale. Emission reductions will occur as high-efficiency heaters or solar collectors are installed. If a hot tub or spa is installed at a residence with a swimming pool, one solar hot water heating system can be used to heat water for both the hot tub or spa and the swimming pool with no increase in system cost. There is no growth in emissions, but the cost-effectiveness ranges from \$74 to \$4,657 for new solar hot tub heaters. The emission reduction ranges from 0.01 to 0.02 tons per day and the cost-effectiveness ranges from \$78 to \$5,433 per pound for retrofitted solar hot tub heaters.

<u>Residential Solar Hot Water.</u> This tactic requires solar equipment or best available technology on natural gas-fired water heating systems be installed in new and existing multi- and single-family homes. Solar energy could provide about 52% of the annual energy needed for residential water heating, with the remaining 48% provided by the conventional natural gas unit. Solar water heating would be especially beneficial during the peak ozone months when incident radiation is most intense. Conventional natural gas-fired water heaters would continue to be used to supplement the solar collector. There is no growth in emissions, but the cost-effectiveness ranges from \$44 to \$131 per pound for new homes. The emission reduction ranges from 1.68 to 2.43

tons per day and the cost-effectiveness ranges from \$49 to \$146 per pound upon home resale. Replacement of existing water heaters upon breakdown with solar will be income-based until a tax credit is obtained. Strategies will be developed for implementation of the solar water heater requirements within two years and for controlling costs of water heater retrofit. The District will return to the Board regarding the requirement for "point of sale" retrofit with solar water heaters and with draft legislation for obtaining tax credits for solar water heaters.

<u>Residential Central Heaters - Heat Transfer Pumps</u>. This tactic requires installation of heat transfer pumps in all new homes and replacement in existing homes when existing conventional central furnaces are to be replaced at the end of its useful life. The heat pump employs an outdoor compressor or heat exchanger to extract heat from the atmosphere and an indoor air handler for heat distribution to rooms. During the summer, the heat pump can be reversed to remove heat from within the home and pump it outdoors. This allows the one device to meet home heating and air conditioning needs. There is no growth in emissions for new homes. The emission reduction 2.19 tons per day and the cost-effectiveness ranges from \$33.67 to \$34.44 per pound for new homes and upon heater replacement.

<u>Commercial Solar Hot Water</u>. This tactic requires installation of solar equipment or best available technology on natural gas-fired water heating systems in all new commercial buildings. Solar energy could provide about 52% of the annual energy needed for commercial water heating, with the remaining 48% provided by the conventional natural gas unit. Conventional natural gas-fired water heaters would continue to be used to supplement the solar collector. Solar water-heating technology is used extensively in many areas with prevalent incident sunlight to supply hot water. Solar water heating would be especially beneficial during the peak ozone months when incident radiation is most intense. There is no growth in emissions, but the cost-effectiveness ranges from a savings to \$158 per pound.

Tactics Ranking

The tactic assessments reflect emission reduction potential, cost-effectiveness, technical feasibility, reliability, and enforceability. The Act also requires the tactics be ranked in order of cost-effectiveness, from the least cost effective to the most¹. Table 13 includes the required list, and Table 14 reflects a listing by emission reduction potential.

¹California Health and Safety Code §40922.
TABLE 13 Tactic Ranking by Cost Effectiveness¹

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Tactic	Pollu- tant	Emis- sions (t/d)	Emis- sion Reduc- tion (t/d)	Percent Emission Reduction	1987 % Emis- sion Reduc- tion	Cost- Effectiveness	ΤF	R	Enf	Т	Ε	C	А	IA
Consumer Products (ARB)	ROG	19.39	6.30	32%	2.26%	Save- \$ 1.70	н	н	н	0	0	0	N/E	ARB
Automotive Refinishing	ROG	2.19	1.31	60%	0.47%	Save-\$2.20	H-M	H-M	М	+	+	0	N/E	APCD
Solvent Cleaning Operations	ROG	5.56	1.06	19%	0.38%	Save-\$3.85	Н	H-M	H-M	-	+	-	N/E	APCD
Marine Coatings	ROG	2.29	0.50	22%	0.18%	Save-\$6.40	H-M	H-M	H-M	+	0	0	N/E	APCD
Architectural Coatings	ROG	14.30	0.37	3%	0.13%	Save-\$6.40	Μ	Н	н	0	0	0	N/E	APCD
Wood Product Coatings	ROG	1.13	0.87	77%	0.31%	Save-\$18.34	H-M	Н	н	0	+	0	N/E	APCD
New Commercial Solar Hot WaterHeaters	NOx	0.21	0.00	53%	0.00%	Save- \$158.00	Н	Н	Н	0	+	0	N	APCD
Substitute Cleanup Solvents	ROG	0.96	0.73	76%	0.26%	Neg-\$0.26	Н	Н	Н	+	0	+	N/E	APCD
Barbeque Grill Ignition (ARB)	ROG	0.18	0.04	22%	0.01%	\$0.01-\$1.04	Н	Н	Н	0	0	+	N/E	ARB
Polyester Resin Operations	ROG	1.40	0.83	59%	0.30%	\$0.04	Н	Н	н	-	0	0	N/E	APCD
Polyester and Epoxy Resin Operations	ROG	0.41	0.08	20%	0.03%	\$0.04	H-M	Н	H-M	-	0	0	N/E	APCD
Small Utility Engine Controls (ARB)	ROG	3.40	2.67	79%	0.96%	\$0.08-\$12	Н	Н	Н	0	0	0	N/E	ARB
Plastic, Rubber, Composite, and Glass Coatings	ROG	0.22	0.17	77%	0.06%	\$0.26-\$1.97	Н	Н	M/H	-	+	0	N/E	APCD
Adhesives	ROG	0.31	0.22	71%	0.08%	\$0.26-\$10.00	Н	Н	Н	+	+	0	N/E	APCD
Deodorants and Antiperspirants (ARB)	ROG	0.43	0.34	79%	0.12%	\$0.50-\$1.20	Н	н	Н	0	0	0	Ν	ARB
Marina Fueling Operations	ROG	0.03	0.02	67%	0.01%	\$0.57-\$7.68	Н	Н	Н	-	+	0	N/E	APCD
Petroleum Dry Cleaners	ROG	0.16	0.04	25%	0.01%	\$0.68-\$1.27	Н	н	Н	+	0	0	N/E	APCD
Can and Coil Coatings	ROG	0.39	0.31	79%	0.11%	\$0.85-\$1.80	н	Н	Н	0	+	0	N/E	APCD
Foam Blowing and Plastics Expanding	ROG	0.25	0.20	80%	0.07%	\$0.90	Н-М	Н	Н	-	0	-	N/E	APCD

¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+) - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

TABLE 13 (cont'd) Tactic Ranking by Cost Effectiveness¹

		w	Emis- sion	_										
		Emis-	Reduc-	Percent	1987 %									
Tactic	Pollu-	sions (t/d)	tion (t/d)	Reduction	Emission Reduction	Cost- Effectiveness	ΤF	p	Enf	т	F	C	۸	IA
		(() ()	(1/ U/	NCUUCIOII	Neudenon	Enectiveness	11	ĸ	LIII		L	C	л	17
Kelp Processing Operations	ROG	0.35	0.17	49%	0.06%	\$1.02	н	н	н	0	+	0	N/E	APCD
Paint and Ink Manufacturing	ROG	0.71	0.48	68%	0.17%	\$1.06	Н	Н	Н	0	+	0	N/E	APCD
Commercial Charbroiling	ROG	0.61	0.52	85%	0.19%	\$1.62	Н	Н	н	•	+	0	N/E	APCD
Metal Parts and Products Coatings	ROG	1.78	0.56	31%	0.20%	\$1.67-\$2.25	н	H-M	Μ	+	0	0	N/E	APCD
Bakeries	ROG	0.28	0.22	79%	0.08%	\$3.14-\$3.45	Н	н	Н	0	+	0	N/E	APCD
Semiconductor Manufacturing	ROG	0.28	0.07	25%	0.03%	\$4.00-\$4.90	Н	Н	Н	+	0	+	N/E	APCD
Ethylene Oxide Sterilizers	ROG	0.02	0.018	83%	0.01%	\$5.00-\$175.00	Н	Н	Н	-	+	0	N/E	APCD
Bulk Gasoline Storage Tank Degassing	ROG	3.50	1.90	54%	0.68%	\$6.10-\$17.00	Н	H-M	Н	-	+	0	N/E	APCD
Underground Gas Tank Decommissioning and Soil Decontamination	ROG	0.58	0.55	95%	0.20%	\$9.71-\$10.00	Н	Н	М-Н	-	0	0	N	APCD
Groundwater Decontamination	ROG	<0.01	<0.01	86%	<0.01%	\$15.88-\$26.40	Н	Н	M-H	-	0	0	Ν	APCD
Retrofit Solar Pool Heaters	NOx	0.04	0.01-0.03	23%-75%	0.00%-0.02%	Save-\$4,800	Н	н	M-H	0	+	0	Ε	APCD
New Solar Pool Heaters	NOx	0.04	0.00	0%	0.00%	Save-\$4,800	Н	Н	M-H	0	+	0	Ν	APCD
Small Utility Engine Controls	NOx	0.15	(0.21)	(140%)	(0.08%)	\$0.08-\$12	Н	Н	Н	0	0	0	N/E	ARB
Stationary I C Engines (200-500 hp)	NOx	3.79	1.59	42%	0.57%	\$0.14-\$0.81	Н	M-H	Μ	0	+	0	N/E	APCD
Stationary I C Engines (50-200 hp)	NOx	2.43	0.78	32%	0.28%	\$0.21-\$2.61	Н	M-H	Μ	0	+	0	N/E	APCD
Industrial & Commercial Boiler Controls	NOx	0.47	0.16	34%	0.06%	\$0.30-\$22.27	H-M	H-M	H-M	0	0	0	N/E	APCD
Methanol for Diesel Engines	NOx	0.04	0.03	75%	0.01%	\$0.50	H-M	Н	Н	0	+	0	Ν	APCD
Turbines	NOx	2.58	0.64	25%	0.23%	\$0.63-\$6.36	L-M	L-M	Н	0	0	0	N/E	APCD
Boiler NOx Controls - Low NOx Burners	NOx	9.60	3.45	36%	1.24%	\$0.64	Н	H-M	Н	0	0	0	N/E	APCD

¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+) - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

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There will be an oxides of nitrogen emission increase, not reduction, for the Small Utility Engine Controls tactic.

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TABLE 13 (cont'd) Tactic Ranking by Cost Effectiveness¹

	Pollu-	Emis- sions	Emis- sion Reduc- tion	Percent Emission	1987 % Emission									
Tactic	tant	(t/d)	(t/d)	Reduction	Reduction	Cost	ΤF	R	Enf	Т	E	С	Α	IA
Boiler NOx Controls - Urea Injection	NOx	9.60	5.20	54%	1.86%	\$0.87	н	H-M	Н	0	0	0	N/E	APCD
Boiler NOx Controls - Selective Non-Catalytic Reduction	NOx	9.60	4.32	45%	1.55%	\$1.13	Н	Н-М	Н	0	0	0	N/E	APCD
Boiler NOx Controls - Low NOx Burners and Flue Gas Recirculation	NOx	9.60	5.17	54%	1.85%	\$1.40	Н	Н-М	Н	0	0	0	N/E	APCD
Residential Low NOx Water Heaters	NOx	4.64	2.50	54%	0.90%	\$1.53	Н	Н	Н	0	0	0	N/E	APCD
Lean Burn Engines	NOx	0.87	0.61	70%	0.22%	\$1.60-\$38.20	Н	н	н	0	0	0	N/E	APCD
Boiler NOx Controls - Flue Gas Recirculation	NOx	9.60	2.60	27%	0.93%	\$2.02	Н	H-M	Н	0	0	0	N/E	APCD
Methanol for Gas Turbines	NOx	10.00	3.40	34%	1.22%	\$4.00-\$5.00	М	Н	н	0	+	0	N/E	APCD
Methanol for Large Boilers	NOx	9.63	3.28	34%	1.18%	\$4.00-\$5.00	Μ	Н	Н	0	+	0	N/E	APCD
Boiler NOx Controls - Selective Catalytic Reduction	NOx	9.60	7.37	77%	2.64%	\$4.06	Н	H-M	Н	0	0	0	N/E	APCD
Residential Low-NOx Furnaces	NOx	1.64	1.01	62%	0.36%	\$5.76	н	Н	н	0	0	0	N/E	APCD
Commercial Low NOx Water Heaters	NOx	0.21	0.12	57%	0.04%	\$8.12	Н	Н	Н	0	0	0	N/E	APCD
Residential Central Furnaces - Retrofit Heat Pumps	NOx	3.28	2.19	67%	0.79%	\$33.67-\$34.44	Η	Н	M-H	0	+	0	M-H	APCD
Residential Central Furnaces - New Heat Pumps	NOx	3.28	0.00	0%	0.00%	\$33.67-\$34.44	Н	Н	M-H	0	+	0	M-H	APCD
Combustion Emission Limits	NOx	4.04	1.66	41%	0.60%	\$35.00	Н-М	H-M	Н	0/+	0	0	N/E	APCD

 ¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+)
 - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

TABLE 13 (cont'd) Tactic Ranking by Cost Effectiveness¹

Tactic	Pollu- tant	Emis- sions (t/d)	Emis- sion Reduc- tion (t/d)	Percent Emission Reduction	1987 % Emission Reduction	Cost	TF	R	Enf	Т	E	C	A	IA
New Residential Solar Hot Water	NOx	4.85	0.00	53%	0.00%	\$44.00-\$131	Н	Н	н	0	+	0	Ν	APCD
Heaters Retrofit Residential Solar Hot Water Heaters	NOx	4.85	1.68-2.43	35%-50%	0.60%-0.87%	\$49.00-\$146	н	Н	M-H	0	+	0	E	APCD
Fuel Cells Replace Internal Combustion Engines	NOx	0.01	0.01	94%	0.00%	\$66.00	L	Н	Н	0	0	0	N/E	APCD
New Solar Spa/Hot Tub Heaters	NOx	0.04	0.00	0%	0.00%	\$74.00-\$4,657	Н	Н	M-H	0	+	0	Ν	APCD
Retrofit Solar Spa/Hot Tub Heaters	NOx	0.04	0.01-0.02	22%-56%	0.00%-0.01%	\$78.00-\$5,4 33	Н	Н	M-H	0	+	0	E	APCD
Fuel Cells Replace Utility Boilers	NOx	9.63	9.44	98%	3.39%	\$1,040.00	L	Н	Н	0	0	0	N/E	APCD

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 ¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+)
 - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

TABLE 14 Tactic Ranking by Emission Reduction Potential¹

Tactic	Pollu- tant	Emis- sions (t/d)	Emis- sion Reduc- tion (t/d)	Percent Emission Reduction	1987 % Emission Reduction	Cost- Effectiveness (\$/pound)	ΤF	R	Enf	Т	F	C	Δ	IA
										-	-	C		•••
Small Utility Engine Controls	NOx	0.15	(0.21)	(140%)	(0.08%)	\$0.08-\$12	Н	Н	Н	0	0	0	N/E	ARB
New Solar Pool Heaters	NOx	0.04	0.00	0%	0.00%	Save-\$4,800	Н	Н	M-H	0	+	0	Ν	APCD
Residential Central Furnaces - New Heat Pumps	NOx	3.28	0.00	0%	0.00%	\$33.67-\$34.44	Н	Н	M-H	0	+	0	Ν	APCD
New Residential Solar Hot Water Heaters	NOx	4.85	0.00	53%	0.00%	\$44.00-\$131	Н	Н	Н	0	+	0	Ν	APCD
New Solar Spa/Hot Tub Heaters	NOx	0.04	0.00	0%	0.00%	\$74.00-\$4,657	н	Н	M-H	0	+	0	N	APCD
New Commercial Solar Hot WaterHeaters	NOx	0.21	0.00	53%	0.00%	Save - \$158	Н	Н	Н	0	+	0	N	APCD
Groundwater Decontamination	ROG	<0.01	<0.01	86%	<0.01%	\$15.88-\$26.40	н	Н	M-H	-	0	0	N	APCD
Fuel Cells Replace Internal Combustion Engines	NOx	0.01	0.01	94%	0.00%	\$66.00	L	Н	Н	0	0	0	N/E	APCD
Retrofit Solar Spa/Hot Tub Heaters	NOx	0.04	0.01-0.02	22%-56%	0.00%-0.01%	\$78.00-\$5,43 3	Н	Н	M-H	0	+	0	Ε	APCD
Retrofit Solar Pool Heaters	NOx	0.04	0.01-0.03	23%-75%	0.00%-0.02%	Save- \$4 ,800	н	Н	M-H	0	+	0	E	APCD
Ethylene Oxide Sterilizers	ROG	0.02	0.018	83%	0.01%	\$5.00-\$175.00	н	н	н	-	+	0	N/F	APCD
Marina Fueling Operations	ROG	0.03	0.02	67%	0.01%	\$0.57-\$7.68	н	н	н	-	+	0	N/F	APCD
Methanol for Diesel Engines	NOx	0.04	0.03	75%	0.01%	\$0.50	H-M	Н	н	0	+	0	N	APCD
Petroleum Dry Cleaners	ROG	0.16	0.04	25%	0.01%	\$0.68-\$1.27	н	н	Н	+	0	0	N/F	APCD
Barbeque Grill Ignition (ARB)	ROG	0.18	0.04	22%	0.01%	\$0.01-\$1.04	н	Н	н	ò	Ň	+	N/F	ARR
Semiconductor Manufacturing	ROG	0.28	0.07	25%	0.03%	\$4.00-\$4.90	н	Н	н	+	0		N/F	
Polyester and Epoxy Resin Operations	ROG	0.41	0.08	20%	0.03%	\$0.04	H-M	Н	H-M	-	0	0	N/E	APCD

¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+)
 - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

There will be an oxides of nitrogen emission increase, not reduction, for the Small Utility Engine Controls tactic.

TABLE 14 (cont'd) Tactic Ranking by Emission Reduction Potential¹

			Emis- sion											
		Emis-	Reduc-	Percent	1987 %	Cost-								
Testis	Pollu-	Sions	tion	Emission	Emission	Effectiveness	an m	n	F (æ		~		
Tactic	tant	(t/d)	(t/a)	Reduction	Reduction	(\$/pound)	11	ĸ	Enf	I	Ł	C	A	IA
Commercial Low NOx Water Heaters	NOx	0.21	0.12	57%	0.04%	\$8.12	н	Н	н	0	0	0	N/E	APCD
Industrial & Commercial Boiler Controls	NOx	0.47	0.16	34%	0.06%	\$0.30-\$22.27	H-M	Н-М	H-M	0	0	0	N/E	APCD
Plastic, Rubber, Composite, and Glass Coatings	ROG	0.22	0.17	77%	0.06%	\$0.26-\$1.97	Н	Н	M/H	-	+	0	N/E	APCD
Kelp Processing Operations	ROG	0.35	0.17	49%	0.06%	\$1.02	Н	Н	н	0	+	о	N/E	APCD
Foam Blowing and Plastics Manufacturing	ROG	0.25	0.20	80%	0.07%	\$0.90	H-M	Н	Н	-	0	-	N/E	APCD
Bakeries	ROG	0.28	0.22	79%	0.08%	\$3.14-\$3.45	Н	Н	Н	0	+	0	N/E	APCD
Adhesives	ROG	0.31	0.22	71%	0.08%	\$0.26-\$10.00	Н	Н	Н	+	+	0	N/E	APCD
Wood Product Coatings	ROG	1.13	0.87	77%	0.31%	Save-\$18.34	H-M	Н	н	0	+	0	N/E	APCD
Can and Coil Coatings	ROG	0.39	0.31	79%	0.11%	\$0.85-\$1.80	Н	Н	Н	0	+	0	N/E	APCD
Deodorants and Antiperspirants (ARB)	ROG	0.43	0.34	79%	0.12%	\$0.50-\$1.20	Н	Н	Н	0	0	0	Ν	ARB
Architectural Coatings	ROG	14.30	0.37	3%	0.13%	Save-\$6.40	Μ	Н	н	0	0	0	N/E	APCD
Paint and Ink Manufacturing	ROG	0.71	0.48	68%	0.17%	\$1.06	Н	Н	Н	0	+	0	N/E	APCD
Marine Coatings	ROG	2.29	0.50	22%	0.18%	Save-\$6.40	H-M	H-M	H-M	+	0	0	N/E	APCD
Commercial Charbroiling	ROG	0.61	0.52	85%	0.19%	\$1.62	Н	Н	Н	-	+	о	N/E	APCD
Underground Gas Tank Decommissioning and Soil Decontamination	ROG	0.58	0.55	95%	0.20%	\$9.71-\$10.00	Н	Н	М-Н	-	0	0	N	APCD
Metal Parts and Products Coatings	ROG	1.78	0.56	31%	0.20%	\$1.67-\$2.25	Н	H-M	Μ	+	0	0	N/E	APCD
Lean Burn Engines	NOx	0.87	0.61	70%	0.22%	\$1.60-\$38.20	Η	Н	Н	0	0	0	N/E	APCD

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 ¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+) - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

TABLE 14 (cont'd) Tactic Ranking by Emission Reduction Potential¹

			Emis- sion	D	1005 %									
	D .U	Emis-	Keduc-	Percent	1987 %	Cost-								
Tachia	Pollu-	sions (A/d)	tion	Emission	Emission	Effectiveness	TE	D	F (T	r	0		
Tactic	lant	(()u)	((/u)	Reduction	Reduction	(a) pound)	1 Г	ĸ	Enr	I	C	C	A	IA
Turbines	NOx	2.58	0.64	25%	0.23%	\$0.63-\$6 .36	L-M	L-M	Н	0	0	0	N/E	APCD
Substitute Cleanup Solvents	ROG	0.96	0.73	76%	0.26%	Neg-\$0.26	Н	Н	Н	+	0	+	N/E	APCD
Stationary I C Engines (50-200 hp)	NOx	2.43	0.78	32%	0.28%	\$0.21-\$2.61	Н	M-H	Μ	0	+	0	N/E	APCD
Polyester Resin Operations	ROG	1.40	0.83	59%	0.30%	\$0.04	Н	Н	н	-	0	0	N/E	APCD
Residential Low-NOx Furnaces	NOx	1.64	1.01	62%	0.36%	\$5.76	Н	Н	Н	0	0	0	N/E	APCD
Solvent Cleaning Operations	ROG	5.56	1.06	19%	0.38%	Save-\$3.85	Н	H-M	H-M	-	+	-	N/E	APCD
Automotive Refinishing	ROG	2.19	1.31	60%	0.47%	Save-\$2.20	H-M	H-M	М	+	+	0	N/E	APCD
Stationary I C Engines (200-500 hp)	NOx	3.79	1.59	42%	0.57%	\$ 0.14- \$ 0.81	н	M-H	М	0	+	0	N/E	APCD
Combustion Emission Limits	NOx	4.04	1.66	41%	0.60%	\$35.00	Н-М	H-M	Н	0/+	0	0	N/E	APCD
Retrofit Residential Solar Hot Water Heaters	NOx	4.85	1.68-2.43	35%-50%	0.60%-0.87%	\$49.00-\$146	Н	Н	M-H	0	+	0	E	APCD
Bulk Gasoline Storage Tank Degassing	ROG	3.50	1.90	54%	0.68%	\$6.10-\$17.00	Н	Н-М	н	-	+	0	N/E	APCD
Residential Central Furnaces - Retrofit Heat Pumps	NOx	3.28	2.19	67%	0.79%	\$33.67-\$34.44	Н	Н	M-H	0	+	0	M-H	APCD
Residential Low NOx Water Heaters	NOx	4.64	2.50	54%	0.90%	\$1.53	Н	Н	Н	0	0	0	N/E	APCD
Boiler NOx Controls - Flue Gas Recirculation	NOx	9.60	2.60	27%	0.93%	\$2.02	Н	Н-М	Н	0	0	0	N/E	APCD
Small Utility Engine Controls (ARB)	ROG	3.40	2.67	79%	0.96%	\$ 0.08 -\$ 12	Н	Н	Н	0	0	0	N/E	ARB
Methanol for Large Boilers	NOx	9.63	3.28	34%	1.18%	\$4.00-\$5.00	Μ	Н	Н	0	+	0	N/E	APCD
Methanol for Gas Turbines	NOx	10.00	3.40	34%	1.22%	\$4.00-\$5.00	Μ	Н	Н	0	+	0	N/E	APCD
Boiler NOx Controls - Low NOx Burners	NOx	9.60	3.45	36%	1.24%	\$0.64	Н	H-M	Н	0	0	0	N/E	APCD

 ¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+)
 - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

TABLE 14 (cont'd) Tactic Ranking by Emission Reduction Potential¹

Tactic	Pollu- tant	Emis- sions (t/d)	Emis- sion Reduc- tion (t/d)	Percent Emission Reduction	1987 % Emission Reduction	Cost- Effectiveness (\$/pound)	TF	R	Enf	Т	E	с	A	IA
Boiler NOx Controls - Selective	NOx	9.60	4.32	45%	1.55%	\$ 1.13	н	H-M	Н	0	0	0	N/E	APCD
Boiler NOx Controls - Low NOx Burners and Flue Gas Recirculation	NOx	9.60	5.17	54%	1.85%	\$1.40	Н	H-M	Н	0	0	0	N/E	APCD
Boiler NOx Controls - Urea Injection	NOx	9.60	5.20	54%	1.86%	\$0.87	Н	H-M	Н	0	0	0	N/E	APCD
Consumer Products (ARB)	ROG	19.39	6.30	32%	2.26%	Save-\$1.70	Н	Н	Н	0	0	0	N/E	ARB
Boiler NOx Controls - Selective Catalytic Reduction	NOx	9.60	7.37	77%	2.64%	\$4.06	Η	H-M	Н	0	0	0	N/E	APCD
Fuel Cells Replace Utility Boilers	NOx	9.63	9.44	98%	3.39%	\$1,040.00	L	Н	Н	0	0	0	N/E	APCD

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 ¹ TF - technological feasibility; R - reliability; Enf - enforceability. H - high; M - medium; N - nominal. T - toxic impact; E - energy impact; C - chlorofluorocarbon impact; (+)
 - possible increase; (o) - no known impact; (-) - possible decrease. A - applicability; N - new source; E - existing source. IA - implementing agency; APCD - Air Pollution Control District; ARB - Air Resources Board; EPA - Environmental Protection Agency.

Emission reductions are in tons per day and cost-effectiveness in dollars per pound. Applicability is noted for new and/or existing sources. Technological feasibility, reliability, and enforceability are ranked as high, medium, or nominal. Toxic emissions, energy demand, and chlorofluorocarbon (freon/halon) impacts are ranked as possible increase, no known impact, or possible decrease. Implementing agencies include the District, state Board, and U.S. Environmental Protection Agency.

Secondary Impacts

While the primary focus of Strategy is to reduce smog forming emissions, tactics may have secondary impacts on other environmental media. Besides emission reductions, tactics were also assessed for potential secondary impacts on toxic air contaminants, energy, and stratospheric ozone depleting substances.

Secondary toxic emission impacts may occur when reformulating regulated materials by substituting presently exempt chlorinated materials for reactive organic gases to meet emission limits. However, some tactics will decrease the use of toxic substances, thereby reducing secondary toxic emission impacts. Table 15 lists tactics with potential toxic emission impacts.

Potentially Adverse Impact	Potentially Beneficial Impact
Auto Refinishing	Solvent Cleaning Operations
Adhesives	Plastic and Rubber Products Coatings
Marine Coatings	Fiberglass Manufacturing
Metal Parts and Products Coatings	Ethylene Oxide Sterilizers
Petroleum Dry Cleaners	Further Fiberglass Control
Substitute Cleanup Solvents	Bulk Gasoline Storage Tank Degassing
Semiconductor Manufacturing	Foam Blowing and Plastics Manufacturing
Allow Only Natural Gas Use	Soil Decontamination
	Underground Gas Tank Decommissioning
	Commercial Charbroiling
	Groundwater Decontamination
	Marine Fueling Operations

TABLE 15 Potential Toxic Emission Impacts

Tactics affecting coatings and solvents frequently result in reformulation to reduce reactive organic gas emissions. This may affect auto refinishing, marine coating, metal parts and products coating,

plastic and rubber products coating, adhesives application, and solvent cleaning operations. A commonly used substitute solvent is methylene chloride. Methylene chloride is currently under review by the Environmental Protection Agency and has been listed by Air Resources Board as a toxic compound.

Affected petroleum dry cleaners switching to synthetic solvents, such as perchloroethylene, may increase hazardous or toxic air emissions. Perchloroethylene is currently under review as a suspected human carcinogen.

Restricting oxides of nitrogen emissions from combustion equipment to the natural gas equivalent level may increase the use of methanol. Methanol is toxic, and miscible in water, increasing its danger in the event of underground aquifer contamination. Methanol combustion in internal combustion engines may also increase toxic aldehyde emissions.

Some tactics may require decreased use or emissions of known or suspected toxic substances, such as polyester resin (fiberglass) operations, foam and plastics manufacturing, ethylene oxide sterilizers, soil decontamination, underground gas tank decommissioning, and bulk gasoline storage tank degassing.

Low monomer resins and reduced cleanup solvents for fiberglass operations will decrease exposure to styrene. Foam and plastics manufacturing proposes to reduce emissions of methylene chloride. Ethylene oxide sterilizers controls may significantly decrease adverse health risks to the general public through reduction in ethylene oxide emissions. Soil decontamination, underground gas tank decommissioning and bulk gasoline storage tank degassing will reduce emissions of gasoline, benzene, and other toxic or hazardous hydrocarbons. Groundwater decontamination by means of air stripping will reduce emissions of benzene, perchloroethylene, trichloroethylene, gasoline, methylene chloride, and ethylene dichloride.

Table 16 lists tactics with potential energy demand impacts. Energy demand may be increased coating and solvent reformulation to waterborne alternatives, which may increase energy consumption to reduce drying time for plastic and rubber products, wood furniture, and metal parts and products coatings, auto refinishing, solvent cleaning operations, and adhesives. Increased energy use is necessary for kelp processing operations to meet a 95% control requirement.

Potentially Adverse Impact
Paint and Ink Manufacturing
Wood Furniture Coatings
Kelp Processing Operations
Can and Coil Coatings
Bakeries
Auto Refinishing
Small Internal Combustion Engines 200-500 hp
Small Internal Combustion Engines 50-200 hp
Methanol for Gas Turbines
Methanol for Large Boilers
Methanol for Diesel Engines
Adhesives
Solvent Cleaning Operations
Plastic and Rubber Products Coatings
Ethylene Oxide Sterilizers
Bulk Gasoline Storage Tank Degassing
Heat Pumps - Retrofit
Heat Pumps - New Homes
Commercial Charbroiling
Marine Fueling Operations

TABLE 16 Potential Energy Demand Impacts

Potentially Beneficial Impact Residential Solar Hot Water-Retrofit Solar Pool Heaters - Retrofit Solar Hot Tub Heaters-Retrofit Solar Pool Heaters - New Pools Solar Hot Tub Heaters-New Hot Tubs Residential Solar Hot Water-New Homes Commercial Solar Hot Water-New Development Heat Pumps - Retrofit

Heat Pumps - New Homes

Control devices may also increase energy demand. The use of thermal or catalytic incinerators, refrigerated condensers, or carbon adsorbents may increase total energy consumption for foam and plastics, fiberglass, semiconductor, and paint and ink manufacturing, can and coil coating, tank degassing, and commercial bakeries. Catalytic, thermal oxidation, and acid-catalyzed scrubber control equipment may result in increased energy usage associated with operating pumps, valves and monitoring equipment for ethylene oxide sterilizers. An increase in energy consumption can be anticipated due to the use of vacuum assist/burner systems for marina gasoline refueling operations and electrostatic precipitators or afterburners for commercial charbroilers.

Changes in operating procedures or use of alternative fuels may increase energy demand. Methanol use in stationary diesel engines, gas turbines, and large boilers may also increase energy demand. Because methanol generally has only half the heat content of fuel oil, twice the volume of fuel must be transferred, stored and burned. This would increase emissions from the fuel

distribution infrastructure. Because methanol is typically manufactured from natural gas, there is some increased energy loss to change the gas to a liquid instead of burning natural gas directly. If methanol were to be manufactured from gasification of coal, the energy impacts would be increasingly significant.

Besides changing to alternative fuels, energy demand for small internal combustion engines may increase as ignition timing is retarded. While this reduces emissions, it diminishes engine efficiency and slightly increases fuel consumption.

Energy conservation benefits would result from small utility engine modifications by substituting 4-stroke engines for 2-stroke engines, and electric for gasoline powered equipment. Solar water heaters would reduce natural gas consumption for domestic water heaters, hot tubs and swimming pools. While electrical energy demand may increase slightly for electric circulating motors, this impact could be offset by using solar powered circulating motors.

The use of heat transfer pumps presents unique potential energy demand impacts, causing these control measures to be listed with both potentially beneficial and adverse impacts. Space heating with heat transfer pumps would reduce natural gas consumption, but increase electrical energy demand. If the heat transfer pumps were installed with natural gas instead of strip resistance heating elements as supplementary or backup heating, increased electrical energy demand would be minimized. If the heat transfer pumps were also used for building cooling in the summer, electrical energy demand increases could be significant.

TABLE 17 Potential Chlorofluorocarbon (Freon/Halon) Impacts

Potentially Adverse Impact Auto Refinishing Wood Products Coating Metal Parts and Products Coating Marine Coating Adhesives Substitute Cleanup Solvents Petroleum Dry Cleaning Semiconductor Manufacturing Potentially Beneficial Impact Solvent Cleaning Operations Foam Blowing and Plastics Manufacturing

Table 17 lists tactics with potential impacts on chlorofluorocarbon (CFC) demand. These substances contribute to depletion of the stratospheric ozone layer, and global warming. Given the

production phaseout of Class I ozone depleting compounds under the federal Act and the Montréal Protocol, these emission impacts may be considered short term.

The increased use of exempt solvents in substitute products or product reformulation may increase emissions of substances contributing to stratospheric ozone depletion and global warming. CFC-113 and 1,1,1-trichloroethane are ozone depleting substances frequently used to replace photochemically reactive solvents, and CFC-11 and CFC-12 are frequently used as refrigerants and foam blowing agents. However, these substances are regulated under the Montréal Protocol and the Federal Clean Air Act. Consequently, production of these substances will be phased out by 2000, with 1,1,1-trichloroethane scheduled for production phaseout by 2002. Because of the federal excise tax on these products and their increasingly limited availability, it is not likely that product reformulations and substitutions will rely heavily on them. Individual industries using these chemicals have already embarked on ambitious efforts to formulate replacements, and alternative compounds will phase out ozone depleting substances within the next several years.

Coating and solvent reformulations or substitutions may increase exempt solvents use, such as 1,1,1-trichloroethane and CFC-113, for auto refinishing, wood products coating, marine coating, metal parts and products coating, semiconductor manufacturing, dry cleaning. Use of ozone depleting substances will be short-term and phased out as federal taxes continue to increase.

The tactic for solvent cleaning operations would decrease CFC emissions by increasing the control efficiency of solvent cleaning apparatus. While this would require the use of refrigerant devices, which may increase slightly the demand for CFC-12, the potential increase would be more than offset bu reductions in CFC-113 emissions. The impact of increased refrigerant demand would diminish as replacement refrigerants are implemented. Significant reductions in CFC's would also result from controls on foam and plastics manufacturing operations still using ozone depleting substances, or as alternatives are implemented.

Measures Not Applicable to San Diego

The state Board's list of feasible measures contains control measures for sources not located in San Diego. Consequently, the control measures for the sources listed in Table 18 are not addressed.

There are also several feasible measures listed by the state Board which are currently being implemented under different District rules. Aircraft fuel transfer in storage tanks is covered by District Rule 61.3 - Transfer of Volatile Organic Compounds in Stationary Storage Tanks. Metal

furniture and fixture coating operations are covered under Rule 67.3 - Coating of Metal Parts and Products. Wood products coatings (flatwood products) and wood furniture manufacturing coatings are both covered under Rule 67.11 - Wood Products Coating Operations. Thus, separate rules to cover those operations are not needed.

Table 18Control Measures WithNo Corresponding Sources in San Diego

Crude oil pipeline heaters Oil field steam generators Control of emissions from cyclic oil production Refinery heaters and boilers wells Covers for sumps, pits, and wastewater Control of emissions from steam drive oil processing equipment production wells Marine vessel ballasting and housekeeping Marine vessel loading operations Organic chemical manufacturing Natural gas/gasoline processing plants Polymer resin manufacturing Fluid catalytic cracking units Glass melting furnaces Petroleum coke calcining Cement kilns Flexible disk manufacturing Automobile assembly coatings Vegetable oil manufacturing Fugitive emissions from industrial processes Rubber tire manufacturing (includes synthetic organic chemical manufacturing industries, petroleum refining, oil/gas production, gas plants, etc.)

Contingency Measures

The Act requires the Strategy contain contingency measures to be implemented should the state Board determine the District is not maintaining the minimum rate of progress for the approved Strategy.¹ However, the Strategy is already designed to implement all feasible measures on an expeditious schedule. As a result, there are no additional control measures that can provide significant reductions with reasonable cost effectiveness. To fulfill the contingency requirement, regulatory development will be accelerated for unadopted control measures sufficient to fulfill contingency measure shortfall requirements should any be identified by the state Board.

¹California Health and Safety Code §40915 & §41503.3.

Transportation Control Measures

Background

The California Clean Air Act requires the 1991 Regional Air Quality Strategy to include transportation control measures, and stipulates minimum performance standards for those measures¹. The Act places the ultimate responsibility for adoption, implementation, and enforcement of regulatory transportation control measures with the District. However, cities, County and regional transportation planning agencies have a participatory role in transportation control measure development². The Board is also authorized to delegate implementation of regulatory transportation control measures to local agencies³. Because the Act requires various levels of performance based on the severity of a region's air quality problem, the state Board has developed guidance documents to assist in developing regional transportation control measures and specifying the minimum levels necessary for approval of the transportation control measure portion of the Strategy.

Transportation Control Measure Performance Standards

In nonattainment areas, the Act requires all reasonably available transportation control measures be included in Air Quality Strategies⁴. Transportation control measures are defined as:⁵

...any measure to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions.

The Act also requires for severe areas such as San Diego, transportation control measures that⁶:

- Achieve an average during weekday commute hours of 1.5 persons per passenger vehicle by 1999;
- Substantially reduce the rate of increase in passenger vehicle trips and miles travelled per trip; and

¹California Health and Safety Code §40918, et. seq.

²California Health and Safety Code §40717.

³California Health and Safety Code §40717.

⁴California Health and Safety Code §40918.

⁵California Health and Safety Code §40717.

• Achieve no net increase in vehicle emissions after 1997.

Because the Act does not define or otherwise provide guidance for determining reasonably available transportation control measures or a substantial reduction in the rate of increase in travel growth, the state Board has issued guidance¹ to assist in transportation control measure planning. The guidance identifies reasonably available transportation control measures that include both regulatory and transportation system measures. They are listed in Table 19. The guidance also suggests that holding the rate of growth in vehicle trips and miles of travel consistent with the rate of population growth will fulfill the requirement for substantially reducing the rate of travel increase.

Table 19 Reasonably Available Transportation Control Measures

Regulatory Measures

Employer Based Trip Reduction Rules

Trip Reduction Rules for Other Sources Attracting Vehicle Trips

Management of Parking Supply and Pricing

Transportation System Measures

Regional High Occupancy Vehicle System Plans and Implementation Programs Appropriate Transit Improvement Programs for Bus and Rail Land Development Policies Supporting Reductions in Vehicle Trips Development Policies to Strengthen Onsite Transit Access for New and Existing Developments

Regulatory measures can usually be implemented through District regulations or local jurisdiction ordinance, and are designed to regulate traffic volumes or flow, or affect individual travel choices. Examples include the employer trip reduction rules already implemented by the South Coast Air Quality Management District² and the Ventura County Air Pollution Control District, and providing emission reductions in those areas.

Transportation system measures are implemented by transportation providers, such as the California Department of Transportation (CALTRANS), transit districts, and local governments. These measures should be implemented through the transportation planning process and designed to support regulatory measures by providing greater incentives for alternative travel mode choices.

¹California Clean Air Act Transportation Requirements Guidance, California Air Resources Board, February 1990. ²The South Coast Air Basin is the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

Transportation Control Measure Development Process Specific to San Diego

The Act contains a process specific to San Diego for transportation control measure development¹. The District, after consultation with the San Diego Association of Governments, develops Criteria to guide the development of transportation control measures. The plan developed and adopted by the San Diego Association of Governments is reviewed by the District for consistency with the Criteria. If the plan is not consistent with the Criteria, the District shall develop and adopt an alternative plan for transportation control measures.

The Criteria were adopted by the Air Pollution Control Board on March 12, 1991, and are included in Appendix D. The Criteria establish a blueprint for transportation control measures necessary to meet the specific performance requirements of the California Clean Air Act. The Criteria are structured to provide all feasible transportation control measures.

To assure regional consistency between air quality and transportation, the Criteria required the transportation control measure plan adopted by the Air Pollution Control Board be incorporated in the Regional Transportation Plan and other regional transportation and congestion management plans. Also, a Memorandum of Agreement between the District and the San Diego Association of Governments ensures appropriate District involvement in determining the consistency of the Regional Transportation Plan and the Congestion Management Plan with the Regional Air Quality Strategy.

Besides setting general performance requirements, the Criteria specify minimum measures to be included in the transportation control measure plan, listed in Table 20.

In addition to requiring certain minimum transportation control measures, the Criteria specify the transportation control measure plan evaluate the Heavy Duty Truck Operations Technical Advisory Group guidance² for feasibility and emission reductions in San Diego. This provides an assessment of the potential benefits from programs suggested in the guidance before specific program requirements are proposed. This was determined necessary during Criteria development because specific problems posed by trucking in San Diego may not be addressed by the guidance, especially considering international border traffic.

¹California Health and Safety Code §40717(d).

²Guidelines for Local Air Districts Considering Transportation Control Measures Directed at Heavy Duty Truck Operations, AB2595 Technical Advisory Group Established Pursuant to the California Clean Air Act, September 1990.

The Criteria specify that the transportation control measure plan suggest a regional process for developing a District indirect source review program ensuring developments are designed to facilitate use of alternative transportation modes to the maximum extent feasible. This aspect of the Criteria allows local land use agencies to participate in the process, providing full consultation during program development.

Table 20 Transportation Control Measure Plan Minimum Measures

Trip Reduction Program Single Passenger Vehicle Trip Reduction Program Parking Management Alternative Transportation Mode Capacity Expansion Expanded Transit Park and Ride Facilities High Occupancy Vehicle Facilities Bicycle and Pedestrian Facilities Transportation System Management Traffic Control Improvements Ramp Metering Incident Management Land Use

> Job-Housing Balance Mixed Use Development Transit Corridor Development

The Criteria also specify primary responsibilities for transportation control measures. The District is listed as the primary agency for implementing the Trip Reduction and Indirect Source Review programs, but it is the intent of the Air Pollution Control Board to delegate the program to local jurisdictions. Transit Development Boards, Cities, County, CALTRANS, Port District and CHP are the responsible agencies for other measures according to their area of responsibility.

On June 28, 1991, SANDAG adopted the initial Transportation Control Measures Plan (TCM Plan), and on October 1, 1991, the District Board considered the initial Plan, received public testimony, and referred the Plan back to SANDAG along with a District assessment and requested SANDAG to address District concerns.

An APCB/SANDAG subcommittee of seven SANDAG Board members (Mayors Jack Doyle, Jan Goldsmith and Lee Thibadeau, and council members Judy McCarty, Tom Behr, Leonard Moore and Richard Hendlin) and two Air Pollution Control Board members (Supervisors Bailey and Bilbray) was established to address the issues. The subcommittee reached consensus on a majority of items. On March 27, 1992, the SANDAG Board amended the Plan and forwarded it to the District.

On June 30, the Air Pollution Control Board amended the TCM Plan submitted by SANDAG, and adopted the Revised Regional Air Quality Strategy, including the amended TCM Plan.

The total annualized cost of transportation control measures is estimated to range from \$92 million to \$167 million annually. Full implementation (\$167 million) would require \$80.6 million in government funding annually, which is not available. A lower level of implementation (\$92 million) is recommended initially that would require \$5.4 million annually in government funding. Assuming all costs are attributed to reducing smog-generating emissions, the cost effectiveness of transportation control measures is \$33-\$60 per pound of smog emissions reduced depending on the level of implementation. However, San Diego is also nonattainment for carbon monoxide, and motor vehicles are approximately 90% of these emissions. When the data are adjusted accordingly, the cost effectiveness is \$18-\$32 per pound. There are other benefits besides air quality such as congestion relief, fuel savings, and reduced personal vehicle maintenance and insurance due to less driving. However, these benefits are not considered in these analyses. According to SANDAG, some estimates suggest the net savings may be far greater than the estimated cost of the transportation control measures.

Regulatory Transportation Control Measure Implementation

The District will implement regulatory transportation control measure programs where appropriate to fulfill the California Clean Air Act, state Board guidance, and the Criteria. While the Act holds the District ultimately responsible for compliance with mandated transportation control measure performance requirements, it is the intent of the Air Pollution Control Board to delegate the program to local jurisdictions.

The state Board guidance, incorporated in the Criteria, recommends employer based trip reduction rules and trip reduction rules for other sources attracting vehicle trips be included in the Strategy.

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The guidance also recommends the management of parking supply and pricing, which may be embedded in these regulatory measures or as a separate program.

The central component of the adopted TCM Plan is the Transportation Demand Management (TDM) program. It addresses commute travel, high school and college travel, goods movement/truck travel, and non-commute travel. All other components of the TCM Plan are Transportation Systems Management programs, for example, transportation capacity expansion and traffic system management, are intended to support the TDM program.

The <u>Commute Travel Reduction</u> program is intended to reduce employment-related commute trips by influencing a shift in travel, to modes other than the single-occupant motor vehicle. The program includes a model ordinance, which provides employers with 60 to 99 employees a two-year voluntary period, and one year for employers with over 100 employees, to meet trip reduction goals in any manner they choose. Then, if goals are still not met after the voluntary period, employers may choose between implementing District preapproved trip reduction actions, such as financial ridesharing incentives and parking management, including parking charges, or designing their own trip reduction plan which must be at least as effective as the pre-approved measures. Trip reduction goals in terms of Average Vehicle Ridership (AVR) tighten each year through 1999, and apply to week day commute travel during the 6 to 9 a.m. peak period. The stated objective is to achieve a 1.5 motor vehicle occupancy among commuters by the year 2000 at an annualized program cost of \$75.2 million: \$1.5 million government implementation cost, \$73.7 million compliance cost. (Note: these cost estimates are based on an employer cutoff of 50 employees, because data available at the time of adoption were only for categories of 50 or more employees or 100 or more employees. Data are being reanalyzed to determine values reflecting employers with 60 or more employees. Costs and emission reduction estimates will be re-estimated when those data are available.)

Regulatory development for the employment based trip reduction program is scheduled for late 1992.

Expansion of the program to include employers with 11 or more employees and covering commuting during the entire 24-hour day is being reserved as a contingency measure to be implemented upon adoption of an implementing rule or regulation by the Air Pollution Control Board, if the Air Pollution Control Board determines or the State Air Resources Board finds that the District is failing to meet interim goals or not making adequate progress toward attainment of applicable state ambient air quality standards.

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The <u>High School, College and University Travel Reduction</u> program is structured similarly to the Commute Program. Campuses are required to implement trip reduction plans in order to meet Average Vehicle Ridership targets for student trips. The program proposes to reduce motor vehicle trips made to high schools, colleges and universities by students at an annualized cost of \$12.9 million. Student related trip reductions would be further encouraged through student transit subsidies, if additional annual funding of \$7.4 million becomes available. The District has recommended additional funding for student transit subsidies be pursued through ISTEA funds.

The feasibility of the College Program requirements for community college students has not been resolved. The District has included a provision for developing a work program for resolving this issue in Fiscal Year 1992-93. Regulatory implementation is scheduled for 1993.

• The <u>Goods Movement/Truck Operation</u> program is being reserved as a contingency measure to be implemented upon adoption of an implementing rule or regulation by the Air Pollution Control Board, if the Air Pollution Control Board determines or the State Air Resources Board finds that the District is failing to meet interim goals or not making adequate progress toward attainment of applicable state ambient air quality standards.

The <u>Goods Movement/Truck Operation</u> program proposes Off-Peak Truck Travel Targets, with reporting and plan requirements similar to the Commute and College Programs, to shift truck operations out of the morning peak period (6:30-8:30) to reduce congestion. An Incident Management and Prevention Program and a Motorist Information System are also part of the Goods Movement/Truck Operation Program. The Incident Management Program clears congestion-causing traffic incidents, such as accidents and breakdowns, more quickly. The Incident Prevention Program provides driver education to improve car-truck interactions. The Motorist Information System uses video and road sensors to gather continuous information on traffic conditions, with radio and changeable electronic message boards providing motorists information to avoid problem areas and minimize congestion. Annualized government cost of \$0.6 million is projected.

Because the Construction Industry Federation (CIF) expressed serious reservations with the program, the District has included provisions for a work program to address exemptions proposed by the CIF, as well as concerns regarding restrictions on delivery schedules. Regulatory implementation is scheduled for 1994.

• The <u>Non-Commute Travel Reduction</u> program proposes a work program and schedule for a study to evaluate the feasibility of regulatory non-commute trip reduction programs. This commitment includes evaluating the feasibility of reducing transportation access emissions for Lindbergh Field, the Stadium, regional shopping centers and other large trip attractions. The work program will result in regulatory development addressing affected trips. It is anticipated that programs for airport trips will be adopted by 1995, special event trips by 1996, and shopping trips by 1997. This schedule is tentative, pending the results of the work program developed to address these trips.

A schedule for regulatory transportation control measures adoption is presented in Table 21.

Table 21Adoption Schedule forRegulatory Transportation Control Measures

Program Type	Adoption Year
Employment Based Trips	1992
Education Related Trips	1993
Heavy Duty Truck Trips	Contingency Measure
Airport Trips	1995
Special Event Trips	1996
Shopping Trips	1997

The amended Transportation Control Measures Plan calls for support for legislation implementing market-based measures in general, specifically a vehicle registration and emission fee, and increased registration fee on more than one car. Revenues from these fees are intended to provide necessary funding to implement the Transportation Control Measures Plan. A statewide effort is underway to reach consensus regarding market-based measures. Appropriate legislative proposals will be developed based on the consensus.

Parking management is a market-based measure, can be implemented under current authorities, and is included in the Commute Travel Reduction Program.

Finally, the Plan proposes a demonstration project to test the feasibility of pricing the use of the I-15 HOV Lane by single occupant vehicles, and funds raised to be allocated to increase transit service in the I-15 corridor.

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Transportation System Measure Implementation

For Air Resources Board approval of the Regional Air Quality Strategy, implementation schedules and commitments for implementation of air quality measures by all responsible agencies or jurisdictions is necessary. This approach may be feasible with stationary and areawide control measures where responsibilities are limited to few agencies, but presents a problem when transportation and air quality planning and funding horizons are not consistent. Forecasting all specific transportation system measures prior to allocation of funding to specific projects, especially beyond the horizon of transportation improvement plans, is infeasible for transportation system management measures. The TCM Plan commits to implementing transportation system measures consistent with currently programmed funding. Where specific implementation is not provided, a work program to identify projects to receive funding is included, fulfilling this requirement.

- The <u>Transit Improvement and Expansion</u> measure is intended to attract more trips to transit that would otherwise be made by motor vehicles. Based on currently anticipated funding, no expansion is proposed beyond that in the Regional Transportation Plan. A 17% further increase in transit service focusing on peak period commute services is proposed, if additional annual funding of \$18.1 million becomes available. Replacing the existing bus fleet with low emission vehicles as a part of the normal fleet replacement program is also proposed. Half the fleet would be converted by 2000 under current funding; the entire fleet would be converted if additional annual funding of \$3.4 million becomes available. The District has recommended additional funding for transit expansion be pursued from Intermodal Surface Transportation and Efficiency Act (ISTEA) funds.
- The <u>Vanpool</u> measure reflects current funding and existing vanpool efforts. It is projected that 10 vanpools per year will be formed. Dependent upon additional funding becoming available, transit districts would obtain 2500 vans and lease them to employers to expand vanpools for commuting to work. The annualized cost would be \$16.5 million. The District has recommended additional funding for vanpool expansion be pursued from ISTEA funds.
- The <u>High Occupancy Vehicle (HOV) Lanes</u> measure reflects current funding (prior to ISTEA) and existing HOV efforts. HOV bypass lanes will be completed on all metered freeway on-ramps under existing funding, and the I-15 HOV lanes, which still have significant unutilized capacity, would remain the only major HOV facility in the region. If

sufficient additional funding becomes available, additional HOV Lanes are proposed to provide travel time savings and encourage ridesharing. About 67 miles are proposed at an annualized cost of \$21.1 million. Freeway HOV lanes are proposed on I-5 from I-8 to SR-78, I-15 from SR-56 to SR-78, I-15 from SR-163 to I-8, and I-805 from I-5 to SR-52. Additionally, arterial High Occupancy Vehicle Lanes are proposed on Pacific Highway, South Harbor Drive, and Friars Road. The District has recommended ISTEA funds be pursued to obtain the needed funding for HOV system expansion.

The HOV measure includes a cost analysis indicating that converting existing lanes to HOV use costs only one sixth as much as adding lanes. However, no corridor-specific analysis is provided to identify potential lane conversions. A study is needed of congested freeways that lack right-of-way to add lanes, to determine if converting an existing lane to HOV use would be feasible and desirable, under the criteria in ARB HOV system guidance. Development of a work program for the study is included in the Strategy.

• The <u>Park and Ride Facilities</u> measure reflects current funding and existing park and ride efforts. No additional park and ride lots are proposed under current funding. However, existing lots are, on the average, still only half utilized, so additional capacity exists. If additional funding becomes available, the Plan proposes to add 4800 park-and-ride spaces oriented toward car/van pooling, located to serve long commute trips in major travel corridors, at an annual cost of \$2.38 million. The District has recommended additional funding for park-and-ride expansion be pursued from ISTEA funds.

A CALTRANS work program for a study of Park-and-Ride options which will lead to a comprehensive park and ride plan and a specific implementation program is included.

- The <u>Bicycle Facilities</u> measure reflects current funding (prior to ISTEA) and existing bikeway efforts and proposes adding 25 miles of bikeways each year, with existing funding, to encourage bicycling instead of the auto for shorter trips. The measure would be expanded to 50 miles of bikeways per year, if additional annual funding of \$3.9 million becomes available. The expanded measure also includes improving bicycle access to transit, showers and lockers and secure bicycle parking at new buildings, and encouraging employers to provide a direct subsidy to all bicycle commuters. The District has recommended ISTEA funds be pursued to obtain the needed funding for bikeway expansion.
- The <u>Traffic Flow Improvements</u> measure reflects an increase over current funding and existing traffic flow improvement efforts and proposes computer optimizing and coordinating

all 2500 signalized intersections in the County by 2000, as well as constructing 3 additional central computer control facilities at an annual cost of \$3.28 million, to increase traffic flow and reduce emissions caused by vehicle stops and starts. If no additional funding becomes available, 1800 traffic signals would be interconnected and computerized in the region by 2000. The specific source of the necessary funding for the proposed expanded implementation is not identified. It is presumed SANDAG is confident the funding is available for the recommended level of implementation.

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Indirect Source Review

The Act requires the 1991 Strategy include an indirect source control program¹. While the indirect source is not defined in the Act, a generally accepted meaning is any facility, building, structure or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant for which there is a state ambient air quality standard². Examples include employment sites, shopping centers, schools, sports facilities, parking facilities, residential, commercial, and industrial development.

The state Board guidance recognizes the lead time necessary for comprehensive program development to include participation by land use planning agencies. To provide for adequate participation, the 1991 Strategy must include a process for program development, with implementation scheduled by the first triennial Strategy update.

While transportation control measures will be instituted to reduce motor vehicle related emissions associated with existing development, the review of new or modified indirect sources will provide the opportunity for new development designs to reduce dependence on automobiles, and be more pedestrian oriented as well as compatible with transit and other alternative modes. Currently development design, hence urban form, is focused heavily on automobiles, which is why 88% of all regional trips are made by motor vehicles.

The process for developing the indirect source review program is contained in the District's Transportation Control Measures Criteria, which also addresses implementation. The process was agreed to and developed in consultation with development and construction industry interests as well as the Regional Growth Management Technical Committee, which includes city managers and planning directors from throughout the region. The Criteria provides:

- The Air Pollution Control Board will adopt an indirect source control regulation requiring evaluation and mitigation of individual land use development projects .
- A condition for delegating the regulation to local land use agencies in the the Cities, County, and Port District will be adopting an air quality element into the local general plan or an air quality program that conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality

¹California Health and Safety Code §40918.

²Executive Summary, California Clean Air Act Guidance on the Development of Indirect Source Control Programs, California Air Resources Board, July 1990, p. 5.

elements be adopted as individual elements of general plans, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.

- Air quality elements for general plans will be developed for implementation as a part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.
- Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.
- If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Quality Strategy, deficiencies will be identified and transmitted to the Regional Growth Management Board.
- Indirect source review program development and implementation shall be completed by 1994.

To facilitate program development, the Air Pollution Control Board approved a three phase effort to research land use related policy options for elected officials to reduce dependence on the automobile and improve building energy efficiency.

Phase I is a multi-client study being conducted by the Local Government Commission, a Sacramento-based nonprofit, nonpartisan and tax-exempt organization of local elected officials. Other participants in the study include the California Energy Commission, Air Resources Board, Bay Area Air Quality Management District, and other Air Pollution Control Districts (e.g., Kern County, San Bernardino, Madera, Northern Sierra). Statewide research will address policy options, focusing on land use decisions that promote less dependence on motor vehicles and improve energy efficiency in residential, commercial and industrial sectors. The multi-client study will provide a foundation for local program development statewide. A guidebook will be provided for local elected officials regarding land use planning techniques to reduce air pollution and save energy.

In Phase II, information derived from the study will be tailored by the Local Government Commission to meet District needs. Approaches for implementing indirect source control policies will be analyzed and draft regulations developed. Local industry, community planning groups and land use agencies will be consulted. The draft regulations will be accompanied by a report describing the regulations and explaining their purpose, including suggested mechanisms for monitoring the effectiveness of local government compliance efforts.

During Phase III, the proposed recommendations will be presented to the Air Pollution Control Board and released for public review and comment. Public workshops and educational efforts targeting local officials will be conducted. The final regulatory program developed through this interactive process will be submitted to the Board for adoption.

To facilitate accessing affected groups, the Local Government Commission will subcontract with a San Diego Based consultant, subject to District approval, to provide local coordination with the District, local officials, industry, and others potentially affected by an indirect source review program.

An Indirect Source Review Program is scheduled to be developed by late 1992, well in advance of the 1994 deadline specified by the Air Resources Board. The District will also work with the Regional Growth Management Technical Committee to prepare policies and design requirements for new development.

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Clean Fuels

Background

The Act requires the Strategy include measures to achieve the use of a significant number of low emission motor vehicles in fleets¹. Fleet size, or whether the provisions apply to all fleets or only centrally fueled fleets is not addressed. In addition, the Air Resources Board has not provided guidance regarding minimum program elements necessary to fulfill the Act's requirements. However, the federal Act requires a low emission vehicle program for fleet operators with ten or more vehicles, starting in 1994.

To initiate a fleet program, the Air Pollution Control Board approved District participation in a multi-client study conducted by Polydyne, Inc. for an integrated alternative transportation and fuel technologies assessment, including related air quality benefits. Market penetration and the cost effectiveness of fuel and technology options were addressed.

Based on the results of the study, the District will review the existing ARB Low Emission Vehicle Program and fleet vehicle requirements mandated by the federal Act's 1990 amendments, and recommend a proposed program to the Air Pollution Control Board in 1993. This will allow development of an fleet vehicle program integrating both state and federal requirements, lessen regulatory development overlap between state and federal requirements, eliminate the need for duplicative rulemaking, and allow the socioeconomic impact analysis to be performed. The proposal will be subject to public review and will address factors such as advanced availability of low emission vehicles, alternative fuel options, and economic incentives for low emission vehicles.

The Air Pollution Control Board supported San Diego Gas and Electric's request granted by the Public Utilities Commission to implement a compressed natural gas vehicle demonstration program. Under the program, SDG&E is facilitating converting some fleet vehicles and providing fueling facilities. Similar programs have also been implemented by Pacific Gas and Electric (PG&E) and Southern California Gas Co.

To enhance the availability of compressed natural gas, the Air Pollution Control Board has directed the District to identify obstructions to, and facilitate the use of, small compressors to allow residents with natural gas service to refuel vehicles. This will enhance fuel availability for residents, or even fleet operators who might not live near a refueling facility, to participate in a

¹California Health and Safety Code §40920.

clean fuel program. The District will work closely with affected agencies to pursue the home fueling option.

Air Resources Board Low Emission Vehicle Program

As provided in the Act, the Air Resources Board has adopted an aggressive program to further reduce emissions from onroad motor vehicles, called the low emission vehicle program. Various aspects apply to light duty vehicles and medium duty trucks. This program may stimulate the introduction of alternatively fueled vehicles for general public use, and facilitate compliance with state and federal fleet programs.

Four new low emission light duty vehicle classes are created, applicable to automobiles and light duty trucks with loaded vehicle weights less than 3,750 pounds. Table 22 lists the vehicle classes and emission limits, along with the previous standards.

	NMOG*	NOx**	CO***
Previous Standards	0.250	0.7	3.4
Transitional Low Emission Vehicles	0.125	0.4	3.4
Low Emission Vehicles	0.075	0.2	3.4
Ultra Low Emission Vehicles	0.040	0.2	1.7
Zero Emission Vehicles	No C	Dnroad Emis	sions

Table 22 Low Emission Vehicle Standards (grams per mile)

Starting in 1994, the total number of light duty vehicles sold each year in California by each manufacturer must meet sales weighted emission standards by producing an increasing percentage of low emission vehicles. Program phase-in would be complete in 2003. Manufacturers retain the flexibility to produce any combination of the categories necessary to meet the sales weighted emission standards, with the exception that 2% of sales in 1998 must be Zero Emission Vehicles, increasing to 5% in 2001 and 10% in 2003.

^{*} Nonmethane Organic Gases.

^{**} Oxides of Nitrogen.

^{***} Carbon Monoxide.

Similar requirements apply to light duty trucks with loaded weights over 3750 pounds, although the sales weighted standards do not reflect Zero Emission Vehicles. Medium duty trucks will be phased in starting in 1998.

Federal Clean Fuels Program

Recent amendments to the federal Clean Air Act include two clean fuels programs, and establish emission standards for clean fuel vehicles. The federal Act creates the California Pilot Test Program to demonstrate the effectiveness of clean fuel vehicles in controlling air pollution in smog nonattainment areas. The federal Act also requires states to amend their federal air quality plans to include a Clean Fuel Vehicle Fleet Program.

The federal Act adopts emission standards for clean fuel vehicles from the California Air Resources Board's low emission vehicle program. For 1996-1998 model year vehicles to qualify as clean fuel vehicles, the state Board's standards for transitional low emission vehicles must be met. Starting with model year 1999, clean fuel vehicles must meet low emission vehicle standards. The emission standards are flexible. If the state Board revises the low emission vehicle standards, such revisions are automatically incorporated, providing manufacturers with one set of applicable standards. This allows California to revise standards as necessary without unduly burdening manufacturers with two sets of standards.

	NMOG*	NOx**	CO***
Phase I Standards - Model Years 1996-98 (Transitional Low Emission Vehicles)	0.125	0.4	3.4
Phase II Standards - Model Year 1999 and Beyond (Low Emission Vehicles)	0.075	0.2	3.4

Table 23 Clean Fuel Vehicle Emission Standards (grams per mile)

The California Pilot Test Program requires 150,000 Phase I vehicles be sold annually in California through 1998, and 300,000 Phase II vehicles annually thereafter. These vehicles are for sale to the general public, and are not restricted to fleets. To ensure adequate supplies of alternative fuels

^{*} Nonmethane Organic Gases.

^{**} Oxides of Nitrogen.

^{***} Carbon Monoxide.

these vehicles may require, California's federal air quality plan is to include a clean fuel element. Other states may enroll in the pilot program, provided they also commit to providing adequate clean fuels.

The Clean Fuel Vehicle Fleet Program is applicable to San Diego and other similar smog nonattainment areas nationwide. Under the federal Act, San Diego is to adopt a program by 1994, to be phased in starting in 1998. It applies to centrally fueled fleets with 10 or more vehicles, and requires 30% of the new model year 1998 automobile and light duty truck purchased as fleet vehicles be Phase II clean fuel vehicles. This increases to 50% for model year 1999 and 70% in 2000.

The Clean Fuel Vehicle Fleet Program also establishes a clean fuel vehicle standard for heavy duty vehicles, starting with model year 1997. The clean fuel vehicle standard limits smog causing emissions to 50% of the standard of a diesel powered heavy duty vehicle of the same model year. If the Administrator of the Environmental Protection Agency determines the standard is not feasible, he may establish and alternative standard. Fifty percent of a fleet operator's model year 1998 and beyond fleet vehicles in the covered weight range shall be clean fueled vehicles.

Vehicle Type	Model Year 1998	Model Year 1999	Model Year 2000
Light Duty [*]	30%	50%	70%
Heavy Duty**	50%	50%	50%

Table 24				
Clean Fuel Vehicle Fleet Program				
Phase In Requirements				

^{*} Light Duty vehicles include automobiles, and light duty trucks up to 6,000 pond gross vehicle weight rating.

^{**} Heavy duty trucks include trucks with gross vehicle weight ratings above 8,500 pounds, but not more than 26,000 pounds.

EMISSION REDUCTION TRENDS

Proposed Strategy

The state Board requires the Strategy's emission reductions be projected for 1994, 1997, and 2000. The following figures illustrate emission trends from adoption of the proposed strategy. For comparison, two other emission trends are included. Measures adopted through 1987 are shown to illustrate emissions if no additional controls had been instituted prior to Strategy adoption. For information, a 5% annual emission reduction trend is also included.

Besides control measures to be implemented by the District, the Strategy includes several further mobile source control measures the state Board intends to adopt, detailed in the 1990 Update to California's Mobile Source Plan for Continued Progress Toward Attainment of the State and National Ambient Air Quality Standards. Motor vehicle emissions would be further reduced by additional gasoline reformulation and extending low emission vehicle requirements beyond 2003. Other mobile sources to be controlled by the Air Resources Board include construction and farm equipment, locomotives, marine vessels, industrial mobile equipment, and off-road recreational vehicles.

In addition, the state Board will adopt control requirements for additional categories of consumer products. The additional control requirements will be designed to ensure that consumer product emissions are reduced 50% by the year 2000.

Two factors combine to influence Strategy trends. First, the trends are sensitive to the accuracy of projected growth in population, vehicle miles of travel, and vehicle trips. Because unanticipated growth results in emissions not being addressed in the Strategy, the air quality benefits of the Strategy are eroded. For example, the population increase projected for 1987 and addressed in the 1982 Strategy was underprojected by 4%, or 80,000 people, resulting in unanticipated emissions. By 1990, the population was 10% greater than projected, with further erosion of projected Strategy benefits.

Regional growth forecasts were revised in 1983 when SANDAG adopted Series 6, and 1989 when SANDAG adopted Series 7. However, both revised forecasts apparently continue to significantly underpredict growth. The actual population in 1990 exceeded the projected Series 5 growth used in the 1982 Strategy for 1995, and the 1995 population projected by Series 6 was realized in 1991. For Series 7, the projected growth for 1995 will likely be realized in 1992. The

revised Series 7, upon which the 1991 Strategy is based, was adjusted upward by SANDAG to reflect the actual 1990 population, and then growth was projected from there at the same rate projected in the original Series 7.

The second factor influencing Strategy emission trends is the projected emissions from motor vehicles. Recent reevaluation of motor vehicle emission calculation methodologies determined significant evaporative emissions during vehicle operation. These emissions were previously thought to be insignificant, and have been factored into the emission projections in the Strategy trends. Further research indicates there are significant excess emissions from driving cycles not represented during vehicle certification testing, referred to as off-cycle emissions. Preliminary indications are that current methodologies are still underestimating motor vehicle emissions by a factor of 1.5 to 2. The results of this research are projected to be available for the first triennial Strategy update. Because motor vehicles will likely constitute a significantly larger fraction of emissions, programs to reduce motor vehicle use, such as transportation control measures and indirect source control, will be increasingly effective.

Reactive Organic Gases

Figure 13 and Table 25 illustrate the effects of the Strategy on reactive organic gas emission trends through 2010. The graph also illustrates that expeditiously adopting all feasible control measures will not achieve a 5% annual emission reduction. About 3% annual emission reductions will be achieved through the year 2000, and less than 1% after that to the year 2010, barely offsetting regional growth with no further significant emission reductions. These projections assume that both the vehicle emissions and regional growth projections are accurate.



Figure 13 Reactive Organic Gases Strategy Emission Trends (tons/day)

While existing controls will continue to provide emission reductions to the year 2000 (44 tons/day), by then the Revised Strategy will more than double those reductions (97 tons/day). The largest contribution will result from mobile sources emission controls required by the state Board. At the local level, stationary source control measures represent the second largest category of emission reductions. Transportation control measures will increase emission reductions from local programs by over 25%. In the long term, increased emissions due to growth will nearly offset benefits from the Revised Strategy.

In the long term, increased emissions from growth would offset benefits from emission control programs. The Strategy will reverse the projected increase. Most of the long term motor vehicle emission reductions will come from motor vehicle controls, such as the low emission vehicle program and reformulated gasoline. Emission reductions from transportation control measures are diminished in future years as motor vehicle control effectiveness increases.

			<u>, </u>	
Current Strategy Emission Reductions	<u>1994</u>	<u>1997</u>	2000	<u>2010</u>
Current Strategy Projected Emissions	236.87	236.64	235.25	253.98
Current Strategy Reduction from 1987 (278.86 tons/day)	41.99	42.22	43.61	24.88
Percent Reduction from 1987	15%	15%	16%	9%
Revised Strategy Emission Reductions	<u>1994</u>	<u>1997</u>	2000	<u>2010</u>
Current Strategy Projected Emissions	236.87	236.64	235.25	253.98
ARB New Car Standards	-7.65	-16.30	-20.59	-44.62
Other Mobile Controls	-0.07	-2.40	-4.37	-9.11
Consumer Product Controls	-3.27	-4.31	-11.60	-13.10
Stationary Source Controls	-8.12	-12.32	-13.08	-15.01
Transportation Control Measures	-1.66	-2.86	-3.56	-2.05
Total Reductions	-20.77	-38.20	-53.19	-83.89
Revised Strategy Projected Emissions	216.10	198.44	182.06	170.09
Revised Strategy Reduction from 1987 (278.86 tons/day)	62.76	80.42	96.80	108.77
Percent Reduction from 1987	23%	29%	35%	39%

Table 25 Reactive Organic Gases Strategy Emission Trends (tons per day)

Oxides of Nitrogen

Figure 14 and Table 26 illustrate the impact of the Strategy on oxides of nitrogen emission trends through 2010. Again the 5% emission reduction requirement will not be met. Instead, emissions will be reduced at an annual rate of about 2%.

Without the Strategy, growth would begin to increase baseline emissions by 2000, offsetting benefits of existing emission control programs. Oxides of nitrogen control measures will take longer to implement than the reactive organic gas controls, especially for motor vehicles. Because the existing smog Strategy only addresses reactive organic gas emissions, the oxides of nitrogen emission reductions available from stationary sources will significantly reduce projected emissions. While controls for onroad and offroad vehicles will comprise the majority of long term reductions,
it is important to note that transportation control measures will provide more emission reductions by 2000 than improvements in motor vehicle emission controls.

In addition to controlling smog, reductions in oxides of nitrogen emissions are important in San Diego because the western portion of the County is a nitrogen dioxide nonattainment area. The nitrogen dioxide standard was not violated in 1989, 1990 or 1991, indicating San Diego is on the threshold of attainment. However, the Revised Strategy must also consider maintaining the standard. Because all feasible controls for oxides of nitrogen are included to control smog, emission reductions beyond those required to attain will assure the standard will be maintained.



Figure 14 Oxides of Nitrogen Strategy Emission Trends (tons/day)

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	(tons per da	y)		
Current Strategy Emission Reductions	<u>1994</u>	1997	2000	2010
Current Strategy Projected Emissions	213.15	207.86	209.90	232.87
Current Strategy Reduction from 1987 (234.47 tons/day)	21.32	26.61	24.57	1.60
Percent Reduction from 1987	9%	11%	10%	-1%
Revised Strategy Emission Trends	<u>1994</u>	<u>1997</u>	2000	2010
Current Strategy Projected Emissions	213.15	207.86	209.90	232.87
ARB New Car Standards	-0.00	-0.00	-3.58	-36.27
Other Mobile Controls	-0.09	-4.94	-14.36	-35.81
Stationary Source Controls	-5.61	-17.25	-19.43	-24.02
Transportation Control Measures	-1.59	-2.95	-4.11	-3.62
Total Reductions	-7.29	-25.15	-41.48	-99.72
Revised Strategy Projected Emissions	205.86	182.71	168.42	133.15
Revised Strategy Reduction from 1987 (234.47 tons/day)	28.61	51.76	66.05	101.32
Percent Reduction from 1987	12%	22%	28%	43%

Table 26 Oxides of Nitrogen Strategy Emission Trends (tons per day)

Carbon Monoxide

Figure 15 and Table 27 illustrate the impact of the Strategy on carbon monoxide emission trends through 2010 and demonstrate attainment of the standard. To demonstrate attainment, state Board guidance¹ specifies a rollback analysis demonstrating emissions reduced by at least 1.25 times the percent by which the peak carbon monoxide violation exceeds the eight-hour standard². This factors in a margin of safety to increase the likelihood the standard will be achieved.

¹Guidance on Estimating Emission Reductions Needed to Attain State Standards and for Determining Area Classifications in Response to the California Clean Air Act, Air Resources Board, October, 1990. ²The state eight-hour carbon monoxide standard is 9.0 parts per million (ppm).

¹⁰²

In San Diego, the peak carbon monoxide violation for 1988 through 1990 was 10.5 ppm. When the peak violation is factored in to the following rollback equation, an 18% emission reduction is necessary to demonstrate attainment.

$$1.25 \times (10.5 - 9.0) \div 10.5 = 0.18 \text{ or } 18\%$$

The emission reductions projected in the Strategy and shown in Table 27 indicate 1994 carbon monoxide emissions will be reduced 19% from the 1987 baseline. Thus, the Strategy demonstrates attainment of the standard by 1994. Continued reductions in carbon monoxide are projected through 2010, demonstrating maintenance of the standard.

Because mobile sources are the overwhelming source of carbon monoxide emissions, stationary and areawide carbon monoxide control measures are not proposed in the 1991 Strategy. Motor vehicle and transportation control measures provide the anticipated emission reductions, sufficient to demonstrate attainment. Similar to oxides of nitrogen, emission reductions in 2000 from transportation control measures will exceed available reductions from new car standards, and this effect will diminish in the long term as motor vehicle control effectiveness increases. By 2010, new car standards emission reductions available from the low emission vehicle program become noticeable. Benefits from the low emission vehicle program will not materialize until a significant number of ultralow emission vehicles are in use, so transportation control measures have the greatest potential for short term emission reductions.





Table 27
Carbon Monoxide
Strategy Emission Trends
(tons per day)

Current Strategy Emission Reductions	<u>1994</u>	<u>1997</u>	2000	<u>2010</u>
Current Strategy Projected Emissions	1235.89	1116.40	1010.78	927.82
Current Strategy Reduction from 1987 (1503.79 tons/day)	267.90	387.39	493.01	575.97
Percent Reduction from 1987	18%	26%	33%	38%
Device d Stretegy				
Emission Trends	<u>1994</u>	<u>1997</u>	2000	<u>2010</u>
Current Strategy Projected Emissions	1235.89	1116.40	1010.78	927.82
ARB New Car Standards	-0.00	-0.00	-0.00	-119.04
Other Mobile Controls	-0.38	-8.63	-16.00	-46.48
Transportation Control Measures	-22.48	-39.25	-51.11	-40.75
Total Reductions	-22.86	-47.88	-67.11	-206.27
Revised Strategy Projected Emissions	1213.03	1068.52	943.67	721.55
Strategy Trend Reduction from 1987 (1503.79 tons/day)	290.76	435.27	560.12	782.24
Percent Reduction from 1987	19%	29%	37%	52%

<u>New Source Review</u>

The Act requires no net increase in emissions from new or modified stationary sources. Emission reductions cannot be reliably determined until more specific provisions of the new source review program are developed and the impact on emissions evaluated.

Appendix A

San Diego 1987 Planning Emission Inventory

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1991 SAN DEIGO RAQS 1987 PLANNING EMISSION INVENTORY SAN DIEGO AIR BASIN

APRIL 1992

San Diego Air Pollution Control District 9150 Chesapeake Drive San Diego, CA 92123-1096 (619) 694-3307

1987 PLANNING EMISSION INVENTORY SAN DIEGO AIR BASIN

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1987 PLANNING EMISSION INVENTORY SAN DIEGO AIR BASIN

APPENDICES

Attached

Appendix 1 Emission Source Category Contribution Charts

Available Separately

Appendix 2	District Documentation of Point Source Inventory Methodologies					
Appendix 3	District Documentation of Area Source Inventory Methodologies					
Appendix 4	ARB Documentation of Area Source Inventory Methodologies					
Appendix 5	ARB Documentation of Motor Vehicle Inventory Methodology					
Appendix 6	SANDAG Documentation of Methodology for Developing Traffic Estimates					
Appendix 7	ARB Documentation of Planning Inventory Methodology					

1987 PLANNING EMISSION INVENTORY SAN DIEGO AIR BASIN

Introduction

Background

San Diego County has not attained the federal and state air quality standards for smog (measured as ground-level ambient ozone) and carbon monoxide. The state standards for nitrogen dioxide and particulates are also not being met, but the federal standards are. San Diego County continues to meet state and federal sulfur dioxide standards. The California Clean Air Act requires air quality plans for nonattainment areas be revised to provide for attainment of the health based air quality standards for nonattainment pollutants as expeditiously as practicable.

Purpose

The 1987 baseline planning emission inventory is one of the first steps in revising the regional air quality plan. It is called a "planning inventory" because it will be the basis for future projections and trends in the development of the air quality plan. It also represents the baseline emission level from which emission reductions will be planned and measured in order to attain the standards. The California Clean Air Act requires that air quality plans provide a minimum 5% annual reduction in nonattainment pollutants from 1987 levels. The federal Environmental Protection Agency has also required the submittal of a 1987 base year inventory for smog precursors (reactive organic gases and oxides of nitrogen) and carbon monoxide.

Pollutants

The pollutants included in this inventory are reactive organic gases (ROG), oxides of nitrogen (NOx), and carbon monoxide (CO). ROG and NOx emissions participate in the photochemical reactions that produce smog and are defined as smog precursors. Because smog is worst in the summer, ROG and NOx emissions are representative of the summer smog season. CO and nitrogen dioxide violations occur in the winter. Therefore, CO and a second set of NOx emissions are representative of winter conditions.

Particulate matter (PM10) plan revisions are not required by the California Clean Air Act in 1991 planning cycle. Sulfur dioxide (SO₂) standards have never been violated in San Diego. Therefore, PM10 and SO₂ emissions are not included.

Pollution Sources

Pollution sources consist of point sources (e.g., industrial plants, government facilities), stationary area sources (e.g., residences, service stations, restaurants, agriculture), mobile area sources (e.g., aircraft, ships, trains, construction

equipment), and on-road motor vehicles (e.g., cars, trucks). The 1987 inventory includes 83 point sources, primarily those that emit at least 25 tons per year of any pollutant, and over 100 area source categories. Because the planning inventory is intended to represent the baseline for required emission reductions, uncontrollable natural sources, such as biogenic sources and wild fires are not included.

Preparation

The 1987 baseline planning emission inventory was compiled by the District in collaboration with the state Air Resources Board (ARB). Point source emissions were compiled by the District from information submitted annually by each source. About half the area source categories were also calculated by the District, based on County-specific survey data. The remaining area source categories were determined by the ARB based on statewide data allocated to counties using population or other appropriate allocation factors. Motor vehicle emissions were calculated by the ARB using County travel data derived by the San Diego Association of Governments (SANDAG) from actual traffic counts and travel surveys.

Methodology Changes

The last comprehensive baseline emission inventory was prepared for 1978 and used in the 1982 Regional Air Quality Strategy update. Since the preparation of the 1978 inventory, emission calculation methodologies have advanced considerably, as discussed below.

Seasonal Inventory

One major enhancement is that the 1987 planning inventory is seasonally adjusted to reflect the days with the highest concentrations for each pollutant, so it represents the emissions that must be reduced to attain the standards. Thus, the inventory reflects warmer summer days for smog precursors and cooler winter days for CO and NO₂. Previous inventories were based on annual average conditions.

Vehicle Emissions

The methodology for determining on-road motor vehicle emissions is the biggest change in the 1987 inventory. Motor vehicle emissions are a function of traffic volume, speed, and emission characteristics. The ARB has updated motor vehicle emission factors based on an ongoing vehicle emission test program. The new data indicate that vehicle exhausts emitted 60% more ROG, 31% more NOx, and 19% more CO compared to the emission factors used in the 1982 plan.

The updated factors also account for significant evaporative running loss emissions, previously assumed to be negligible, and account for temperature effects on parked vehicle evaporative emissions. Urban transit buses are now calculated separately from other heavy duty diesel vehicles due to their different operating cycle.

Traffic speed distributions in 5 mph increments accounting for the percentage of total vehicle miles traveled (VMT) in each speed class are also new. An average speed of 35 mph was assumed for the District's 1978 inventory. Since emission factors vary nonlinearly as a function of speed, the use of the actual speed distribution increases the accuracy of the emission inventory.

Motor vehicle emissions reflect actual area temperatures on the smoggiest summer days for smog precursors and cold winter days for CO and NO₂. Previous inventories assumed an average 75° F. Since motor vehicle emission rates vary considerably based on temperature, this represents another significant improvement.

The motor vehicle inspection and maintenance "Smog Check" program was only about half as effective at reducing automobile emissions in 1987 as had been projected in the 1982 plan. Emission reduction factors based on a detailed program evaluation study were used. Future inventories and emission trends will reflect enhancements to the program implemented in 1990 pursuant to a State law (SB1997) passed in 1988.

Finally, due to unprojected growth, 1987 traffic volume was 15% higher than projected in 1982. Combining the effects of these improved motor vehicle emission calculation methodologies, 1987 on-road motor vehicle ROG emissions are currently estimated to be 160 tons per day, 2.7 times higher than the 60 tons per day projected for 1987 in the 1982 plan. NOx emissions are 71% higher and CO emissions are twice as high as previously projected.

Surface Coating and Gasoline Storage

Two other significant methodology changes for the 1987 inventory include the use of actual coating volatile organic compound (VOC) contents for calculating surface coating emissions, rather than an average VOC content used in previous inventories; and sophisticated tank-specific formulas for calculating gasoline storage and transfer emissions, instead of using an average emission factor. These enhancements, however, had a much smaller effect than the improved vehicle inventory. Stationary source ROG emissions for 1987 are 102 tons per day, about the same as projected in the 1982 plan; however, though the total is the same as projected, individual source categories differ considerably.

<u>1987 Inventory Highlights</u>

- Motor vehicles are the largest contributor to smog. On smoggy days in 1987, motor vehicles contributed about 60% of basinwide smog precursor emissions 57% of ROG and 67% of NOx) and 90% of CO.
- Other mobile sources, including ships, aircraft, trains, construction and farm equipment, lawn and garden equipment, and off-road recreational vehicles, contributed 6% of regional ROG emissions, 23% of NOx, and 6% of CO.
- Industry and commerce contributed 18% of regional ROG emissions, 8% of NOx, and less than 1% of CO.
- Residential, agricultural and other stationary area sources contributed the remaining 19% of regional ROG emissions, 2% of NOx, and 3% of CO.

The San Diego County 1987 Baseline Planning Emission Inventory Summary Report is presented in Table 1. Emissions are expressed in tons of pollutant per smoggy weekday. Figure 1 compares the emissions of reactive organic gases, oxides of nitrogen, and carbon monoxide in 1987. Figures 2, 3, and 4, in Appendix 1, present the relative contributions of various source categories to those emissions.

Emission Reductions Since 1978

- On-road motor vehicle controls provided all the emission reductions from 1978 to 1987.
- Controls on industry were just sufficient to offset nonvehicular emission growth.

4

TABLE 1

1987 PLANNING EMISSION INVENTORY

SAN DIEGO AIR BASIN

(TONS PER DAY)

SOURCE CATEGORY	ROG	<u>NOX</u>	<u>00</u>
STATIONARY SOURCES			
FUEL COMBUSTION			
AGRICULTURE	.00	.00	25.20
OTHER MANUFACTURING/INDUSTRIAL	.12	1.31	.69
ELECTRIC UTILITIES	.22	12.04	4.60
OTHER SERVICES AND COMMERCE	.10	1.89	1.44
RESIDENTIAL	.11	3.19	10.43
OTHER	.01	4.62	.19
SUBTOTAL: FUEL COMBUSTION	.56	23.05	42.55
WASTE BURNING			
AGRICULTURAL - DEBRIS	.16	.00	.93
RANGE MANAGEMENT	.43	.00	5.81
FOREST MANAGEMENT	.05	.00	2.09
OTHER	.01	.00	.36
SUBTOTAL: WASTE BURNING	.65	.00	9.19
SOLVENT USE			
DRY CLEANING	2.89	.00	.00
DEGREASING	6.77	.00	.00
ARCHITECTURAL COATING	16.65	.00	.00
OTHER SURFACE COATING	17.15	.00	.00
ASPHALT PAVING	1.35	.00	.00
PRINTING	2.30	.00	.00
DOMESTIC	19.39	.00	.00
INDUSTRIAL SOLVENT USE	4.88	.00	.00
OTHER	.23	.00	.00
SUBTOTAL: SOLVENT USE	71.61	.00	.00
PETROLEUM PROCESS, STORAGE & TRANSFER			
PETROLEUM REFINING	.01	.01	.01
PETROLEUM MARKETING	7.14	.00	.00
OTHER	.39	.08	.08
SUBTOTAL: PETROLEUM PROCESS, STORAGE & TRANSFER	7.54	.09	.09

TABLE 1 (continued)

1987 PLANNING EMISSION INVENTORY

SAN DIEGO AIR BASIN

(TONS PER DAY)

SOURCE CATEGORY	ROG	<u>NOX</u>	$\underline{\infty}$
INDUSTRIAL PROCESSES			
CHEMICAL	3.43	.00	.00
FOOD AND AGRICULTURAL	1.71	.00	.00
METAL PROCESSES	.00	.02	.00
OTHER	.00	.00	.00
SUBTOTAL: INDUSTRIAL PROCESSES	5.14	.02	.00
MISCELLANEOUS PROCESSES			
PESTICIDE APPLICATION	3.95	.00	.00
FARMING OPERATIONS	10.12	.00	.00
UNPLANNED FIRES	.07	.02	.85
WASTE DISPOSAL	2.13	.00	.00
OTHER	.47	.85	.39
SUBTOTAL: MISC PROCESSES	16.74	.87	~ 1.24
SUBTOTAL: STATIONARY SOURCES	102.24	24.03	53.07
	36.66%	10.25%	3.53%
MOBILE SOURCES			
ON ROAD VEHICLES			
LIGHT DUTY PASSENGER	109.44	85.91	920.31
LIGHT AND MEDIUM DUTY TRUCKS	37.08	31.41	297.63
HEAVY DUTY GAS TRUCKS	7.01	11.03	121.10
HEAVY DUTY DIESEL TRUCK	3.87	26.46	12.96
MOTORCYCLES	1.88	.37	6.36
HEAVY DUTY DIESEL URBAN BUSES	.28	2.09	1.10
SUBTOTAL: ON ROAD VEHICLES	159.56	157.27	1,359.46
	57.22%	67.07%	90.40%
OTHER MOBILE		• • •	
OFF ROAD VEHICLES	5.24	3.80	18.44
TRAINS	.27	.97	.35
SHIPS	.53	9.47	1.42
AIRCRAFT - GOVERNMENT	2.09	1.71	5.56
AIRCRAFT - OTHER	1.09	2.38	13.81
MOBILE EQUIPMENT	4.44	34.69	24.83
UTILITY EQUIPMENT	3.40	.15	26.85
SUBTOTAL: OTHER MOBILE	17.06	53.17	91.26
	6.12%	22.68%	6.07%
SUBTUTAL: MUBILE SOURCES	176.62	210.44	1,450.72
	63.34%	89.75%	96.47%
TUTAL: SAN DIEGO AIR BASIN	278.86	234.47	1,503.79

FIGURE 1

SAN DIEGO AIR POLLUTION CONTROL DISTRICT 1987 ROG, NOX AND CO EMISSIONS



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Comparing the 1978 to 1987 Emission Estimates

Reactive Organic Gases

- Applying the 1987 motor vehicle emission calculation methodology to 1978, the motor vehicle ROG emissions were 253 tons per day, rather than the 148 tons per day previously estimated.
- Adding revised 1978 nonvehicular source emission estimates, the total 1978 ROG emissions were 369 tons per day (69% from vehicles), rather than the previously calculated 305 tons per day (49% from vehicles).
- The 1978-to-1987 ROG emission reductions are 90 tons per day (24% reduction), rather than the previously projected 119 tons per day (39% reduction).



FIGURE 5

ROG EMISSION CHANGES DUE TO UPDATED METHODOLOGIES

Oxides of Nitrogen

- Using the updated motor vehicle emission calculation methodology, the 1978 motor vehicle NOx emissions were 150 tons per day, rather than the 133 tons per day previously estimated.
- Adding revised 1978 nonvehicular source emission estimates, the total 1978 NOx emissions were 234 tons per day (64% from vehicles), rather than the previously calculated 193 tons per day (69% from vehicles).
- From 1978 to 1987, NOx emission staid constant rather than the previously projected reduction of 60 tons per day (31% reduction).

FIGURE 6

NOX EMISSION CHANGES DUE TO UPDATED METHODOLOGIES



Carbon Monoxide

- The 1987 motor vehicle emission calculation methodology indicates 1978 motor vehicle CO emissions were 1646 tons per day, rather than the 1089 tons per day previously estimated.
- Adding revised 1978 nonvehicular source emission estimates, the total 1978 CO emissions were 1768 tons per day (93% from vehicles), rather than the previously calculated 1237 tons per day (88% from vehicles).
- The 1978-to-1987 CO emission reductions were 264 tons per day (15% reduction), rather than the previously projected 438 tons per day (35% reduction).



FIGURE 7

CO EMISSION CHANGES DUE TO UPDATED METHODOLOGIES

1987 Inventory Methodology Documentation

The 1987 emission inventory methodology documentation in the following appendices is voluminous, and therefore is not attached, but is available from the District upon request.

Appendix 2 - point sources (District)

Appendix 3 - area sources (District)

Appendix 4 - area sources (ARB)

Appendix 5 - motor vehicles (ARB)

Appendix 6 - traffic estimates (SANDAG)

Appendix 7 - planning inventory (ARB)

San Diego County 1987 Baseline Planning Emission Inventory

Appendix 1

Emission Summary Reports

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1987 Baseline Emission Inventory

FIGURE 2



1987 Baseline Emission Inventory

FIGURE 3

SAN DIEGO AIR POLLUTION CONTROL DISTRICT 1987 OXIDES OF NITROGEN EMISSION SOURCE CONTRIBUTIONS



1987 Baseline Emission Inventory



Appendix B

California Air Resources Board Listing of Feasible Measures

PETE WILSON, Governor

STATE OF CALIFORNIA

AIR RESOURCES BOARD 1102 Q STREET P.O. BOX 2815 CRAMENTO, CA 95812



March 19, 1991

Dear Air Pollution Control Officers:

List of Feasible Measures for Stationary Sources

The California Clean Air Act (CCAA) requires districts to demonstrate in their attainment plans emission reductions of nonattainment pollutants of at least 5 percent annually, averaged over 3 years. In recognition that some districts may not achieve these reductions, the CCAA provides that those districts unable to achieve the 5 percent requirement, can develop approvable attainment plans provided the plans commit to the implementation of all feasible measures on an expeditious schedule.

Enclosed is a list of feasible measures for your consideration in developing your attainment plan under the CCAA. The list of feasible measures was compiled to assist those districts that must include all feasible measures in their plans.

The list represents a comprehensive compilation of control measures that are presently being applied in California. These control measures consist of existing district rules, federal new source performance standards, and applicable suggested control measures and control technique guidelines. For convenience, the control measures are categorized according to new source review, indirect source review, and transportation control measures; oxides of nitrogen and volatile organic compound related control measures; and multiple and other pollutant (e.g. sulfur dioxide and carbon monoxide) control measures. Also, information is provided in the form of questions and answers to assist you in incorporating the list of feasible measures into your attainment plan.

If you have any questions regarding the list of feasible measures or its application, please feel free to contact Mr. Ronald A. Friesen, Assistant Chief of the Stationary Source Division, at (916) 445-0656.

Sincerely,

James D. Boyd Fiecutive Office

Enclosures

List of Feasible Measures for Stationary Sources

The California Health and Safety Code (HSC) Section 40910 requires districts to take action to meet the state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide at the earliest practicable date. Further, HSC Section 40914 requires districts to prepare plans that are designed to achieve a reduction in emissions of nonattainment pollutants by at least 5 percent annually averaged over 3 years. If districts cannot demonstrate that an annual 5 percent reduction in emissions is achievable, HSC Section 40914 (b)(2) provides that those districts can develop approvable plans provided that every feasible measure is included into their plans to ensure progress toward attainment of the state ambient air quality standards. The Air Resources Soard (ARB) must concur that all feasible measures have been included in the district plans under this section.

Attached is a list of feasible measures that districts should consider in developing plans that require the inclusion of every feasible measure. The list is composed of control measures that are categorized according to new source review, indirect source review, and transportation control measures; oxides of nitrogen (NOz) related control measures; volatile organic compound (VOC) related control measures; and multiple and other pollutant (e.g. sulfur dioxide (SOz), and carbon monoxide (CO)) control measures. New source review, indirect source review, and transportation control measures are considered generic measures that are composed of several control strategies based on source and population growth.

The following questions and answers are provided to assist the districts in incorporating the list of feasible measures into their attainment plans.

Question: What districts must include every feasible measure in their attainment plans?

Answer: Districts that do not demonstrate in their attainment plans an annual 5 percent emission reduction of nonattainment pollutants, averaged over 3 years, are required by the California Clean Air Act (CCAA) to develop approvable plans that include every feasible measure. Such plans must have the concurrence of the ARS that all feasible measures are contained in the plans.

Question: What are feasible measures?

Answer: Feasible measures are emission control measures that have been developed to control sources of nonattainment pollutants in California. Additionally, feasible control measures should meet the criteria of reasonably available control technology (RACT) and best available retrofit control technology (BARCT), where appropriate, as specified in the CCAA and discussed in the "California Clean Air Act Guidance" for the determination of RACT and BARCT developed by the ARB. Question: How was the list of feasible measures compiled?

- Answer: The list of feasible measures are a comprehensive compilation of control measures that are presently being applied in California. The list was compiled by reviewing the existing rules of districts, federal new source performance standards, and applicable suggested control measures and control technique guidelines. Reference measures are identified for each feasible measure.
- Question: Are reference measures the appropriate measures on which districts should base their development of feasible measures?
- Answer: Reference measures are identified to provide the basis for listing each feasible measure. The reference measures can be used to assist the districts in developing feasible measures. It may be necessary for districts to modify appropriate reference measures to meet RACT and BARCT requirements.
- Question: Do districts have to include all feasible measures in their attainment plans?
- Answer: Districts must include every feasible measure in their attainment plans for which there are sources that operate within their respective districts. When districts have identified feasible measures for which there are no sources that operate within their respective districts, those specific feasible measures are not required to be included in their attainment plans. However, districts must provide justification in their plans for excluding any feasible measure. The ARB must concur that all feasible measures have been included in their plans.
- Question: What level of detail should the districts provide when including feasible measures in their plans?
- Answer: The districts should specify in their plans for each feasible measure the level of emission control effectiveness, the applied control technology, and anticipated annual emission reductions. Additionally, the district should provide an expeditious schedule for adoption of feasible measure. Also, the CCAA requires that districts within the same air basin adopt uniform measures. District plans should address how this requirement for uniform measures will be met.
- Question: What should be considered when prioritizing feasible measures for adoption?
- Answer: The CCAA requires that the districts rank feasible measures according to the following criteria: technical feasibility, costeffectiveness, emission reduction potential, rate of emission reductions, public acceptability, and enforceability. However, priority should be given to feasible measures that provide the most expeditious progress toward the goal of healthful air.

NEW PAGE 3/25/91

Question: How many feasible measures should be annually adopted by the districts?

Answer: The exact number of feasible measures that should be adopted annually will vary for each district. For districts that are sources of transported pollutants to downwind areas, those districts must include in their plans, pursuant to HSC Section 40912, all mitigation requirements as established by the ARB. For those districts, ARB has established the requirement for the adoption of feasible measures for sources accounting for 75% of the emission inventory within 18 menths by January 1, 1994 to control emission sources that contribute to transported pollutants.

> For districts that are not sources of transported pollutants, all feasible measures should be adopted according to a schedule that will provide expeditious progress towards attainment of the state ambient air quality standards. At a minimum, adoption of at least six measures should be considered by each district, annually. Districts may need to provide a more aggressive schedule if expeditious progress towards attainment is not made.

- Question: How can districts with a limited regulatory program and resources provide an expeditious adoption schedule of all feasible measures?
- Answer: The CCAA requires districts that must include every feasible measure in their attainment plans, adopt these measures according to an expeditious adoption schedule. Districts may need to augment their existing program and resources to meet the requirements of the CCAA.
- Question: 'If attainment is achieved before all feasible measures are adopted, will districts have to pursue the rest of the feasible measures contained in their plans?
- Answer: If districts can attain and maintain the state ambient air quality standards, further adoption of feasible measures contained in their plans is not necessary.

Attachment

List of Feasible Measures for Stationary Sources

Reference Measures Control Measures A. New source review, indirect source review, and transportation control measures ARB guidance New source review measures ARB guidance Indirect source review measures 0 ARB guidance Transportation control measures 8 B. NOx related control measures district. SCM Coment kilns 0 district Crude oil pipeline heaters 0 district, SCM Electric utility gas turbines 0 district. SCM Glass melting furnaces 6 district, SCM Industrial boilers 0 district, SCM Internal combustion engines 0 district, SCM district, SCM Oil field steam generators 0 Refinery heaters and boilers 0 district, SCM Residential space heating 0 district Residential water heating ٥ district, SCM Utility beilers (electrical power generation) 0 C. VOC related control measures district Aerospace coatings 8 district Aircraft fuel transfer into storage tanks 0. district, SCM Architectural coatings 8 RACT/BARCT Automobile refinishing coatings ٥ district, SCM, CTG Automobile assembly coatings ۵ district. SCM, CTG Can and coil coatings 0 Cleaning of organic product storage tanks district 0 district, SCM, CTG Coating of metal parts and products 0 district Coating of plastic parts 0 district Commercial bakeries 0 district Commercial charbroilers 0 Commercial and industrial adhesives district 6 Control of emissions from cyclic oil ٥ district production wells Control of emissions from steam drive oil ٥ district, SCM production wells Covers for sumps, pits, and wastewater ٥ district. SCM, CTG processing equipment district, SCM, CTG Cutback asphalt 0 SCM Disposal of organic westes 0 Factory surface coating of flatwood paneling CTG 0 district Flexible disc manufacturing ٥

Reference Measures

Control Measures district, SCM, CTG Floating roof storage tanks 0 Fugitive emissions from industrial processes ۵. (includes synthetic organic chemical manufacturing industries, petroleum refining, oil/gas production. district. SCM. CTG gas plants, etc.) district, SCM Gas collection system for sanitary landfills ٥ district. SCM, CTG Graphic arts (rotogravure & flozography) ۵ district Kelp processing plants ٥ RACT/BARCT Marine coatings 0 district Marine vessel ballasting and housekeeping 0 RACT/BARCT Marine vessel loading operations 0 Metal furniture and fixture coating operations district, SCM, CTG ٥ SCM, CTG Natural gas/gasoline processing plants 0 CTG. NSPS Organic chemical manufacturing ٥ district, SCM, CTG Petroleum solvent dry cleaning operations 0 district, CTG Pharmaceutical manufacturing 0 RACT/BARCT Polyester resin operations ٥ district, SCM, CTG Polymer resin manufacturing 0 Refinery Vacuum Producing Systems, Wastewater 0 Separators, and Process Unit Turnarounds district, CTG district. CTG Rubber tire manufacturing ٥ district Semiconductor manufacturing operations ۵ district Soil decontamination containing VOCs ٥ district, CTG ۵ Solvent degreesing Surface coatings of paper and fabrics district, SCM, CTG 0 district. SCM. CTG Synthetic solvent dry cleaning operations ٥ Vapor recovery systems for gasoline distribution ۵ (includes service stations, terminals, bulk plants, storage tanks, tank trucks, reil car district loading) district Vegetable oil menufacturing ٥ district, SCM Wood furniture manufacturing coatings 6 D. Multiple and other pollutant (SOx, CO, PM) control measures ARB Clean fuel for fleets (NOx, SOx. CO. PM, VOC) ۵ Fluid catalytic cracking units (SOz) district ۵ SCM Marine vessel operations (SOX. VOC) 6 Petroleum coke calcining (SOX) district ۵ Residential wood combustion (CO, VOC, PM) SCM ۵ district Sulfur content in fuel (SOx) ٥ Notes:

1. Reference measures listed represent existing district regulations or past control strategies developed by the districts, ARB, and EPA. In developing feasible measures, districts are encouraged to address current enforceability issues, SIP deficiencies, and the California Clean Air Act guidance for the determination of RACT/BARCT.

All feasible measures should be adopted as expeditiously as possible 2. to satisfy the requirements of the CCAA. Feesible measures should represent uniformity within an air basin and be acceptable to the ARB and EPA in regards to enforceability, completeness, and State Implementation Plan deficiencies.

PETE WILSON, Governor

STATE OF CALIFORNIA

AIR RESOURCES BOARD 1102-0 STREET 0.0. BOX 2815 CRAMENTO, CA 95812



March 26, 1991

Dear Air Pollution Control Officers:

Correction to List of Feasible Measures for Stationary Sources

On March 19, 1991, we sent you a list of feasible measures for stationary sources which also contained information in the form of questions and answers to assist you in incorporating the list of feasible measures into your attainment plans.

It has been brought to our attention that we incorrectly stated the time allowed for the adoption of feasible measures for sources that contribute to transported pollutants. The time period mentioned in our letter for adoption of feasible measures for sources accounting for 75 percent of the emission inventory for transported pollutants should not have been 18 months; but, rather the correct date is January 1, 1994. Enclosed is the corrected page. Please discard the page with the incorrect information and and substitute the corrected page.

Please accept our apology for any inconvenience this error may have caused. If you have any questions regarding this matter, please feel free to call me at (916) 445-0650.

Sincerely.

Peter D. Venturini, Chief Stationary Source Division

Enclosure

cc: William W. Sylte

Appendix C

Stationary, Areawide and Energy Conservation Control Measures Listed by Date of Adoption

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Control Measure	Pollutant*	Emission Reduction**	Cost Effectiveness***	Adoption Year
Consumer Products (ARB)	ROG	6.30	Savings - \$1.70	Currently Adopted
Small Utility Engine Controls (ARB)	ROG	2.67	\$0.08-\$12.00	Currently Adopted
Barbecue Grill Ignition (ARB)	ROG	0.04	\$0.01 - \$1.04	Currently Adopted
Polyester Resin Operations	ROG	0.83	\$0.04	Currently Adopted
Marine Coatings	ROG	0.50	Savings - \$6.40	Currently Adopted
Deodorants and Antiperspirants(ARB)	ROG	0.34	\$0.50 - \$1.20	Currently Adopted
Ethylene Oxide Sterilizers	ROG	0.018	\$5.00 - \$175	Currently Adopted
Metal Parts and Products Coatings	ROG	0.56	\$1.67 - \$2.25	Currently Adopted
Wood Product Coatings	ROG	0.73	Savings-\$18.34	Currently Adopted
Kelp Processing Operations	ROG	0.17	\$1.02	Currently Adopted
Paint and Ink Manufacturing	ROG	0.48	\$1.06	1 992
Electrical Generating Steam Boilers	NOx	7.32	\$3.86	1992
New Source Review	ROG/ NOx/CO	1	1	1992
Automotive Refinishing	ROG	1.31	Savings-\$2.20	1 99 3
Underground Gas Tank Decommissioning and Soil Decontamination	ROG	0.55	\$9.71 - \$10.00	1993
Adhesives	ROG	0.22	\$0.26 - \$10.00	1993
Marine Coating Operations	ROG	2	2	1993
Industrial and Commercial Boiler Controls	NOx	0.16	\$0.30 - \$22.27	1993
Large Nonutility Boilers	NOx	0.05	\$21.42-\$28.36	1993
Solvent Cleaning Operations	ROG	1.06	Savings-\$3.85	1994
Can and Coil Coatings	ROG	0.31	\$0.85-\$1.80	1994

Appendix C Strategy Tactics Listed by Adoption Date

^{*} ROG-Reactive Organic Gases - NOx-Oxides of Nitrogen - CO-Carbon Monoxide. ** Emission Reductions from 1987 baseline, except as otherwise noted.

^{***} Cost Effectiveness in \$/pound of emissions reduced.

¹Reductions and Cost Effectiveness are currently unknown.

²Rule adoption to implement Best Available Retrofit Control Technology. Reductions and Cost Effectiveness are currently unknown.

Control Measure	Pollutant*	Emission Reduction**	Cost Effectiveness***	Adoption Year
Plastic, Rubber, Composite, and Glass Coatings	ROG	0.17	\$0.26-\$1.97	1994
Wood Product Coatings	ROG	0.14	Savings-\$18.34	1994
Polyester and Epoxy Resin Operations	ROG	0.08	\$0.04	1994
Turbines	NOx	0.64	\$0.63 - \$6.36	1994
Bakeries	ROG	0.22	\$3.14 - \$3.45	1995
Foam Blowing and Plastics Expanding	ROG	0.20	\$0.90	1995
Semiconductor Manufacturing	ROG	0.07	\$4.00 - \$4.90	1995
Lean Burn Engines	NOx	0.61	\$1.60-\$38.20	1995
Residential Low-NOx Water Heaters	NOx	2.50	\$1.53	1995
New Residential Solar Hot Water Heaters	NOx	0.38 - 0.541	\$44 - \$131	1995
Retrofit Residential Solar Hot Water Heaters	NOx	1.68 - 2.43	\$49 - \$146	1995
Commercial Low-NOx Water Heaters	NOx	0.12	\$8.12	1995
New Commercial Solar Hot Water Heaters	NOx	0.01 ³	Savings - \$158	1995
Commercial Charbroiling	ROG	0.52	\$1.62	1 996
Bulk Gasoline Storage Tank Degassing	ROG	1.90 ²	\$6.10 - \$17.00	1996
Petroleum Dry Cleaning	ROG	0.04	\$0.68 - \$1.27	1996
Stationary I C Engines (200-500 hp)	NOx	1.59	\$0.14-\$0.81	1996
Stationary I C Engines (50-200 hp)	NOx	0.78	\$0.21-\$2.61	1996

Appendix C Strategy Tactics Listed by Adoption Date (Cont'd)

^{*} ROG-Reactive Organic Gases - NOx-Oxides of Nitrogen - CO-Carbon Monoxide. ** Emission Reductions from 1987 baseline, except as otherwise noted. *** Cost Effectiveness in \$/pound of emissions reduced.

¹Emission reductions from new buildings in 2000.

²Except for emergencies, these operations occur only a few days per year, and are allowed only outside the peak smog season.

Control Measure	Pollutant*	Emission Reduction**	Cost Effectiveness***	Adoption Year
Groundwater Decontamination	ROG	<0.01	\$15.88 - \$26.40	1997
Marina Fueling Operations	ROG	0.02	\$0.57 - \$7.68	1997
Residential Low-NOx Furnaces	NOx	1.01	\$5.76	1997

Appendix C Strategy Tactics Listed by Adoption Date (Cont'd)

^{*} ROG-Reactive Organic Gases - NOx-Oxides of Nitrogen - CO-Carbon Monoxide. ** Emission Reductions from 1987 baseline, except as otherwise noted. *** Cost Effectiveness in \$/pound of emissions reduced.
1991 San Diego Regional Air Quality Strategy

Appendix D

San Diego Air Pollution Control Board Criteria to Guide Development of Transportation Control Measures There is presented to the Air Pollution Control Board a letter, Document No. 739592, from the Air Pollution Control District Officer concerning Transportation Control Measure Criteria, and making certain recommendations.

The Air Pollution Control Officer orally reviews background information as outlined in the report with the aid of a slide presentation.

Tom Scheffer, representing the Construction Industry Federation, addresses the Board in support of the Criteria to guide development of Regional Transportation Control Measures by the San Diego Association of Governments, and requests the districts work with the Industry to coordinate an alternate truck traffic control program.

Christopher Neils, representing the Greater San Diego Chamber of Commerce, addresses the Board in support of the Transportation Control Measure Criteria, and states that emphasis placed on the proposed parking fees could become a disincentive on the employer/employee. He urges the Board to keep this concern in mind and suggests educating the public on the Transportation Control Measure Criteria.

Craig Adams, representing C-3 Citizens Coordinate for Century 3, addresses the Board strongly supporting the adoption of the criteria, but questions the criteria concerning complete elimination of carbon monoxide hot spots. He suggests the Criteria include an earlier schedule that leases implementation of the indirect source review procedures prior to the 1994 deadline; and requests the Board keep the transportation control measures in perspective relative to the entire range of pollution sources.

The record shows receipt of a letter from the Sierra Club, San Diego Chapter supporting the Air Pollution Control District efforts to reduce air pollution, Document No. 740004.

The record shows receipt of a letter from the Chairman of the Air Quality Strategy Development Committee, supporting the proposed Criteria in principle, Document No. 740005.

<u>No. 2</u>

ON MOTION of Member Williams, seconded by Member Golding, the Air Pollution Control Board of the San Diego County Air Pollution Control District adopts the following criteria to guide development of Regional Transportation Control Measures by the San Diego Association of Governments:

Nos. 2-2A 3/12/91 mcc Page 1 of 16 Pages WHEREAS, the San Diego Air Basin has been designated a nonattainment area by the California Air Resources Board for the state air quality standards for smog (measured as ground-level ambient ozone) and particulates, and the Western portion of the San Diego Air Basin (west of the mountains) has been designated nonattainment for carbon monoxide and nonattainment-transitional for nitrogen dioxide;

WHEREAS, on-road motor vehicles are the predominant source of reactive organic gases, oxides of nitrogen and carbon monoxide in San Diego County;

WHEREAS, regional traffic in San Diego County, measured as Vehicle Miles Traveled (VMT), has been growing over the last decade at an average annual rate of about seven percent, and vehicle trips have been growing at an annual rate of about five percent; while the annual rate of population growth has averaged three percent;

WHEREAS, for purposes of improving air quality, reducing vehicle trips must be given priority as trip-related start and soak emissions represent from one-third to one-half of reactive organic gas emissions from motor vehicles;

WHEREAS, for purposes of improving air quality, trip reduction programs must address all travel periods since regional travel is divided almost equally between peak and off-peak periods;

WHEREAS, in the past, the primary focus of regional transportation planning has been on mobility, not air quality;

WHEREAS, on a regular basis, land use policies do not promote land development patterns that support transit use and provide a mixture of housing and employment opportunities that minimize trip lengths;

WHEREAS, the primary focus of current regional transportation demand management efforts in San Diego County has been on traffic congestion relief, and not air quality;

WHEREAS, the San Diego Association of Governments has adopted a Model Transportation Demand Management Program which includes establishing a regional Transportation Demand Management Board;

WHEREAS, the Air Pollution Control Board is opposed to establishing a new regional Board or agency to administer and implement the regional transportation demand management program, duplicating the District's responsibilities under the California Clean Air Act;

WHEREAS, sufficient measures to support trip reduction programs and provide an adequate supply of alternative transportation modes are not included in the current regional effort;

Nos. 2-2A 3/12/91 mcc Page 2 of 16 Pages WHEREAS, the 1900 draft Regional Transportation Plan identifies funding shortfalls, and many of the unfunde projects are High Occupancy Vehicle (HOV) lanes and transit improvements.

WHEREAS, the California Clean Air Act requires revised air quality plans for smög, carbon monoxide, and nitrogen dioxide be submitted to the Air Resources Board by June 30, 1991, to provide for attainment of the health based air quality standards as by the earliest practicable date.

WHEREAS, the San Diego area has photochemical smog concentrations high enough that the Air Resources Board guidance considers the region to be a Severe nonattainment area, and the California Clean Air Act specifies minimum requirements for transportation control measures in Severe areas:

WHEREAS, the California Clean Air Act requires that revised air quality plans achieve emission reductions from all sources of at least five percent per year until attainment, or include all feasible control measures if the required five percent reductions cannot be obtained:

WHEREAS, an estimated twenty-two percent emission reduction in reactive organic compounds and thirty-nine percent in oxides of nitrogen emissions from the 1987 level are needed by the year 2000 to satisfy the five percent annual emission reduction requirement;

WHEREAS, a five percent per year emission reduction is likely not achievable: therefore, all feasible transportation control measures reflecting the optimal effectiveness level to provide as much emission reduction as feasible, and implemented as expeditiously as practicable are needed.

WHEREAS, the integration of the Regional Transportation Plan and other regional transportation and congestion management plans with the air quality plan is required by state and federal law:

WHEREAS, the California Clean Air Act authorizes and requires the Air Pollution Control District to adopt, implement, enforce, and monitor the progress of regional transportation control measures necessary to attain and maintain air quality standards:

WHEREAS, the California Clean Air Act provides an institutional framework for regional participation in developing and implementing transportation control measures, and requires the Air Pollution Control Board to adopt criteria in consultation with the San Diego Association of Governments to guide the development of a regional plan for transportation control measures by the San Diego Association of Governments;

WHEREAS, the San Diego Association of Governments has been consulted during Criteria development;

WHEREAS, the California Clean Air Act requires the Air Pollution Control District to develop an indirect source control program;

WHEREAS, the California Clean Air Act requires the air quality strategy contain an assessment of the cost-effectiveness c. available and proposed control measures, and that measures be ranked in order of cost-effectiveness;

Nos. 2-2A 3/12/91 mcc Page 3 of 16 Pages WHEREAS, the California Clear Air Act requires the air quality strategy contain an assessment of the technological feasibility, total emission reduction potential, rate of emission reduction, public acceptability, and enforceability of each control measure;

NOW THEREFORE BE IT RESOLVED that the Board hereby adopts the following criteria for developing a regional plan for transportation control measures to be included in the revised regional air quality strategy required by the California Clean Air Act:

- 1. The plan shall substantially reduce passenger vehicle trips and trip length as expeditiously as practicable. The rate of increase in vehicle trips shall be reduced to or below the rate of population growth.
- 2. The plan shall achieve a regionwide average vehicle ridership of 1.5 or more during weekday commute hours as expeditiously as practicable, but no later than 1999, and no net increase in vehicle emissions after 1997. The vehicle trip reduction goal shall be in terms of average vehicle ridership, not drive-alone ratio as the latter reduces the incentive for transit promotion, thereby diminishing the opportunity to further reinforce the viability of the region's investment in mass transit.
- 3. The plan shall include all feasible transportation control measures for peak and off-peak period travel that reflect the optimal effectiveness level to provide as much emission reduction as feasible, and be implemented as expeditiously as practicable.
- 4. The transportation control measures shall be developed in coordination and consultation with all affected agencies and the Air Quality Strategy Development Committee, and significant issues raised in the development shall be identified in the plan. The Air Quality Strategy Development Committee shall be the key committee to address and resolve all issues prior to making recommendations to the Board.
- 5. The plan for Transportation Control Measures shall include a recommended strategy and alternative options for consideration by the Air Pollution Control Board. Each measure shall be evaluated at three implementation levels. These levels shall represent implementation to the maximum extent feasible using: (1) Existing funding sources, (2) Potentially available funding sources, including parking and other fees implemented by the District for which legislation is not required, and (3) Potentially available funding sources including those that would require legislation, such as fuel taxes and vehicle use fees. Resource needs and funding sources shall be identified for each implementation level.
- 6. For each implementation level, an evaluation shall be performed by analyzing transportation control strategies using TRANPLAN to determine resulting changes in trips, VMT and speeds. The assumptions and justifications for the assumptions shall be documented, and TRANPLAN outputs shall conform to District format specification. Any emission reductions determined by the San Diego Association of Governments shall be submitted to the District with supporting documentation. The District shall submit any revisions to the emission reductions to the San Diego Association of Governments for inclusion in the transportation control measure analysis.
- 7. The cost-effectiveness, technological feasibility, total emission reduction potential for reactive organic compounds, oxides of nitrogen and carbon monoxide, rate of emission

Nos. 2-2A 3/12/91 mcc Page 4 of 16 Pages reduction, public acceptability, and enforceability shall be determined for each control measure at each implementation level. The proposed transportation control measure plan and alternative options shall be evaluated in terms of the same factors, with special attention to synergistic effects and other interactions among measures in the plan.

- 8. The performance criteria and the target levels to demonstrate expeditious progress shall be specified for each control measure. Monitoring and audit procedures to effectively track implementation and progress of each transportation system management measure by the District shall be recommended. Monitoring and audit procedures to effectively track regionwide average vehicle ridership necessary to determine compliance with the California Clean Air Act requirement for 1.5 persons per passenger vehicle during weekday commute hours shall be recommended.
- 9. In light of projected funding limitations, the proposed plan shall include an analysis of benefits and recommendations as appropriate for redirecting discretionary funds from highway capacity expansion projects to other projects that accelerate expansion of alternative transportation modes.
- 10. Revenues from all air quality related fees shall be deposited with the District for allocation to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost-effective measures, and total emission reduction potential. The parking fee program may be structured to allow facilities to retain a portion of the parking charges from their employees to help fund incentive programs provided sufficient funding, as determined by the District, for District transportation related programs is provided to the District.
- 11. Market-based measures, which increase the cost of driving, may be suggested, but may not replace, regulatory measures. Suggested market-based measures shall be designed to be implemented within a District regulatory structure and shall include approaches that do not require legislation. Market-based measures that may require implementing legislation may be suggested as long-term measures.
- 12. The regional plan for transportation control measures shall suggest a regional process for implementing long-term measures, and for developing and implementing future transportation control measures that may become feasible with the emergence of new technologies, enabling legislation, or legal requirements.
- 13. The plan shall include sufficient incentives to induce solo drivers into alternative transportation modes, and provide for a sufficient supply of alternative transportation modes (e.g., transit, HOV lanes, vanpools) to meet the demand induced by the transportation control measures. An assessment of how much transit expansion will be necessary to meet the demand induced by the transportation control measures and of transit operating funding needs to support that expansion shall be included.
- 14. Incorporated herein by reference are all applicable guidance documents, including California Clean Air Act Transportation Requirements Guidance, California Clean Air Act Guidance for the Development of Indirect Source Control Programs, Guidelines to Local Air Districts Considering Transportation Control Measures Directed at Heavy-Duty Truck Operations, and Cost-Effectiveness - District Options for Satisfying the Requirements of the California Clean Air Act. The transportation control measures plan shall conform to, these guidance documents as determined by the Air Pollution Control Board.
- 15. All information necessary for an environmental assessment of the plan, if necessary under the California Environmental Quality Act, shall be provided to the District upon request.

Nos. 2-2A 3/12/91 mcc Page 5 of 16 Pages

- 16. If the Air Pollution Control Board adopts a strategy different from the proposed and analyzed strategies, the San Diego Association of Governments shall analyze the transportation control measures in the adopted strategy using TRANPLAN, provide appropriate outputs in a format specified by the District, and determine the overall cost-effectiveness of the adopted transportation control measures.
- 17. The attached list of transportation control measures, Addendum I, constitutes the minimum measures to be included in the plan. Transportation control measures requiring local land use decisions should be developed in coordination with local land use jurisdictions. Other measures proposed in the plan must meet the definition of transportation control measures as defined by the California Clean Air Act and be approved by the Air Pollution Control Officer.
- 18. The plan for transportation control measures shall include suggested contingency measures to be implemented as necessary to offset any emission reduction shortfall if other measures are not implemented or are not as effective as anticipated.
- 19. The plan for regional transportation control measures shall suggest revisions to federal, state, and local laws and regulations that would facilitate or remove barriers to reducing regional travel.
- 20. The regional plan for transportation control measures shall not impede pedestrian and bicycle travel, and shall address safety issues associated with such travel as well as transit and park-and-ride lots.

The plan for transportation control measures shall be submitted to the Air Pollution Control District by May 1, 1991, in order to meet the June 30, 1991, requirement for submittal of a revised regional air quality strategy to the Air Resources Board. If SANDAG anticipates difficulty in meeting this deadline, SANDAG shall notify the District and suggest a reasonable extension date, subject to approval by the Air Pollution Control Officer.

The Air Pollution Control Board reserves the right to approve or modify the recommended plan for transportation control measures as necessary to meet federal or state requirements applicable to air quality.

The plan for transportation control measures shall, upon adoption by the Air Pollution Control Board, be incorporated in the Regional Transportation Plan and other regional transportation and congestion management plans.

A Memorandum of Agreement shall be developed between the San Diego Association of Governments and the District that ensures appropriate District involvement in determining the consistency of the Regional Transportation Plan, the Congestion Management Plan, Regional Growth Management Plan, and other regional plans with the Regional Air Quality Strategy. For purposes of developing deficiency congestion management plans which are required to be adopted by cities and the County, the San Diego Association of Governments shall develop a list of approved improvements, programs, and actions, and include those in the plan for transportation control measures.

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MINIMUM TRANSPORTATION CONTROL MEASURES ADDENDUM I

TRIP REDUCTION PROGRAM

SINGLE PASSENGER VEHICLE TRIP REDUCTION PROGRAM

A single passenger trip reduction program will be implemented and enforced by the District, subject to delegation as authorized by the California Clean Air Act to Cities and the County and not to another regional agency. Delegation to Cities and the County shall be limited to ordinances certified by the District as being at least as stringent as the District regulation. The Single Passenger Vehicle Trip Reduction Program shall include the following elements:

- Trip reductions will be mandated and measured as average vehicle ridership for at least commute, educational, airport, special event and shopping trips, according to the size, type and location of facility. The mandated trip reduction levels shall represent the maximum achievable reductions as expeditiously as practicable.
- Minimum standards for facility rideshare/transit promotion efforts consistent with mandated trip reduction measures shall be specified and include financial incentives and contributions, information dissemination, and telecommuting programs.
- Average vehicle ridership shall be defined as the average daily number of employees/students/customers who would be normally expected to work/attend/shop at a facility divided by the average number who drive to the facility, to account for all alternative transportation modes, including telecommuting, teleshopping, part time ridesharing, and compressed work weeks. Average Vehicle Ridership credits shall be provided employers who establish satellite work centers designed to significantly reduce the length of commuting by employees who would otherwise report to the principal work site. Low emission vehicles, as defined in Health and Safety Code Section 39037.05 may be excluded.
- Facilities shall be required to submit an annual report to the District documenting the average vehicle ridership, any incentives provided to promote alternative transportation modes, and necessary supporting data.
- Facilities shall be required to submit a deficiency correction plan to the District for review and approval when the average vehicle ridership fails to meet mandated requirements. The deficiency correction plan shall analyze why the required reductions were not achieved, and shall specify the design, funding requirements and sources, and expeditious implementation schedule for deficiency correction measures sufficient to achieve the required reductions, as approved by the District. Facilities will be required to fund and implement the Districtapproved deficiency correction plans.
- Multifacility averaging and combined reports and deficiency correction plans within appropriately defined subregional areas will be provided for, as approved by the District.

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PARKING MANAGEMENT

A parking management program implemented and enforced by the District shall be designed to reduce the number of drive-alone trips by making parking more expensive and less convenient. The program shall, at a minimum, be optimized to support the Single Passenger Vehicle Trip Reduction Program and include the following elements:

- Charges for commuter parking where that parking is now free and increased long-term rates for existing fee-based parking. One consideration in setting or increasing parking charges may be health-related costs associated with motor vehicle trips. The parking charges shall be structured to create disincentives for the solo driver, and the program shall be structured so parking charges are paid by drivers and not subsidized by employers. Revenues from parking management fees are to be deposited with the District for allocation by the District to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost effective measures, and measures with high emission reduction potential. The parking fee program may be structured to allow facilities to retain the parking charges from their employees to help defray the cost of required incentive programs and transportation control measures, provided sufficient funding, as determined by the District, is provided for transportation related District programs including transit expansion and other similar programs.
- Free or reduced-cost carpool and vanpool parking;
- Preferential parking spaces for carpools and vanpools in the most convenient locations at the parking facility;
- Limits on the supply of parking for drive-alone commuters;
- Require cities and County control on-street parking where necessary to support the purpose and goals of the parking management program;
- Review of City and County land use and zoning policies regarding parking and recommended changes to those policies and ordinances consistent with the purpose and goals of the parking management program.

TRUCK OPERATION CONTROL REGULATIONS

A regional goods movement truck travel reduction program consistent with Air Resources Board guidance shall be evaluated for feasibility and emission reductions in San Diego County. The program will be implemented and enforced by the District, subject to delegation to the Cities and County consistent with the California Clean Air Act. The truck operation control regulations to be evaluated shall:

- Prohibit idling of trucks for more than five minutes, except in specific situations of necessity.
- Prohibit facilities from operating in a manner that causes trucks to idle for more than five minutes.

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- Require freight consolidation centers for less than truckload shipments into and out of San Diego County.
- Require operations at freight consolidation centers be conducted in a manner to minimize motor vehicle emissions and traffic congestion, such as low emission service vehicles and appropriate off-peak operations.
- Require establishments shipping or receiving goods by truck to shift some or all shipments to off-peak hours.
- Prohibit travel by specified trucks during appropriate peak periods. Criteria for considering which trucks shall be subject to travel restrictions shall include the ability of the class of truck to accelerate, decelerate, merge with, or otherwise operate in a manner that does not interfere with peak period traffic flow. Peak periods during which truck travel shall be restricted may be established separately from other definitions of peak period.
- Require the Cities and County to revise provisions of local plans and ordinances to be consistent with the purpose and goals of the truck operation control regulations.

ALTERNATIVE TRANSPORTATION MODE CAPACITY EXPANSION

EXPANDED TRANSIT

- Air quality related transit improvements shall, through ease of use, convenience, comfort and security, be optimized to attract "choice" riders (those riders who have a choice of modes available) who would otherwise use personal vehicles.
- Air quality related transit services shall be designed to include feeder transit service to linehaul transit routes to the maximum extent feasible to minimize the number of vehicle trips needed to access transit.
- Transit expansion shall be as extensive and implemented as rapidly as feasible to accommodate choice riders induced by other transportation control measures.
- Transit system design shall minimize travel time and maximize convenience for the largest number of potential riders.
- The Trolley shall to the maximum extent feasible be conveniently accessible by walking, bicycle, or feeder transit. Trolley corridors shall be reviewed for potential realignment to go through the areas of greatest ridership potential rather than along the fringes. Where such realignments prove infeasible, development plans along the Trolley corridors shall maximize the number of potential riders who would otherwise be single-occupant-vehicle drivers.
- Transit-only streets shall be implemented as appropriate in congested, high density activity centers.
- Closing of existing regionwide arterial gaps shall be evaluated to enhance transit service.

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PARK AND RIDE FACILITIES

For purposes of air quality improvement, park and ride facilities have a lower priority than providing a convenient feeder transit system. Wherever feasible, convenient feeder transit to line haul transit shall be provided and promoted, rather than providing park and ride lots. However, where park and ride facilities are necessary, the following design criteria shall apply.

- Park and ride locations shall serve all trip origin areas that cannot be feasibly served by feeder transit.
- Park and ride facilities shall be located at or near other trip generating activities or services such as grocery stores, banks, or day care to minimize or eliminate additional motor vehicle trips to these activities or services.
- Park and ride facilities shall be located to intercept trips as close to the origin as possible.
- Park and ride facilities shall be available at regional transit centers in trip origin areas.
- Park and ride lots shall have adequate spaces to meet demand.
- Park and ride facilities shall target longer trips along corridors with High Occupancy Vehicle lanes.
- Park and ride facilities shall be equipped with secure bicycle storage to minimize vehicle trips.

HIGH OCCUPANCY VEHICLE FACILITIES

- High Occupancy Vehicle lanes shall be given priority consideration in funding highway capacity expansion on existing highways.
- Adequate provisions shall be made for HOV lanes on new highways.
- A regional system of High Occupancy Vehicle lanes shall be provided, when feasible, in all congested corridors, at least those identified in the Regional Transportation Plan, or where queueing onto local streets creates excessive congestion or safety problems.
- The Regional High Occupancy Vehicle Facilities Plan shall include transit stops for the transfer of passengers between local transit and transit travelling in High Occupancy Vehicle lanes where there is or is the potential for connecting local transit. Where there are space constraints in the medians, it is not necessary to build the transit stops in the facility itself. Alternative designs for transit-only access should allow transit riders the added convenience and time savings associated with HOV use that might be otherwise unavailable without transit stops.
- High Occupancy Vehicle bypass lanes shall be provided at all metered freeway entrance ramps where economically feasible and consistent with public safety standards.

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BICYCLE AND PEDESTRIAN FACILITIES

- Bicycle and pedestrian facilities represent two distinct forms of nonmotorized transportation. Recognizing that the safety and access of cyclists and pedestrians may be jeopardized by combined facility use, bicycle facilities shall be designed for bicycle use and pedestrian facilities for pedestrian use to the extent necessary to provide safe, accessible facilities for each.
- The priority for pedestrian and bicycle access to facilities shall be at least as high as motor vehicle access.
- Pedestrian and bicycle circulation patterns and paths providing convenient, attractive, secure pedestrian and bicycle travel shall have priority in development design.
- The bicycle element of the Regional Transportation Plan shall be implemented as expeditiously as feasible.
- Bicycling shall be enhanced through improved bicycle lane maps, improved bicycle destination signage, improved intersections accommodating right turn only traffic, and separate bicycle paths at strategic locations.
- Pedestrian and bicycle access shall be designed to provide quick and convenient access to transit nodes.
- Secure bicycle storage at transit stops and on transit vehicles shall be expanded to encourage bicycle-transit trips.

TRANSPORTATION SYSTEM MANAGEMENT

Suggest appropriate monitoring criteria and auditing procedures to be used by the District to effectively track the emission reduction effectiveness of each transportation system management measure.

TRAFFIC CONTROL IMPROVEMENTS

- Any measure to improve the flow of traffic shall not undermine the safety of cyclists or pedestrians.
- Advanced computer-based traffic signal control systems shall be implemented to minimize travel time, stops and delay on the urban highway network.
- First priority shall be given to transit vehicles. On streets with bus frequency of 15 minutes or less, signal timing should favor short cycles compatible with pedestrian traffic.
- Replacing stop signs with optimized signals shall have a high priority.
- Traffic controls along all regional arterials identified in the Regional Transportation Plan shall be optimized to minimize stops and delay and give priority to regional travel.

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- Traffic signals in all major local and regional activity centers shall be optimized to minimize stops and delay.
- Traffic signals at the street end of freeway on and off ramps shall be coordinated and integrated with the surrounding city street signals.

RAMP METERING

• The Ramp Metering program in the Regional Transportation Plan shall be implemented as rapidly as feasible unless research indicates ramp metering causes a net emission increase.

INCIDENT MANAGEMENT

• The Incident Management program in the Regional Transportation Plan shall be implemented as rapidly as feasible.

LAND USE

A model air quality element for comprehensive land use plans shall be developed for consideration by the Cities, the County, the Port District, and other applicable jurisdictions.

JOB-HOUSING BALANCE

- Each major statistical area (as defined by SANDAG and concurred by the District) shall, to the extent feasible, contain affordable housing for the employment spectrum in that area.
- Land use policies and programs shall be established to attract appropriate employers to overly residential areas and to encourage appropriate housing in and near industrial and business areas.

MIXED USE DEVELOPMENT

• Development designed to maximize walking and minimize vehicle use by providing housing, employment, education, shopping, recreation, and any support facilities within convenient proximity shall be maximized.

TRANSIT CORRIDOR DEVELOPMENT

• City, County, and Port District land use plans, zoning ordinances, and development policies shall be designed to foster transit ridership.

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TRANSIT CORRIDOR DEVELOPMENT

- City, County, and Port District land use plans, zoning ordinances, and development policies shall be designed to foster transit ridership.
- High residential densities shall be encouraged within walking distance of major transit routes.
- Industrial and commercial development shall focus at transit nodes.
- Developments shall have convenient access to transit.
- Multiuse development at transit centers shall offer such facilities as day care, groceries, banking, etc.

INDIRECT SOURCE REVIEW

The transportation control measure plan submittal shall suggest a regional process, including the following features, for developing a District indirect source review program to ensure that developments are designed to facilitate use of alternative transportation modes to the maximum extent feasible.

- The Air Pollution Control Board will adopt an indirect source control regulation requiring evaluation and mitigation of individual land use development projects.
- A condition for delegating the regulation to local land use agencies in the the Cities, County, and Port District will be their adopting an air quality element into the local general plan or an air quality program, that conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality elements be adopted as individual elements of general plans, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.
- Air quality elements for general plans will be developed for implementation as a part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.
- Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.
- If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Quality Strategy, deficiencies will be identified and transmitted to the Regional Growth Management Board.
- Indirect source review program development and implementation shall be completed by 1994.

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IMPLEMENTATION AND ENFORCEMENT RESPONSIBILITIES FOR TRANSPORTATION CONTROL MEASURES

	Primary	May be Delegated to	Support
TRANSPORTATION DE	EMAND MANAGEN	MENT	
TDM Ordinance/ Regulation	APCD	Cities/County	Commuter Computer TMA
Parking Management	APCD	Cities/County Port District	SANDAG
Truck Regulation	APCD	Cities/County	CHP

ALTERNATIVE TRANSPORTATION MODE CAPACITY EXPANSION

Expanded Transit	Transit Development Boards	SANDAG/APCD
Park-and-Ride Facilities	Transit Development Boards/ CALTRANS	SANDAG/APCD
HOV Facilities	Cities/County/CALTRANS	SANDAG/APCD
Bicycle/Pedestrian	Cities/County/CALTRANS Port District	SANDAG/APCD

TRANSPORTATION SYSTEM MANAGEMENT

· Traffic Control Improv.	Cities/County/CALTRANS Port District	SANDAG/APCD
One-Way Streets	Cities/County/CALTRANS	SANDAG/APCD
Ramp Metering	Cities/County/CALTRANS	SANDAG/APCD
Incident Management	Cities/County/CALTRANS CHP	SANDAG/APCD

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	Primary	May be Delegated to	Support
LAND USE			
1. Job-Housing Balance	Cities/County		SANDAG/APCD
2. Mixed Use Development	Cities/County		SANDAG/APCD
3. Transit Corridor Develop.	Cities/County/Port Dis Transit Development 1	strict Boards	SANDAG/APCD

INDIRECT SOURCE REVIEW

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Regulation/Ordinance	APCD	Cities/County	SANDAG
Air Quality Element- General Plans	Cities		SANDAG/APCD

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PASSED AND ADOPTED by the Air Pollution Control Board of the County of San Diego, State of California, this 12th day of March, 1991, by the following vote:

AYES: Members Bailey, Golding and Williams NOES: Members None ABSENT: Members Bilbray and MacDonald

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No. 2A

ON MOTION of Member Williams seconded by Member Golding, the Air Pollution Control Board directs the Air Pollution Control Officer to transmit the Criteria to the San Diego Association of Governments.

Roll call on the foregoing motion results in the following vote:

AYES: Members Bailey, Golding and Williams NOES: Members None ABSENT: Members Bilbray and MacDonald

STATE OF CALIFORNIA) ss. County of San Diego)

I, THOMAS J. PASTUSZKA, Acting Clerk of the Air Pollution Control Board of the County of San Diego, State of California, hereby certify that I have compared the foregoing copy with the original order adopted by said Board, at a regular meeting thereof held March 12, 1991 (2-2A), by the vote herein stated, which original order is on file in my office; that the same contains a full, true and correct transcript therefrom and of the whole thereof.

Witness my hand and the seal of said Air Pollution Control Board, this 12th day of March, 1991.

THOMAS J. PASTUSZKA Acting Clerk of the Air Pollution Control Board San Diego County Air Pollution Control District

Esther & Hyan By Esther C. Ryan

Deputy

(SEAL)

1991 San Diego Regional Air Quality Strategy

Appendix E

Transportation Control Measures Plan

TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN

EXECUTIVE SUMMARY

The Board of Directors of the San Diego Association of Governments, at its March 1992 meeting, approved the Transportation Control Measures (TCM) Plan contained herein for inclusion in the San Diego Regional Air Quality Plan. The plan is also designed to meet the requirements of the state's Congestion Management Act.

CALIFORNIA CLEAN AIR ACT OF 1988

The California Legislature, in recognition that the state must undertake a more vigorous program to reduce air pollution, enacted the California Clean Air Act of 1988.

The Act requires additional controls on industrial sources of pollution, more strict vehicle emission standards, improved motor vehicle maintenance and inspection, control of indirect and area-wide sources of emissions, the use of cleaner burning fuels, vehicle fleet management, the design and implementation of transportation control measures, and the incorporation of air quality considerations into local land use planning decisions.

Responsible Agencies

The State, through the Air Resources Board (ARB) and the California Energy Commission (CEC), retains responsibility for certain activities to reduce pollution such as vehicle emission standards, vehicle maintenance and inspection, and fleet vehicle management. Other air pollution control activities including responsibility for industrial sources of pollution and transportation control measures are delegated to the local level.

In the San Diego air basin, the San Diego Air Pollution Control District (APCD) is responsible for the development of the 1991 Regional Air Quality Plan to be adopted and submitted to the State Air Resources Board by the Air Pollution Control Board by June 30, 1991.

Under the requirements of the California Clean Air Act, the San Diego Air Pollution Control District is required to develop measures to achieve an average 5% per year reduction in pollutants, averaged over every 3 years, until attainment is achieved and maintained.

In addition, the Air Pollution Control District has determined that the San Diego air basin will not be in attainment of the state air quality standards by 1997, thereby designating the air basin as an area of "severe" pollution. This designation carries additional and significant requirements to be included in the Transportation Control Measures (TCM) Plan. Transportation Control Measures are strategies designed to reduce motor vehicle emissions by reducing trips, miles traveled and congestion.

TRANSPORTATION CONTROL MEASURES PLAN

The San Diego Association of Governments (SANDAG) is responsible for the development and adoption of the Transportation Control Measures Plan component of the Air Quality Plan, based on criteria adopted by the Air Pollution Control Board. The TCM Plan is submitted to the Air Pollution Control Board (County Board of Supervisors) for approval and inclusion in the 1991 Air Quality Plan for the San Diego region.

Plan Goal

The goal of the TCM Plan is to reduce traffic congestion and motor vehicle emissions in the San Diego air basin in order to meet the requirements of the Congestion Management Act and California Clean Air Act of 1988 and federal Clean Air Act Amendment of 1990.

TCM Plan Criteria

There are five basic air quality criteria which these measures are designed to meet. The TCM Plan meets these criteria.

- 1. Air quality plans must include reasonably available transportation control measures.
- 2. Transportation control measures must achieve an average vehicle occupancy of 1.5 or more persons during weekday commute hours by 1999.
- 3. There shall be no net increase in vehicle emissions after 1997.
- 4. Vehicle trips shall increase no faster than the rate of population growth.
- 5. The Act requires a reduction in area-wide emissions of 5% per year, averaged every consecutive three-year period. Transportation must contribute its share of this required reduction.

Contents of the Plan

The TCM plan contains four major components with appropriate actions. The primary component of the plan is the transportation demand management (TDM) or trip reduction program. This program will reduce travel in single occupant vehicles by encouraging the development and use of alternative modes of transportation.

The TDM program is supported by three other components of the plan - the transportation capacity expansion program, the traffic systems management program, and the indirect source control program. These components provide the alternative transportation needed to make the TDM program a success.

Contingency measures, in addition to the ones listed, will be developed and incorporated into the TCM Plan, to be implemented as necessary, to offset any emission reduction shortfall if other measures are not implemented or are not as effective as anticipated. The work program for developing the contingency measures will be developed in FY-93.

Emissions Reductions and Cost Effectiveness

Table 1 displays each recommended transportation control tactic and its air pollution and cost characteristics.

Table 1

Year 2000 Total Emission Reductions and Cost Effectiveness of Recommended Transportation Control Tactics												
	Tra Red ('	Travel Emissions Reduced Reduced (%) (tons/day)		Emissions Reduced (% '87)			Annualized Cost (\$ millions)		Cost Effectiveness (ROG+NOx)			
Tactic	VMT	Trips	ROG	NOx	00	ROG	NOx	CO	Govt	Other	(\$/lb)	
TDM Program - Non-Commute Travel*	-	-	-	-	-	-	-	-	-	-	-	
TDM Program - Goods Movement (Level 3) (Contingency Measure)	-	-	1.26	-0.02	15.84	0.45	0.00	1.10	0.6	-	0.65	
Traffic Flow Improvements (Level 2)	-	-	0.58	0.58	12.80	0.22	0.22	0.45	3.28	-	3.90	
TDM Program - Commute Travel (Level 1) (Level 2 is a Contingency Measure)	3.93	3.28	2.60	2.83	33.62	0.93	0.98	2.36	1.5	73.8	27.20	
Bicycle Facilities (Level 2)	0.09	0.33	0.13	0.13	1.45	0.05	0.05	0.10	3.9	-	20.50	
TDM Program - High School/College Travel (Level 2)	0.65	0.55	0.38	0.71	4.72	0.14	0.25	0.33	8.0	12.3	25.50	
Transit Improvements (Level 3)	2.35	2.52	1.03	-0.04	13.65	0.37	-0.01	1.00	21.5	-	29.70	
Vanpool Program (Level 3)	0.49	0.41	0.31	0.47	3.86	0.11	0.16	0.27	16.5	-	28.90	
Park and Ride Facilities (Level 3)	0.06	-	0.03	0.06	0.35	0.01	0.02	0.02	2.4	-	36.23	
High Occupancy Vehicle Lanes (Level 3)	0.42	1.22	0.27	0.42	3.52	0.10	0.14	0.25	21.1	-	41.90	

^{*} Costs, emissions, and emission reductions for Airport, Special Event, and Shopping trips to be determined later, pursuant to work program.

Table 1a

INITI TOTAL EMISSION REDUCTIONS AN	AL IMPLE D COST E TACTI	EMENTA EFFECTIV CS WITI	FION - Venes H exis	YEAI S OF Sting	R 2000 RECO FUNI	DOLL MMEN DS	ARS DED 1	FRANS	SPORTA	TION (CONTROL
	Tra Red (4	Travel Reduced (%)		Emissions Reduced (tons/day)		Emissions Reduced (% '87)			Annualized Cost (\$ millions)		Cost Effectiveness (ROG+NOx)
Tactic	VMT	Trips	ROG	NOx	00	ROG	NOx	CO	Govt	Other	(\$/lb)
TDM Program - Non-Commute Travel*	-	•	-	-	•	-	-	-	-	-	-
TDM Program - Goods Movement (Level 3) (Contingency Measure)	-	-	1.26	-0.02	15.84	0.45	0.00	1.10	0.6	-	0.65
Traffic Flow Improvements (Level 2)	-		0.58	0.58	12.80	0.22	0.22	0.45	3.28	-	3.90

(Conungency measure)											
Traffic Flow Improvements (Level 2)	-	-	0.58	0.58	12.80	0.22	0.22	0.45	3.28	-	3.90
TDM Program - Commute Travel (Level 1) (Level 2 is a Contingency Measure)	3.93	3.28	2.60	2.83	33.62	0.93	0.98	2.36	1.5	73.8	27.20
Bicycle Facilities (Level 2)	0.05	0.17	0.07	0.07	0.71	0.02	0.05	0.06	-	-	-
TDM Program - High School/College Travel (Level 1)	0.65	0.55	0.38	0.71	4.72	0.14	0.25	0.33	0.6	12.3	16.21
Transit Improvements (Level 3)	1.90	2.05	0.51	-0.89	10.65	0.18	-0.30	0.75	-	-	-
Vanpool Program (Level 3)	0.02	0.01	0.01	0.02	0.12	0.00	0.01	0.01	-	-	-
Park and Ride Facilities (Level 3)	0.02	-	0.01	0.02	0.14	0.00	0.01	0.01	-	-	-
High Occupancy Vehicle Lanes (Level 3)	0.05	0.26	0.03	0.05	0.42	0.01	0.02	0.03	-	-	-

^{*} Costs, emissions, and emission reductions for Airport, Special Event, and Shopping trips to be determined later, pursuant to work program.

Plan Results

The plan meets the requirements of the California Clean Air Act and the criteria of the Air Pollution Control District. When fully implemented in the year 2000, the TCM plan is expected to reduce peak period congestion by 30%, automobile fuel consumption by 8% and photochemical air emissions by over 2%.

The emissions reductions resulting from the TCM plan, when combined with planned actions by the Air Resources Board to improve vehicle emissions and fuel technology, will result in a 35% reduction in photochemical smog emissions in the year 2000. This is more than one-half of the emissions reductions required by the California Clean Air Act by the year 2000 and represents transportation's share toward achieving state air quality standards.

FINANCIAL PLAN

The total government cost of the recommended transportation control measure plan is \$80.6 million annually in the year 2000. The cost of operating the commute and college travel reduction programs will be \$5.8 million per year.

YEAR 2000				- · · · · · · · · · · · · · · · · · · ·
TRANSPORTATION CONTROL MEASURES COSTS BY	REVENUE	CATEG	ORY	
·	ANNUALI	ZED GOV	ernment	COSTS
MEASURE		(\$ mil.	lions)	
	PROGRAM	OPS	CAPITAL	TOTAL
1. PERSONAL TRIP REDUCTION PROGRAM (LEVEL 1)	-	-	-	1
2. GOODS MOVEMENT/TRUCKING PROGRAM (LEVEL 3)	-	-	-	-
(CONTINGENCY MEASURE)				
3. TRAFFIC FLOW IMPROVEMENT (LEVEL 2)	-	-	3.3	3.3
4. TDM PROGRAM - EMPLOYMENT (LEVEL 1)	1.5	-	-	1.5
(LEVEL 2 IS A CONTINGENCY MEASURE)				
5. BICYCLE FACILITIES (LEVEL 2)	-	-	3.9	3.9
6. HIGH SCHOOL/COLLEGE TDM/TRANSIT PROGRAM	4.3	3.7	-	8.0
(LEVEL 2)				
7. TRANSIT IMPROVEMENT PROGRAM (LEVEL 3)	-	12.8	11.1	23.9
8. VANPOOL PROGRAM (LEVEL 3)	-	6.5	10.0	16.5
9. PARK AND RIDE (LEVEL 3)	-	-	2.4	2.4
10. HOV LANES (LEVEL 3)	-	-	21.1	21.1
TOTAL ANNUALIZED COST BY REVENUE CATEGORY	\$5.8	\$23.0	\$51.8	\$80.6

Operating subsidies for the transit and vanpool program and the college pass subsidy total \$23 million annually. Capital improvements for traffic signals, bicycle facilities, transit vehicles and facilities, park-and ride lots and high occupancy vehicle lanes total \$51.8 million per year.

Potential funding sources for the program, operations and capital facilities portions of the plan include: existing motor vehicle registration fees (AB 2766), increased motor vehicle registration fees, vehicle emissions fees, "polluting" fuels fees, multiple vehicle registration surcharges, singleoccupant fees for use of HOV facilities, state and federal funds and, in the case of the traffic signal measure, TransNet revenues.

Because virtually all existing revenue sources are currently programmed and a development fee is under active consideration, the motor vehicle registration fees authorized by AB 2766, and the present financial support for Commuter Computer, and employer filing fees (to cover administrative costs) at the discretion of the implementing agencies, are the only existing revenues sources available to pay for the implementation of the TCM Plan at this time.

In response to the shortfall of existing funding to support the overall Plan, two implementation levels have been recommended. The initial implementation is based on the use of existing available revenues sources. The overall implementation of the TCM Plan is contingent upon additional state and/or federal funding being made available for this purpose.

INITIAL IMPLEMENTATION TRANSPORTATION CONTROL MEASURES COSTS BY	REVENUE	CATE	GORY					
MEASURE	ANNUALIZED Government costs (\$ millions in 2000 \$s)							
	PROGRAM	OPS	CAPITAL	TOTAL				
1. PERSONAL TRIP REDUCTION PROGRAM (LEVEL 1)	-		-	-				
2. GOODS MOVEMENT/TRUCKING PROGRAM (LEVEL 3) (CONTINGENCY MEASURE)	-	-	-	-				
3. TRAFFIC FLOW IMPROVEMENT (LEVEL 2)	-	-	3.3	3.3				
4. TDM PROGRAM - EMPLOYMENT (LEVEL 1) (LEVEL 2 IS A CONTINGENCY MEASURE)	1.5	-	-	1.5				
5. BICYCLE FACILITIES (LEVEL 1)	-	-	0.0	0.0				
6. HIGH SCHOOL/COLLEGE TDM/TRANSIT PROGRAM (LEVEL 1)	0.6	0.0	-	0.6				
7. TRANSIT IMPROVEMENT PROGRAM (LEVEL 1)	-	0.0	0.0	0.0				
8. VANPOOL PROGRAM (LEVEL 1)	-	0.0	0.0	0.0				
9. PARK AND RIDE (LEVEL 1)	-	-	0.0	0.0				
10. HOV LANES (LEVEL 1)	-	-	0.0	0.0				
TOTAL ANNUALIZED COST BY REVENUE CATEGORY	\$2.1	\$0.0	\$3.3	\$5.4				

The recently enacted Federal Surface Transportation Act (ISTEA) has provided an increase in funding to California and, importantly, has provided increased flexibility in the use of federal transportation monies. The most significant new category of federal revenues made available by the ISTEA is the Surface Transportation Program (STP). The STP is available for virtually all transportation projects including transportation control measures (TCMs). STP monies are allocated by formula to the state and regions and either fund may be used to support transportation control measures.

A second category of new discretionary funding which may be used for TCMs is the Congestion Management and Air Quality Program (CMAQ). According to the federal statutes, CMAQ monies are intended for transportation control measures and other transportation programs or projects that contribute to the attainment of air quality standards. The level of funding for these two programs is not yet known; however, it is expected that the allocation procedures and funding level will be determined by the State over the next year.

The motor vehicle registration, or registration combined with an emissions fee appears to be the most feasible funding alternative along with other market-based measures and, therefore, is recommended as the preferred funding source to pay for the TCM Plan. SANDAG and the APCB

have agreed to pursue the adoption of market-based legislation to enable the region to increase reliance to market-based strategies to fulfill the law. Funding from the market-based measures would be used to pay for those portions of the overall Plan not included in the initial implementation and for which existing revenue sources were not available or sufficient ISTEA funding may not be available.

The vehicle registration + emissions fee can be used to provide a secure and reliable funding source for the entire TCM Plan and it can be phased in over time to meet the funding needs of the program. Assembly Bill 2766 currently authorizes up to a \$4 increase in the vehicle registration fee to be used for the reduction of air pollution from motor vehicles. This alternative can be used to cover the total cost of the TCM Plan through a gradual increase in the motor vehicle registration fee. It would require an average fee increase of \$43 per vehicle by the year 2000 to cover the \$79 million annualized capital and program costs.

The vehicle registration + emissions fee can also be designed with the flexibility to allow for a reduction in the fee level if, in the future, certain components of the TCM Plan were to be funded with new state and federal revenues, or other revenue sources.

Equity considerations can be resolved through the provision of State income tax rebates or transportation credits and use of revenues from the registration + emissions fee to tune vehicles which fail the smog test which are owned by low income persons.

The TCM Plan assumes some level of incentive is needed to encourage individuals to alter their travel behavior away from predominantly single-occupant vehicle travel to ridesharing and trip reduction alternatives. These incentives, whether as simple as distributing a pamphlet or an employer providing a transportation allowance for desired travel behavior, represent a private sector cost.

It is estimated that the private sector cost of implementing the TCM Plan will be about \$1 per trip reduced. Based on this, the total annualized private sector cost is estimated to total \$86 million by the year 2000.

While the private sector cost may appear high, these programs would most likely be supported through the reallocation of existing and future resources, rather than with new resources. In fact, the role of the private sector in the TCM Plan has been carefully crafted to provide the private sector with the flexibility to reallocate its resources over time and to encourage new travel behavior at the lowest possible cost.

The private sector cost estimates contained in the TCM Plan do not take into account any potential net savings which may be realized by the private sector (i.e., vehicle, operating, parking, infrastructure and insurance costs). Some estimates suggest the net savings may be far greater than the estimated private sector cost of the TCM Plan.

Overall, including government and private sector costs, the recommended program is expected to cost \$1.57 per vehicle trip reduced.

In conclusion, the Transportation Control Measures Plan meets the requirements of the California Plan Air Act and the criteria for development of the Plan adopted by the Air Pollution Control District. The transportation control measures will, when implemented, achieve transportation's share of the 5% per year regionwide emissions reduction requirement until the San Diego air basin reaches attainment of the state's air quality standards.

TRANSPORTATION CONTROL MEASURES

INTRODUCTION

The population of the San Diego air basin has grown from 1.9 million in 1982, when the region's last Air Quality Plan was prepared, to over 2.5 million in 1991, an increase of nearly 30%. In this same time period, the number of licensed drivers has increased 31%, from 1.3 million to 1.7 million. The number of registered motor vehicles in the region (78% of which are autos) has increased 46%, from 1.194 million to 1.749 million (1990) and the number of miles driven in the region has increased 66%.

San Diego is not alone experiencing this phenomenon. Other cities in the State, the country, and in the industrialized and developing countries throughout the world are having rapid increases in population, vehicles, and vehicular traffic, too. And nearly every one of these areas is facing increasing congestion and increasing environmental damage, including air pollution.

Effects of Air Pollution

Air pollution has long been identified as adversely affecting health, especially that of children and the elderly. It has been shown to contribute to the decline in lung function and add stress to the cardiovascular system; and thus is believed to contribute to deaths from cancer, lung failure, asthma, and heart disease.

Pollutants in the air have been shown to seriously damage food crops and other plants, including the Sequoia of the Sierras. It is responsible for the damage of marble of buildings and art works in major urban areas. It is responsible for "haze" at the Grand Canyon.

Air Pollution in California

The Environmental Protection Agency has determined that California has the worse air pollution problem in the United States. Yet, the State also has the country's most aggressive air pollution control program. Over the past three decades, all major and many minor sources of air pollution have been regulated. This has resulted in significant reductions in pollution from industry, and from motor vehicles which are sold in the state and which are dramatically cleaner than those of two decades ago. Even so, air pollution is a major concern of Californians.

Sources of Air Pollution

There are many sources of air pollution. One major source in California, as in many regions of the world, is motor vehicles. In California, in 1987, automobiles and trucks were responsible for 43% of the hydrocarbon emissions, 57% of the nitrogen oxides emissions, and 83% of the carbon monoxide emissions in the major urban areas. These motor vehicles were responsible, also, for the majority of airborne particulate matter emitted. It is the reaction of these emitted hydrocarbons and nitrogen oxides in the presence of sunlight that forms ozone, a major component of smog.

There are three phases of vehicle operation that result in different levels of air pollution: the cold start mode, the hot stabilized mode, and the hot soak evaporative mode. Cold start emissions occur at the start and for the first few minutes of the operation of the vehicle, when the engine and catalytic converter are cold. After the engine is warmed up, during the hot stabilized mode, relatively low levels of emissions are emitted for each mile driven. However, it is these emissions which are increased when vehicles are delayed by congestion. The hot soak evaporative emissions occur when the vehicle engine is turned off after a trip and the heat in the engine causes the gasoline remaining in the carburetor or fuel system to "boil off." Therefore, in order to reduce emissions from vehicles, it is necessary to reduce the number of individual trips and the length of trips, and increase the speed of vehicles by reducing congestion.

CALIFORNIA CLEAN AIR ACT OF 1988

In recognition that the State of California must undertake a more vigorous program to reduce pollution, the legislature enacted the California Clean Air Act of 1988. This Act requires additional controls on industrial sources of pollution, more strict vehicle emission standards, improved motor vehicle maintenance and inspection, control of indirect and area-wide sources of emissions, the use of cleaner burning fuels, vehicle fleet management and several other measures, the design and implementation of transportation control measures, and the incorporation of air quality considerations into local land use planning decisions. To demonstrate how the law is to be implemented locally, every air district must prepare and submit a plan of its program to clean the air in its air basin.

Act Requirements

The Act requires Plans from those air districts which were not in attainment of the State's air quality standards in 1987. The air districts are required to develop measures to achieve an average of 5% per year reduction in pollutants averaged over every 3 years, until attainment is achieved and maintained. The Act designates three levels for attainment: those air basins which will be in attainment by 1994 are designated "moderate;" those which will be in attainment by 1997 are "serious;" and those areas which will not be in attainment until after 1997 are designated "severe." The San Diego Air Pollution Control District, in its plan will determine whether the San Diego air district will be in attainment of the standards by 1997 or if it is an area of "severe" pollution.

State standards for air quality are based on parts per million of the various pollutants which cannot be expressed in tons per day easily because of the impact of climate, geography, and other conditions on them. Photochemical models are under development to help determine the amount of maximum tons per day of the various pollutants that can be emitted in the region and yet attain the state standards. Therefore, the goal of the plan is to reduce the pollutants by an average of 5% per year until such time as the measurements show that attainment has been reached.

For areas of serious pollution (attainment by 1997), the plan requirements are:

o Reasonably available transportation control measures which will substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip;

- o Provisions to develop area source and indirect source control programs;
- o Schedule for implementing transportation control measures;
- o Identification and agreements from implementing agencies;
- o Other measures relating to controls on stationary sources;
- o Provisions for public education programs to promote actions to reduce emissions from transportation and area-wide sources.

For areas of severe pollution (attainment after 1997), the plan requirements in addition to those listed above, are:

- o Transportation control measures to achieve an average of 1.5 or more persons per passenger vehicle, during weekday commute hours by 1999 and no net increase in vehicle emissions after 1997;
- o Measures to achieve the use of a significant number of low-emission motor vehicles by operators of motor vehicle fleets;
- o Measures sufficient to reduce overall population exposure to ambient pollutant levels in excess of the standard by at least 25% by 1994, 40% by 1997, and 50% by 2000.

The Act requires the plan to include an assessment of the cost effectiveness of available and proposed control measures for all emission sources, and a list ranking the control measures from the least cost-effective to the most cost-effective. The measures must be evaluated as to technological feasibility, total emission reduction potential, the rate of reduction, public acceptability, and enforceability.

Definition of Transportation Control Measures

The California Clean Air Act defines transportation control measures as "... any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions." The Act, furthermore, requires "reasonably available" transportation control measures but does not specifically define what particular measures are reasonably available. The Act does state that air districts may adopt and implement regulations to ..."Encourage or require the use of ridesharing, vanpooling, flexible work hours, or other measures which reduce the number or length of work trips."

The California Air Resources Board (ARB), the agency responsible for the implementation of the Act, has issued several guidance documents to assist the planning agencies in their development of the transportation control measures. Among the transportation control measures listed in the documents are employer based trip reduction rules, parking management ordinances, restrictions on vehicle operation, HOV lanes, improved transit service, and bridge tolls. The guidance documents suggests the list is not inclusive.

The ARB will determine, in its review of a plan, whether all reasonably available transportation control measures have been included if it meets the following requirements.

- o The plan contains all measures determined to be reasonable in the plans of other areas with similar air problems and comparable transportation situations.
- o The process used by the district to determine the measures to be included has made sound and defensible decisions.
- o The transportation measures in the plan, when combined with other controls, are sufficient to achieve the required triennial emission reduction and attain standards by the earliest practicable date.
- The transportation measures in the plan are sufficient to meet other requirements of the Act, including:
 - o substantially reduce the rate of increase in passenger vehicle trips and trip length,

- o achieve an average vehicle occupancy of 1.5 during weekday commute hours by 1999,
- o achieve, when combined with other measures to reduce vehicle emissions, no net increase in vehicle emissions after 1997, and
- o include all feasible measures.

The transportation control measures presented in this plan will meet the ARB requirements as follows.

- o The transportation control measures contained in the plan are reasonably available to the residents, employers, and governmental agencies of the region. All feasible and reasonably available measures are included in the plan.
- o The Transportation Demand Management Program adopted March 27, 1992 by SANDAG and revised by the Air Pollution Control Board June 30, 1992 will meet the criterion of an average vehicle occupancy of 1.5 or more persons per vehicle during weekday commute hours by 1999.
- o The emissions inventory as shown in Figure 1, below, shows that the existing mobile source controls established by ARB will meet the criterion of no net increase in vehicle emissions after 1997.
- o A reduction in trips of 6% by the year 2000 is necessary to meet the requirement that vehicle trips shall increase no faster than the rate of population growth. The transportation control measures presented in this plan will reduce year 2000 trips by about 3%.
- o The Act requires an average of 5% reductions in emissions per year until the state standards are met. The ARB mobile source controls will achieve this criterion for all on-road vehicles for ROG. However, for NOx, this criterion can be met only by additional controls on heavy trucks. The requirement is met for NOx emissions from passenger vehicles and light and medium duty trucks.

Responsible Agencies

The State, through the Air Resources Board (ARB) and the California Energy Commission (CEC), retain responsibility for certain activities to reduce pollution. For example, the ARB is responsible for requiring vehicles and programs to promote the use of alternative fuels, such as liquified natural gas and methanol. The CEC is responsible for assuring that gas and the alternative fuels are available in the State for these programs. Other air pollution control activities are delegated to the local jurisdictions and air pollution control district.

SAN DIEGO AIR QUALITY PLAN

In the San Diego air basin, the San Diego Air Pollution Control District (APCD) is responsible for the development of the 1991 Air Quality Plan to be adopted and submitted to the State Air Resources Board by the Air Pollution Control Board (APCB). The San Diego Association of Governments (SANDAG) is responsible for the development and approval of the transportation control measures, based on criteria adopted by the APCB. This plan contains these transportation control measures and is a component of the regional Air Quality Plan.

Emissions Inventory Summary

The Air Resources Board has calculated the emissions inventory for the San Diego Air Basin. A summary of this inventory in presented in Figure 1. It shows the emissions for the plan's baseline year of 1987, and the projected inventory for the years 2000 and 2010. These data show a

decrease in emissions from the baseline year to the year 2010 for motor vehicles, as a result of the ARB's requirements for cleaner vehicles and the use of alternative fuels. It does not include any emissions reductions as the result of the implementation of this transportation control measures element.

Transport of Pollution

Under the law, each air basin is responsible for reducing the pollutants from its own air basin only and for those transported to other air basins from its own. An area is not responsible for reducing the pollutants which it receives from another air basin. In 1990 in the San Diego air basin, approximately one-third of the days on which the region exceeded the state ozone standards were the result of transport of pollutants from the Los Angeles/South Coast air basin.

Existing Programs

The 1982 Regional Air Quality Strategy Update, the transportation control measure element of the 1982 San Diego Air Quality Plan, analyzed a number of transportation tactics to reduce pollution and bring the region into the attainment of the air quality standards by 1987. Four tactics were selected and adopted. These were: ridesharing, bicycle improvements, transit services, and traffic flow improvements. The funding levels for the tactics, however, were below expectations and the goals were not achieved for any of the four tactics. For example, the voluntary rideshare program achieved only about 30% of its target. Bicycle trips did not increase as projected, although a number of miles of new bikeways were added. The transit targets did not take effect until 1986; the one-half cent sales tax increase was not approved until November, 1987.

The TransNet half-cent sales tax program will provide funding to improve transportation in the region which will also improve air quality. These include transit expansion to provide an alternative to motor vehicle use and highway expansion to reduce congestion. Other funds will build park-and-ride facilities to promote ridesharing and the use of commuter rail.

Two cities in the region, San Diego and San Marcos, have adopted trip reduction ordinances to promote ridesharing, transit use, and other transportation measures to provide alternatives to single-occupant motor vehicle use.

There were ten Transportation Management Associations in the region in the spring of 1991. Known as TMAs, these voluntary organizations assist employers in providing transportation programs for employees and in helping them comply with city trip reduction ordinances.

Other Regional Plans

There are several regional plans and programs which are related to the Air Quality Plan. These are the Regional Transportation Plan, the Regional Transportation Improvement Program, and the Congestion Management Program.

The Regional Transportation Plan (RTP) is adopted biannually by SANDAG. It is a 20-year longrange plan for the development of the region's transit, highways, bicycle program, and commuter and intercity rail. It also contains aviation, transportation systems management, congestion, energy and air quality, and financial elements.

The Regional Transportation Improvement Program (RTIP) is a listing of transportation projects, including freeways, expressways, arterials, and other roads; transit, bikeways, and aviation projects, It lists the costs and projected funding sources and date of project completion over the next seven years. The RTIP is adopted by SANDAG biennially, also.

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The Congestion Management Program (CMP) is a seven-year program, too, but it details traffic levels of service, transit services, trip reduction and travel demand management, land use impact analysis, and a capital improvement program to maintain or improve traffic standards. Cities and the County are required to conform to the CMP or lose a portion of revenues from the gas tax. SANDAG is the Congestion Management Agency for the San Diego county region.

Simultaneous with the development of the region's Air Quality Plan, the Regional Planning and Growth Management Review Board is preparing a regional strategy for such issues as quality of life objectives, growth rate policies, phasing and distribution of growth, among others. Implementation of the strategy is planned to complement the Air Quality Plan. SANDAG is designated as this Board.

APCD Criteria for Transportation Control Measures

The Air Pollution Control Board, in March 1991, adopted the Transportation Control Measure Criteria to guide development of this Element. The general criteria are listed in the Appendix, and the criteria specific to a measure are discussed in the appropriate section.

Transportation Control Measures

Following is a summary of the transportation control measures to be implemented in the San Diego region. Implementation of these measures is planned to achieve the following requirements of the California Clean Air Act: a 1.5 vehicle occupancy by 1999, no net increase in emissions after 1997, and contribute to the required reduction in district-wide emissions of 5% per year, averaged every consecutive three-year period.

Transportation Control Measures Plan

<u>Goal</u>

The goal of the Transportation Control Measures Plan of the San Diego Air Quality Plan is to reduce motor vehicle emissions in the San Diego air basin in order to meet the requirements of the California Clean Air Act of 1988.

Objectives

The objectives of the Transportation Control Measures Plan are to achieve the following:

- o Reasonably available transportation control measures which will substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip;
- o An average during weekday commute hours of 1.5 or more persons per passenger vehicle by 1999;
- o To achieve no net increase in vehicle emissions after 1997; and
- o To achieve transportation's fair share of the 5% per year overall reductions in emissions.

Actions

Following are the reasonably available transportation control measures proposed for the Plan.

A. Transportation Demand Management Program

This measure has four principal components to achieve the objectives of the Plan. These are:

- Commute Travel Reduction Program, comprised of (a) employment trip reduction program and ordinance, (b) employment rideshare program, (c) parking management, (d) telecommuting program, (e) compressed work week, (f) employer transit subsidy, (g) flexible work hours, and (h) staggered work hours. The Commute Program will apply to employers with 60 or more employees. Inclusion of employers with less than 60 employees will be reserved as a contingency measure.
- 2. College Travel Reduction Program, comprised of (a) college trip reduction program and ordinance, similar to the employment trip reduction program, and (b) transit pass subsidy to students at the region's colleges and universities.
- 3. Goods Movement Program, comprised of: (a) goods movement/truck travel reduction ordinance, (b) incident management and prevention program, and (c) motorist information system. The Goods Movement Program will be reserved as a contingency measure.
- 4. Non-Commute Travel Reduction Program which proposes an education program to encourage drivers to change the way they use their automobiles to help reduce emissions.
- B. Transportation Capacity Expansion Program

This measure has five principal components which support and enhance the transportation demand management program. These are:

- Transit Improvements and Expansion Program, consisting of two major components:

 (a) conversion of the existing bus fleet to vehicles using alternative "clean" fuels, and
 (b) expansion of the trolley and bus services.
- 2. Vanpool Program which consists of the provision, by the transit districts, of vans to employers for use by employees in vanpooling programs.
- 3. High Occupancy Vehicle Lanes, consisting of a program to increase to 67.4 miles the region's HOV lanes on highways and arterial roads.
- 4. Park-and-Ride Facilities, consisting of an expansion of the region's park-and-ride facilities adjacent to highways and at transit centers.
- 5. Bicycles Facilities Program, consisting of a four-fold increase in funding for bikeways and related facilities.

C. Transportation System Management

This measure consists of activities to computerize and interconnect the region's traffic signals.

D. Indirect Source Control Program

This measure will reduce emissions from motor vehicles associated with land uses identified as indirect sources, such as employment sites and shopping centers.

E. Contingency Measures

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Contingency measures, in addition to the ones listed, will be developed and incorporated into the TCM Plan, to be implemented as necessary, to offset any emission reduction shortfall if other measures are not implemented or are not as effective as anticipated. The work program for developing the contingency measures will be developed in FY-93.

FUNDING PLAN

The total government cost of the recommended transportation control measure plan is \$80.6 million annually in the year 2000. TDM program costs for the commute and college travel reduction programs total \$5.8 million per year. Operating costs for the transit and vanpool program and the college pass subsidy total \$23 million annually. Capital improvements for traffic signals, bicycle facilities, transit vehicles and facilities, park-and ride lots and high occupancy vehicle lanes total \$51.8 million per year.

YEAR 2000 TRANSPORTATION CONTROL MEASURES COSTS BY	REVENUE	CATEG	ORY	
MEASURE	ANNUALI	ZED GOV	ERNMENT Lions)	COSTS
	PROGRAM	OPS	CAPITAL	TOTAL
1. PERSONAL TRIP REDUCTION PROGRAM (LEVEL 1)	-	-	-	-
2. GOODS MOVEMENT/TRUCKING PROGRAM (LEVEL 3) (CONTINGENCY MEASURE)	-	-	-	-
3. TRAFFIC FLOW IMPROVEMENT (LEVEL 2)	-	-	3.3	3.3
4. TDM PROGRAM - EMPLOYMENT (LEVEL 1) (LEVEL 2 IS & CONTINGENCY MEASURE)	1.5	-	-	1.5
5. BICYCLE FACILITIES (LEVEL 2)	-	-	3.9	3.9
6. HIGE SCHOOL/COLLEGE TDM/TRANSIT PROGRAM (LEVEL 2)	4.3	3.7	-	8.0
7. TRANSIT IMPROVEMENT PROGRAM (LEVEL 3)	-	12.8	11.1	23.9
8. VANPOOL PROGRAM (LEVEL 3)	-	6.5	10.0	16.5
9. PARK AND RIDE (LEVEL 3)	-	-	2.4	2.4
10. HOV LANES (LEVEL 3)	-	-	21.1	21.1
TOTAL ANNUALIZED COST BY REVENUE CATEGORY	\$5.8	\$23.0	\$51.8	\$80.6

Potential funding sources for the program, operations capital facilities portions of the plan include: existing motor vehicle registration fees (AB 2766), increased motor vehicle registration fees, vehicle emissions fees, fees on "polluting" fuels, multiple vehicle registration surcharges, singleoccupancy fees for use of HOV facilities, state and federal funds and, in the case of the traffic signal measure, TransNet revenues.

Because virtually all existing revenue sources are currently programmed and a development fee is under active consideration, the motor vehicle registration fees authorized by AB 2766 and the present financial support for Commuter Computer, and employer filing fees (to cover administrative costs) at the discretion of the implementing agencies, are the only existing revenues sources available to pay for the implementation of the TCM Plan at this time.

In response to the shortfall of existing funding to support the overall Plan, two implementation levels have been recommended. The initial implementation is based on the use of existing available revenues sources. The overall implementation of the TCM Plan is contingent upon additional state and/or federal funding being made available for this purpose.

INITIAL IMPLEMENTATION				
TRANSPORTATION CONTROL MEASURES COSTS BY	REVENUE	CATE	GORY	
	ANNUALIZE	D GOVES	NIMENT CO	STS
MEASURE	(\$ millio	ns in :	2000 \$=)	
	PROGRAM	OPS	CAPITAL	TOTAL
1. PERSONAL TRIP REDUCTION PROGRAM (LEVEL 1)	+	-	-	-
2. GOODS MOVEMENT/TRUCKING PROGRAM (LEVEL 3)	-	-	-	-
(CONTINGENCY MEASURE)				
3. TRAFFIC FLOW IMPROVEMENT (LEVEL 2)	-	-	3.3	3.3
4. TDM PROGRAM - EMPLOYMENT (LEVEL 1)	1.5	-	-	1.5
(LEVEL 2 IS A CONTINGENCY MEASURE)			_	
5. BICYCLE FACILITIES (LEVEL 1)	-	-	0.0	0.0
6. HIGH SCHOOL/COLLEGE TDM/TRANSIT PROGRAM	0.6	0.0	-	0.6
(LEVEL 1)				
7. TRANSIT IMPROVEMENT PROGRAM (LEVEL 1)	-	0.0	0.0	0.0
8. VANPOOL PROGRAM (LEVEL 1)	-	0.0	0.0	0.0
9. PARK AND RIDE (LEVEL 1)	-	-	0.0	0.0
10. HOV LANES (LEVEL 1)	-	-	0.0	0.0
TOTAL ANNUALIZED COST BY REVENUE CATEGORY	\$2.1	\$0.0	\$3.3	\$5.4

The recently enacted Federal Surface Transportation Act (ISTEA) has provided an increase in funding to California and, importantly, has provided increased flexibility in the use of federal transportation monies. The most significant new category of federal revenues made available by the ISTEA is the Surface Transportation Program (STP). The STP is available for virtually all transportation projects including transportation control measures (TCMs). STP monies are allocated by formula to the state and regions and either fund may be used to support transportation control measures.

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The motor vehicle registration, or registration combined with an emissions fee appears to be the most feasible funding alternative along with other market-based measures and, therefore, is recommended as the preferred funding source to pay for the TCM Plan. SANDAG and the APCB have agreed to pursue the adoption of market-based legislation to enable the region to increase reliance to market-based strategies to fulfill the law. Funding from the market-based measures would be used to pay for those portions of the overall Plan not included in the initial implementation and for which existing revenue sources were not available or sufficient ISTEA funding may not be available.

Assembly Bill 2766 currently authorizes up to a \$4 increase in the vehicle registration fee to be used for the reduction of air pollution for motor vehicles. Revenues from the AB 2766 vehicle registration fees will be allocated in accordance with the 1990 Memorandum of Understanding between the Air Pollution Control Board and SANDAG.

An increase of \$15 per year per vehicle would provide the necessary funding for the non-capital or program costs of the TCM Plan. This alternative can be used to cover the total cost of the TCM Plan through a gradual increase in the motor vehicle registration fee. It would require an average fee increase of \$43 per vehicle by the year 2000 to cover the \$79 million annualized capital and program costs.

By combining the vehicle registration with an emissions fee, a lower basic fee of \$15-20 per year could be charged for all vehicles, with supplemental charges based on excessive mileage driven during the year and/or excessive pollutants emitted. Such a fee would be coordinated with an annual vehicle inspection and maintenance program expected as a requirement of the Federal Clean Air Act.

The vehicle registration + emissions fee approach is directly related to the cause of our congestion and transportation-related air quality problem - the operation of the private automobile.

It has the advantage of being easily collected, enforced, and administered as an increment on top of the existing vehicle registration fee. While it does not require a vote of the people to be enacted, it would require state legislation to authorize the fee increase for the San Diego region.

The vehicle registration + emission fee can be used to provide a secure and reliable funding source for the entire TCM Plan and it can be phased in over time to meet the funding needs of the program. It can also be designed with the flexibility to allow for a reduction in the fee level if, in the future, certain components if the TCM Plan were to be funded with new state and federal revenues, or other revenue sources.

Equity considerations can be resolved though the provision of State income tax rebates or transportation credits and use of revenues from the registration + emissions fee to tune vehicles which fail the smog test which are owned by low income persons.

The funding of TDM programs and operations by increasing the motor vehicle registration fee with an emissions fee component has received strong and continued support by the member agencies, TDM committees and members of the community.

Early on, SANDAG agreed that the Regional TDM Program should be funded by vehicle use fees and programmed Commuter Computer funding rather than by employer filing fees or local city/County general fund revenues. The assignment of financial responsibility for these programs with the vehicle owner is generally preferred because it goes directly to the source of vehicle
emissions and underlines the contribution of each motorist to air pollution and congestion. More importantly, this method of funding does not place a disproportionate share of the costs of a program designed to serve all motorists in the region on one user group (employers) nor does it tax those who do not own a vehicle.

The TCM Plan assumes some level of incentive is needed to encourage individuals to alter their travel behavior away from predominantly single-occupant vehicle travel to ridesharing and trip reduction alternatives. These incentives, whether as simple as distributing a pamphlet by mail or an employer providing a transportation allowance for desired travel behavior, represent a private sector cost.

It is estimated that the private sector cost of implementing the TCM Plan will be about \$1 per trip reduced. Based on this, the total annualized private sector cost is estimated to total $\frac{161.686}{1000}$ million by the year 2000.

While the private sector cost may appear high, these programs would most likely be supported through the reallocation of existing and future resources, rather than with new resources. In fact, the role of the private sector in the TCM Plan has been carefully crafted to provide the private sector with the flexibility to reallocate its resources over time and to encourage new travel behavior at the lowest possible cost.

The private sector cost estimates contained in the TCM Plan do not take into account any potential net savings which may be realized by the private sector (i.e., vehicle, operating, parking, infrastructure and insurance costs). Some estimates suggest the net savings may be far greater than the estimated private sector costs of the TCM Plan.

MEASURE TRANSPORTATION DEMAND MANAGEMENT

TACTIC Commute Travel Reduction Program

DESCRIPTION

The Commute Travel Reduction Program will reduce transportation source emissions by decreasing the number of employment-related commute vehicle trips and by influencing a shift in commute travel to modes other than the single-occupant motor vehicle. The Commute Travel Reduction Program includes the following program elements and strategies: (a) Employment Trip Reduction Program and Ordinance, (b) Ridesharing Program, (c) Parking Management Program, (d) Telecommuting, (e) Compressed Work Week, (f) Employer Transit Subsidy, (g) Flexible Work Hours, and (h) Staggered Work Hours.

AIR QUALITY PURPOSE

The strategies which make up the Commute Travel Reduction Program are designed to help achieve through commute travel reductions, the requirements of the California Clean Air Act. For "severe" air basins these include: (a) 5% reduction in emissions per year, (b) no net gain in emissions relative to population growth by 1997, and (c) minimum average vehicle occupancy of 1.5 persons per vehicle during weekday commute hours by 1999.

RECOMMENDATION

Level 1 2: Implementation of the Employment Trip Reduction Ordinance to achieve an average vehicle occupancy between 6 a.m. and 10 a.m. of 1.5 persons per vehicle entering work sites with 60 or more employees, by the year 2000. Level 2, including employers with 11 or more employees, and covering 24 hours a day, would be a contingency measure to be implemented upon adoption of an implementing rule or regulation by the Air Pollution Control Board, if the Air Pollution Control Board determines or the State Air Resources Board finds that the District is failing to meet interim goals or not making adequate progress toward attainment of applicable state ambient air quality standards.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

YEAR 2000 MEASURE: TDM PROGRAM - EMPLOYMENT												
LEVEL	TRAVEL REDUCED (%)		EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (%'87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (\$4b)	
VMT TRIPS			ROG	NOX	СО	ROG	NOX	СО	GOVT	OTHER		
1.	3.93	3.28	2.60	2.83	33.62	0.93	0.98	2.36	1.5	73.8	27.20	
2.	7.96	6.64	5.26	5.72	68.05	1.88	1.98	4.77	7.0	149.3	19.50	
3.	9.00	7.51	5.95	6.47	76.93	2.13	2.24	5.39	7.0	168.9	19.42	

STATUS

A rideshare program to reduce single-occupant auto trips to employment sites was an adopted tactic of the 1982 Regional Air Quality Strategies. The program was operated by Commuter Computer, located at CALTRANS, District 11 headquarters in San Diego. This program is a voluntary one, receiving about \$1.2 million in funding annually. A number of employers have voluntarily adopted programs contained in this measure including compressed work weeks, staggered hours, transit pass subsidies, car or van pools, and preferential parking for carpoolers. Both San Diego and San Marcos have adopted trip reduction programs.

IMPLEMENTATION STRATEGIES

All Implementation Levels

- o The Regional Transportation Demand Management Program approved by SANDAG at its November 1990 meeting (amended 3/92) is appended to this Measure and is an integral part of it.
- o The Cities and the County will adopt the Regional Transportation Demand Management Program and Ordinance.
- o All employers subject to the Ordinance will prepare reports or plans as required.
- o Employers subject to the Ordinance will offer incentives to employees, including ridesharing, telecommuting, alternative work hours, and transit subsidies. Employers shall institute parking management programs where feasible and necessary to encourage ridesharing.
- o Employers with multiple worksites in different jurisdictions throughout the county may have all their sites subject to the District regulation rather than being subject to the differing ordinances of the various jurisdictions where the worksites are located.
- o All employers in the San Diego region, with 100 or more employees, will be subject to the regional Trip Reduction Program, beginning FY 93.
- o All employers with 60 to 99 employees will be subject to the regional Trip Reduction Program, beginning FY 94.
- o All employers with 25 to 59 employees will be subject to the regional Trip Reduction Program, beginning with the implementation of the contingency measure.
- o All employers with 11 to 24 employees will be subject to the regional Trip Reduction Program, beginning one year after the implementation of the contingency measure.
- o Study feasibility of including trips by real estate agents and business trip made from home to the field beginning FY 93.
- Study feasibility of employer credits for the reduction of vehicle miles traveled beginning FY 93.
- o The regional Trip Reduction Program will be examined in light of any new developments as part of the annual and triennial review of the Strategy as required by state law.

Level 1 Implementation

On average, all employers subject to the Employment Trip Reduction Ordinance will adopt programs to achieve a 1.5 average vehicle occupancy, during <u>peak commute hours</u> (6:00 a.m. - 10:00 a.m.) by the year 2000, for vehicles entering work sites with 60 or more employees.

Level 2 Implementation (Contingency Measure)

On average, all employers subject to the Employment Trip Reduction Ordinance will adopt programs to achieve a 1.5 average vehicle occupancy of vehicles entering work sites with 11 or more employees, during the <u>24-hour period</u> by the year 2000.

Level 3 Implementation

 On average, all employers subject to the Employment Trip reduction Ordinance will adopt programs to achieve an 1.6 average vehicle occupancy of vehicles entering work sites during the <u>24-hour period</u> by the year 2000.

TARGETS TO DEMONSTRATE PROGRESS

Targets to demonstrate progress are the following.

- o The Employment Trip Reduction Program and Ordinance is adopted in a timely manner by the Cities and the County.
- o The AVR targets will be achieved according to the schedule in the Employment Trip Reduction Program.
- o Employers will offer incentives to encourage employees to commute in modes other than driving alone and achieve their annual AVR targets.

IMPLEMENTATION TIMING

The measure will be implemented, upon adoption of the air quality plan and the Employment Trip Reduction Ordinance.

DETERRENTS TO IMPLEMENTATION

To achieve the State mandated 1.5 average vehicle ridership requirement will require, on the average, a 200% increase in ridesharing for affected employees. The average vehicle ridership for affected employers will need to be increased from a level of nearly 1.2 today to 1.7 by 1999. Experience has shown that aggressive voluntary programs can increase ridesharing by large employers by five to ten percent. To achieve the 200% increase required by the State Legislature will require significant employee incentives and disincentives. Travel allowances for employees who rideshare and/or pricing programs will be necessary to achieve these aggressive targets. Some employers and employees can be expected to respond negatively to these governmental requirements mandating a significant change in travel behavior. Additionally, some employers may be expected to resist the estimated \$400 per year per participating employee cost of ridesharing incentives and the need to introduce pricing programs.

PERFORMANCE CRITERIA

The performance criteria are the following.

- o Adoption of the Regional Transportation Demand Management Program and Ordinance by the Cities and the County beginning July 1992.
- o Notification of employers of more than 100 employees of their responsibilities under the ordinance beginning FY 93.
- o Notification of employers with 60 to 99 employees of their responsibilities under the ordinance beginning FY 94
- o Notification of employers with 25 to 59 employees of their responsibilities under the ordinance beginning with the implementation of the contingency measure.
- o Notification of employers with 11 to 24 employees of their responsibilities under the ordinance beginning one year after the implementation of the contingency measure.
- o Achievement of the average vehicle occupancy appropriate to the Implementation Level selected.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

If Level 1 implementation of the Employment Trip Reduction Program does not achieve its interim targets for the required average vehicle occupancy, Level 2 will be implemented as a contingency measure. If further reductions are still needed after implementation of Level 2, the program may be amended in order for the region to fulfill the mandate of law.

MONITORING & AUDIT PROCEDURES

Two types of monitoring procedures will be utilized, vehicle occupancy counts and employee surveys. SANDAG has been conducting vehicle occupancy counts according to FHWA guidelines since 1981. This is the same method suggested by the Air Resources Board. Vehicle occupancy counts are conducted in the Spring on weekdays between 6:30 a.m. and 8:30 a.m. Counts have been taken in 1981, 1985 and 1990. For air quality purposes, the next vehicle occupancy count will be undertaken in 1995. Thereafter, counts will be undertaken every three years. The cost of the vehicle occupancy count program is \$25,000 not including CALTRANS' cost for counts on freeways. The second method of monitoring is employee surveys. Affected employers will be required to annually report the work trip characteristics of their employees as required by the trip reduction ordinance.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

Employers

Reports and implement program at work sites.

Cities and the County

Adopt the Regional Transportation Demand Management Program and Ordinance and appoint a TDM program administration to implement TDM activities.

San Diego Association of Governments

Adopt the Transportation Control Measures Plan for submission to the APCB. Support role to the Cities and the County Assist with monitoring activities

Commuter Computer and Transportation Management Associations

Support responsibility as designated in the Regional Transportation Demand Management Program

Air Pollution Control Board (APCB)

Required to adopt the revised Air Quality Plan, including transportation control measures. The APCD may implement the TDM program when a local agency opts to decline the authority to implement the trip reduction program.

COSTS TO IMPLEMENTING AGENCY

Costs for the employer are estimated at \$1 per trip reduced and approximately \$7 1.5 million per year for the regional trip reduction program in the year 2000.

FUNDING

Existing:

State and Federal funds for Commuter Computer

Potential without Legislation:

AB 2766 funds from the increased vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax and filing fees to cover administrative costs.

Potential with Legislation:

Legislation could be introduced to provide funding from increased vehicle registration, emission fees or other sources.

Discretionary:

Discretionary highway funds are currently being used to support trip reduction efforts in this region.

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY

High. Trip Reduction Ordinances are in effect in two cities in the county and in other locales throughout the state and country.

RELIABILITY

The use of Trip Reduction Ordinances to improve air quality is new and their effectiveness in reducing emissions is not yet proven.

ENFORCEABILITY

High. Cities and the County currently have the authority to enforce ordinances. The California Clean Air Act also provides the authority for the local air district to enforce trip reduction ordinances.

OTHER IMPACTS

Other expected impacts of trip reduction programs are savings in motor vehicle fuel (8% for Level 2), and reduced traffic congestion (30% for Level 2).

PUBLIC ACCEPTABILITY

Moderate. Public support for voluntary programs is high. With a strong public education program, and the opportunity of employers to design a program suitable for their own businesses, acceptance for achievable program targets should improve.

RELATED MEASURES

Transportation Capacity Expansion Program Transit Improvements and Expansion Program High Occupancy Vehicle Lanes Park-and-Ride Facilities Bicycle Facilities Transportation System Management Traffic Flow Improvements Indirect Source Control Programs Land Use Measures Market Based Measures

APCD CRITERIA

Criteria: "Trip Reduction Program"

"Single Passenger Vehicle Trip Reduction Program"

"A single passenger trip reduction program will be implemented and enforced by the District, subject to delegation as authorized by the California Clean Air Act to Cities and the County and not to another regional agency. Delegation to Cities and the County shall be limited to ordinances certified by the District as being at least as stringent as the District regulation. The single Passenger Vehicle Trip Reduction Program shall include the following elements:"

- 1. <u>Criterion</u>: Trip reductions will be mandated and measured as average vehicle ridership for at least commute, educational, airport, special event and shopping trips, according to the size, type and location of facility. The mandated trip reduction levels shall represent the maximum achievable reductions as expeditiously as practicable. <u>Response</u>: Trip reductions are mandated for the commute and educational trips, according to the size, type, and location of facility and represent the maximum achievable reductions as expeditions are mandated for the commute and educational trips, according to the size, type, and location of facility and represent the maximum achievable reductions as expeditiously as practicable. Airport, special event, and shopping trips are included in the Indirect Source Control Measure.
- 2. <u>Criterion</u>: Minimum standards for facility rideshare/transit promotion efforts consistent with mandated trip reduction measures shall be specified and include financial incentives and contributions, information dissemination, and telecommuting programs.

<u>Response</u>: See the Employment Trip Reduction Program Technical Supplement, in the Appendix to this Measure.

3. <u>Criterion</u>: Average vehicle ridership shall be defined as the average daily number of employees/students/customers who would be normally expected to work/attend/shop at a facility divided by the average number who drive to the facility, to account for all alternative transportation modes, including telecommuting, teleshopping, part time ridesharing, and

compressed work weeks. Average Vehicle Ridership credits shall be provided employers who establish satellite work centers designed to significantly reduce the length of commuting by employees who would other wide report to the principal work site. Low emission vehicles, as defined in Health and Safety Code Section 39037.05 may be excluded.

<u>Response</u>: Average vehicle ridership is used in the calculations. Credits are allowed under the program.

4. <u>Criteria</u>: Facilities shall be required to submit an annual report to the District documenting the average vehicle ridership, any incentives provided to promote alternative transportation modes, and necessary supporting data.

<u>Response</u>: Reports are required documenting the average vehicle ridership, credits, and incentives. See the Technical Supplement to the Program, attached as the Appendix.

5. <u>Criterion</u>: Facilities shall be required to submit a deficiency correction plan to the District for review and approval when the average vehicle ridership fails to meet mandated requirements, The deficiency correction plan shall analyze why the required reductions were not achieve, and shall specify the design, funding requirements and sources, and expeditious implementation schedule for deficiency correction measures sufficient to achieve the required reductions, as approved by the District. Facilities will be required to fund and implement the District-approved deficiency correction plans.

<u>Response</u>: Plans to correct deficiencies are required. See the Trip Reduction Ordinance, the Employment Trip Reduction Program and Technical Supplement, attached as the Appendix to this Measure.

6. <u>Criterion</u>: Multifacility averaging and combined reports and deficiency correction plans within appropriately defined subregional areas will be provided for, as approved by the District.

<u>Response</u>: Multifacility averaging and combined reports and deficiency plans are provided for in this Measure.

Criteria: "Parking Management"

"A parking management program implemented and enforced by the District shall be designed to reduce the number of drive alone trips by making parking more expensive and less convenient. The program shall, at a minimum, be optimized to support the Single Passenger Vehicle Trip Reduction Program and include the following elements:"

1. <u>Criterion</u>: Charges for commuter parking where that parking is now free and increased longterm rates for existing fee-based parking . . .

<u>Response</u>: The Trip Reduction Program permits individual employers to determine if charging for parking at employment sites is an effective method for achieving the goal of 1.5 vehicle occupancy.

<u>Criterion</u>: ...One consideration in setting or increasing parking charges may be health related costs associated with motor vehicle trips ...

<u>Response</u>: Unless the employer or shopping center directly invests fees collected into healthrelated programs, to show a direct benefit, the fee could be construed as a tax, in violation of Proposition 13. <u>Criterion</u>: ... The parking charges shall be structured to create disincentives for the solo driver, and the program shall be structures so parking charges are paid by drivers and not subsidized by employers. Revenues from parking management fees are to be deposited with the District for allocation by the District to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost effective measures, and measures with high emission reduction potential. The parking fee program may be structured to allow facilities to retain the parking charges from their employees to help defray the cost of required incentive programs and transportation control measures, provided sufficient funding, as determined by the District, is provided for transportation related District programs including transit expansion and other similar programs.

<u>Response</u>: Parking management may be implemented by the employer if determined to be an effective means to achieve its AVR target.

2. <u>Criterion</u>: Free or reduced-cost carpool and vanpool parking.

Response: This criterion is an option in the Trip reduction Program.

3. <u>Criterion</u>: Preferential parking spaces for carpools and vanpools in the most convenient locations at the parking facility.

Response: This criterion is an option in the Trip reduction Program.

4. <u>Criterion</u>: Limits on the supply for drive-alone commuters.

<u>Response</u>: Priority parking recommended for rideshares and optional limits on supply.

5. <u>Criterion</u>: Require Cities and County control on-street parking where necessary to support the purpose and goals of the parking management program.

Response: This can be considered under the Indirect Source Control Program.

6. <u>Criterion</u>: Review of City and County land use and zoning policies regarding parking and recommend changes to those policies and ordinances consistent with the purpose and goals of the parking management program.

<u>Response</u>: This can be considered under the Indirect Source Control/Land Use Measure.

REFERENCES

o <u>1982 Regional Air Quality Strategy Update</u>, San Diego Association of Governments, San Diego 1982.

APPENDIX

- o <u>Regional Transportation Demand Management Program and Technical Supplement</u>, San Diego Association of Governments, San Diego 1991.
- o "Transportation Demand Management Ordinance," San Diego Association of Governments, San Diego 1991.

MEASURE TRANSPORTATION DEMAND MANAGEMENT

TACTIC High School, College, and University Student Travel Reduction Program and Ordinance

DESCRIPTION

The purpose of the High School, College, and University Trip Reduction Program and Ordinance is to apply a travel reduction program to the students at the region's high schools, colleges and universities to help achieve air quality goals. This measure has two components: a travel reduction program and a student transit pass subsidy.

AIR QUALITY PURPOSE

The air quality purpose of this measure is similar to that for the commute travel reduction program. The program is designed to achieve a 1.5 average vehicle occupancy by 1999 and encourage the use of alternative modes of transportation to help reduce emissions from commute trips by an average of 5% per year.

RECOMMENDATION

Level 1: Implementation of the travel reduction program. If additional state and/or federal funding is available for this purpose, Level 2 implementation is recommended. Level 2 combines the travel reduction program and the transit pass subsidy.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

YEAR 20 MEASUR	00 E: <u>COL</u>	LEGE TD	M AND	TRANS	IT PROC	RAM					
LEVEL	TRAVEL REDUCED (%)		EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (%'87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (S(b)
VMT TH		TRIPS	ROG	NOX	CO	ROG	NOX	СО	GOVT	OTHER	
1.	0.65 0.55		0.38	0.71	4.72	0.14	0.25	0.33	0.6	12.3	16.21
2.	0.65	0.55	0.38	0.71	4.72	0.14	0.25	0.33	8.0	12.3	25.51
3.	0.81	0.69	0.48	0.89	5.90	0.17	0.31	0.41	14.2	15.4	29.60

STATUS

Most of the region's colleges and universities have parking management programs, including parking fees for faculty, staff, students, and visitors. Several institutions have transit centers adjoining the campuses; the University of California at San Diego runs a campus shuttle service; San Diego State University sells transit passes on campus.

School Districts have indicated that student travel to high schools should also be covered by an education trip reduction regulation. SANDAG has established the Local Schools Travel Advisory Committee to investigate the feasibility of addressing high school student travel. A work program will be developed during FY 93 to complete the feasibility study.

IMPLEMENTATION STRATEGIES

The following activities will implement this measure.

Level 1 Implementation College TDM Program

The High School, College, and University TDM Program requires high schools, colleges and universities to encourage students to shift to alternative commute modes in order to achieve annual average vehicle ridership (AVR) Targets. It is the goal of the High School, College, and University Trip Reduction Program and Ordinance to achieve a 1.5 High School, College, and University student AVR by 2000. The High School, College, and University Travel Reduction Program and Ordinance is included in the Regional Transportation Demand Management Program and Technical Supplement, which is appended to this plan.

Level 2 Implementation High School, College, and University TDM and Transit Pass Subsidy Program

Level 2 combines the High School, College, and University TDM Program (Level 1) with the High School, College, and University Transit Subsidy Program which would offer a 50% discount to students who purchase monthly transit passes. The program would also provide funding to assist campuses in establishing local campus transit service. It is the goal of the program to achieve a 1% increase in student transit ridership each year, achieving a 12% student ridership rate by 2000, and 22% by 2010.

Level 3 Implementation High School, College, and University TDM and Transit Pass Subsidy Programs

This measure combines the High School, College, and University TDM Program goal of 1.6 High School, College, and University AVR with the High School, College, and University Transit Subsidy Program goal of 22% by 2000.

TARGETS TO DEMONSTRATE PROGRESS

Level 1 Implementation

- o Adoption of the High School, College, and University TDM Program by the cities and the County.
- o Participation in the program by institutions with 100 or more students beginning in fall of 1993.
- o Participation in the program by institutions with 60 to 99 students beginning in fall of 1994.
- o Achievement of annual AVR targets.
- o Achievement of an average vehicle ridership of 1.5 persons by 1999.

Level 2 Implementation

o Same as Level 1-plus the addition of the High School, College, and University Transit Pass Subsidy Program.

Level 3 Implementation

- o Adoption of the High School, College, and University TDM and Transit Program by the cities and County.
- o Participation in the program by institutions with 100 or more students beginning in fall of 1993.
- o Participation in the program by institutions with 60 to 99 students beginning in fall of 1994.
- o Achievement of an average vehicle ridership of 1.6 by 1999.
- o Achievement of 2% increase in student transit ridership per year beginning FY 94.

IMPLEMENTATION TIMING

Level 1 will be implemented beginning fall of 1993 for institutions with 100 or more students, and fall of 1994 for institutions with 60 to 99 students.

DETERRENTS TO IMPLEMENTATION

Community Colleges have questioned the feasibility of the College/University program. During meetings between District and SANDAG staffs, it was agreed to address the feasibility issue with the Community Colleges. During FY 93, the College and University TDM Policy Advisory Committee will consult with the community colleges, review the issue, and consider and address any concerns regarding the feasibility of the Program for Community College students, as well as addressing issues regarding the Program that were raised in the record of the public hearing on the adoption of the Revised Regional Air Quality Strategy.

There are no other deterrents to implementation as the educational institutions have existing parking management programs, communications with students and employees, and procedures and facilities for selling transit passes. The transit measure (Level 2) will provide for enhanced transit services resulting in increased student ridership. The only deterrent will be the development of adequate funding for the transit pass subsidy program.

PERFORMANCE CRITERIA

The performance criteria are the following.

- Adoption of the Regional Transportation Demand Management Program and Ordinance, which includes the High School, College, and University Trip Reduction Program (Level 1) and Ordinance and the High School, College, and University Transit Pass Subsidy Program (Level 2), by the Cities and the County beginning FY 93.
- 0 Notification of high schools, colleges and universities with 100 or more /students of their responsibilities under the ordinance beginning FY 94.
- o Notification of high schools, colleges and universities with 60 to 99 students of their responsibilities under the ordinance beginning FY 95.
- Achievement of the annual average vehicle occupancy according to the schedule of annual AVR targets.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

If the College Trip Reduction and Transit Pass Subsidy Programs do not achieve the interim targets for the required average vehicle occupancy and transit ridership, the program should be amended in order for the region to fulfill the mandate of the law.

MONITORING & AUDIT PROCEDURES

SANDAG and to the Air Pollution Control District will provide monitoring and audit activities and report on the progress of the program.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

Air Pollution Control Board

Required to adopt the revised Air Quality Plan, including transportation control measures. The APCD may implement the TDM program when a local agency opts to decline the authority to implement the trip reduction program.

Cities and County

Adopt Regional TDM Program including the College and University TDM Ordinance

High Schools, Colleges and Universities

Responsible for regulation of motor vehicles on campuses; have authority for subsidizing student incentives.

Commuter Computer

Provides rideshare information and assistance.

Transit Operators

Assist in providing transit service to educational institutions

Transportation Management Associations

Provide assistance to the educational institutions in conducting their trip reduction programs

COSTS TO IMPLEMENTING AGENCY

Costs for the college are estimated at \$1 per trip reduced and \$20 per month per student participating in the Transit Pass Subsidy Program as part of the regional trip reduction program (Level 2).

FUNDING

Existing:

- o On-campus parking fees and/or Transportation fees
- o State and Federal funds for Commuter Computer

Potential without Legislation:

o AB 2766 funds from the increased vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax.

Potential with Legislation:

o Legislation could be introduced to provide funding from increased vehicle registration and emission fees.

Discretionary:

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY

High. Trip reduction programs and transit pass subsidies programs have been in use in various locales.

RELIABILITY

The use of trip reduction programs to improve air quality is new and their effectiveness in reducing emissions is not yet proven.

ENFORCEABILITY

High. Colleges and universities have the authority to regulate motor vehicle use on campus property. The Cities and the County currently have the authority to enforce trip reduction ordinances. The California Clean Air Act also provides the authority for the local air district to enforce trip reduction ordinances.

OTHER IMPACTS

Other impacts of trip reduction programs are savings in motor vehicle fuel, and reduced traffic congestion.

PUBLIC ACCEPTABILITY

Moderate. Public support for voluntary programs is high. With a strong public education program, and the opportunity of the educational institutions to design programs suitable for the individual campuses, acceptance should improve for the mandated programs.

RELATED MEASURES

Transportation Capacity Expansion Program Transit Improvements and Expansion Program High Occupancy Vehicle Lanes Park-and-Ride Facilities Bicycle Facilities Transportation System Management Traffic Flow Improvements Indirect Source Control Programs Land Use Measures Market-Based Measures

APCD CRITERIA

There were no criteria specifically for the college and university programs. See the Criteria under the Commute Travel Reduction Program.

REFERENCES

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1982 Regional Air Quality Strategy Update, San Diego Association of Governments, San 0 Diego 1982.

APPENDIX

- Regional Transportation Demand Management Program and Technical Supplement, San Diego Association of Governments, San Diego 1991. "Transportation Demand Management Ordinance," San Diego Association of Governments. 0
- 0 San Diego 1991.

MEASURE TRANSPORTATION DEMAND MANAGEMENT

TACTIC Goods Movement/Truck Operation Program (Contingency Measure)

DESCRIPTION

The TDM Program's Goods Movement/Truck Operation Program will reduce truck related emissions through alternative truck delivery schedules, load consolidation, and the scheduling of truck operations during weekday off-peak commute hours. These actions include the development of an Incident management and Prevention Program to reduce the number and severity of truck involved incidents and to improve incident response and removal technologies for truck and auto accidents. Additionally this measure features enhancement of the regional motorist information system to reduce congestion and delay.

AIR QUALITY PURPOSE

The air quality purpose of this measure is to reduce emissions from the idling of motor vehicles which occur when traffic is congested because of truck deliveries or accidents involving trucks. Other air quality benefits will be an increase in speed on roads and highways because of reduced trucking traffic during the peak commute hours, resulting in a reduction of reactive organic gases.

RECOMMENDATION

This is a contingency measure to be implemented upon adoption of an implementing rule or regulation by the Air Pollution Control Board, if the Air Pollution Control Board determines or the State Air Resources Board finds that the District is failing to meet interim goals or not making adequate progress toward attainment of applicable state ambient air quality standards.

Level 3 Implementation: Adoption and implementation of the Truck Travel Reduction Ordinance, the Incident Management and Prevention Program, and the Motorist Information System.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

YEAR 200 MEASUR LEVEL	0 E: GOO TRAVI REDU((%)	<u>DS MOVE</u> EL CED	MENT/TRUCK OPERAT EMISSIONS REDUCED (T/D)			TION PROGRAM EMISSIONS REDUCED (%87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (\$/b)
	VMT	TRIPS	ROG	NOX	CO	ROG	NOX	CO	GOVT	OTHER	
1.	•	•	0.21	•	2.86	0.08	•	0.20	0.4	•	2.60
2.	-	•	0.74	-0.01	9.35	0.26	•	0.65	0.5	•	0.94
3.	•	•	1.27	-0.01	15.84	0.45	•	1.10	0.6	-	0.66

STATUS

Currently local jurisdictions control truck deliveries at certain hours to mitigate noise. There are restrictions on truck traffic on SR-163 southbound, south of I-8 during the morning commute hours to relieve congestion. CALTRANS works with the Highway Patrol to clear incidents, especially those involving trucks because of the resulting congestion. Demonstration programs are underway to better inform motorists of incidents and congestion.

IMPLEMENTATION STRATEGIES

Goods Movement/Truck Operation Program and Ordinance is an integral part of the Regional Transportation Demand Management Program which is appended to this plan.

Level 1 Implementation Truck Travel reduction Ordinance

The Goods Movement/Truck Travel Reduction Ordinance would require that operators of medium and heavy duty trucks achieve annual targets for off-peak truck travel by shifting operations out of the peak commute period and through freight consolidation programs. The goal of this program is to achieve a 25% off-peak truck travel rate by 2000 and 35% by 2010.

Level 2 Implementation Truck Travel Reduction, Incident Management and Prevention Program

Level 2 combines Level 1 with the Incident Management and Prevention Programs. The goal of the Incident Management and Prevention Program, is to achieve a 50% reduction in the number of truck-involved incidents, and a 50% reduction in the amount of congestion delay resulting from incidents by the year 2000.

Level 3 Implementation Truck Travel Reduction, Incident Management and Prevention with Motorist Information System

Level 3 combines Level 1 and 2 with the Motorist Information System. The Motorist Information System Program will provide state-of-the-art delivery of traffic information to motorists through radio, changeable electronic messages, and other available means to reduce traffic congestion and delay resulting from incidents.

TARGETS TO DEMONSTRATE PROGRESS

Targets to demonstrate progress are the following.

- o The Goods Movement/Truck Operation Program and Ordinance is adopted by the Cities and the County.
- o The average truck traffic during the peak commute period will be reduced by an average of 2.5% per year.
- o Regional traffic congestion delay due to truck incidents or breakdowns will be reduced by an average of 5% per year.
- o The number of truck related incidents in the region will be reduced by 5% per year.
- o Timely traffic information will be relayed to motorists.

IMPLEMENTATION TIMING

The measure will be implemented as a contingency measure, upon adoption of the rule implementing the contingency measure, after the Air Pollution Control Board determines or the State Air Resources Board finds that the District is failing to meet interim goals or not making adequate progress toward attainment of applicable state ambient air quality standards.

DETERRENTS TO IMPLEMENTATION

- Note: A work program will be developed by SANDAG during FY 92-93 to address concerns regarding restrictions on delivery schedules, as well as exemptions from the Goods Movement Travel Reduction Program proposed by the Construction Industry Federation. These proposed exemptions include:
 - o Heavy duty vehicles engaged in the production of transit mixed concrete, including hauling of portland cement and cement treated base products;
 - o Heavy duty vehicles engaged in the production of hot-mixed concrete, including hauling of asphaltic cement, cut back asphaltic concrete and asphaltic emulsions;
 - o Heavy duty vehicles engaged in the production of sized aggregate including oversized rock, sand, and base materials;
 - o Heavy duty vehicles that must operate during the peak period in order to conform with restrictions or requirements imposed on daily starting and/or ending times, or duration of operations as a result of any government issued permit conditions or regulations or executed labor, private or government contract provisions in force prior to the effective date of the transportation control measures program.
 - o Employees who can demonstrate to the implementing agency that the shifting of delivery schedules from peak to non-peak would cause a shift in commute patterns of employees from non-peak to peak hours.
 - o Trucks engaged exclusively in the transport of perishable products which require daytime delivery, or products which require daylight delivery for bona fide safety reasons.

There are no other major deterrents to implementation, pending the adoption of the Ordinance and an education program for the trucking industry.

PERFORMANCE CRITERIA

The performance criteria are the following.

- o Adoption of the Regional Transportation Demand Management Program and Ordinance by the Cities and the County, beginning with the implementation of the contingency measure.
- o Conduct work program to address exemptions proposed by the Construction Industry Federation beginning FY 93.
- Notification of trucking employers of 100 or more employees of their responsibilities under the ordinance, beginning with the implementation of the contingency measure.
- 0 Notification of trucking employers with 50 to 99 employees of their responsibilities under the ordinance, beginning one year after the implementation of the contingency measure.
- 0 Notification of trucking employers with 25 to 49 employees of their responsibilities under the ordinance, beginning two years after the implementation of the contingency measure.

- o Notification of trucking employers with 11 to 24 employees of their responsibilities under the ordinance, beginning three years after the implementation of the contingency measure.
- o Achievement of the annual target for the off-peak truck travel according to the schedule contained in the Ordinance.
- o Achievement of the annual targets for the reduction in incident delay.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

If the Goods Movement/Truck Operation Program does not achieve its interim off-peak travel targets, the program should be amended in order for the region to fulfill the mandate of law.

MONITORING & AUDIT PROCEDURES

SANDAG and to the Air Pollution Control District will provide monitoring and audit activities and report on the progress of the program.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

Cities and the County

Adopt the Goods Movement/Truck Operation of the Regional Transportation Demand Management Program and Ordinance.

San Diego Association of Governments

Adopt the Transportation Control Measures Plan for the adoption by the APCB. Support role to the Cities and the County

Air Pollution Control Board (APCB)

Required to adopt the revised Air Quality Plan, including transportation control measures. The APCD may implement the TDM program when a local agency opts to decline the authority to implement the trip reduction program.

California Highway Patrol and CALTRANS

Responsible for accident reporting and traffic control; and identified in the Criteria as having a support role for this measure.

COSTS TO IMPLEMENTING AGENCY

Government costs are estimated at \$0.6 million per year in the year 2000.

FUNDING

Existing:

There are no existing funds for this program.

Potential without Legislation:

AB 2766 funds from the increased vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax.

Potential with Legislation:

Legislation could be introduced to provide funding from increased vehicle registration and emission fees.

Discretionary:

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY

Moderate. Programs to move truck traffic out of the peak periods and to reduce incident delay are feasible. New technology may be needed to provide improved incident management and motorist information at a reasonable cost.

RELIABILITY

The reliability of the Program and Ordinance to reduce emissions and to help the region achieve the air quality standards is not known.

ENFORCEABILITY

High. The Cities and the County have the authority to enforce ordinances on streets and roads over which they have jurisdiction. Cooperation with CALTRANS and the California Highway Patrol will result in the success of the program on state highways.

OTHER IMPACTS

Other impacts of the goods movement/truck operation program are savings fuel, improved traffic flows, and savings in time of motorists.

PUBLIC ACCEPTABILITY

Moderate. Truckers may have problems scheduling deliveries and businesses may not want to open to receive goods out of regular business hours.

RELATED MEASURES

Transportation Capacity Expansion Program High Occupancy Vehicle Lanes Transportation System Management Traffic Flow Improvements

APCD CRITERIA

Criteria: "Truck Operation Control Regulations"

A regional goods movement truck travel reduction program consistent with Air Resources Board guidance shall be evaluated for feasibility and emission reductions in San Diego County. The program will be implemented and enforce by the District, subject to delegation to the Cities and County consistent with the California Clean Air Act. The truck operation regulations to be evaluated shall (as follows below):

1. <u>Criterion</u>: Prohibit idling of trucks for more than five minutes, except in specific situations of necessity.

<u>Response</u>: The APCB should adopt, implement, and enforce regulations governing the idling of engines.

2. <u>Criterion</u>: Prohibit facilities from operating in a manner that causes trucks to idle for more than five minutes.

Response: This should be included in the APCB regulation on idling of engines.

- 3. <u>Criterion</u>: Require freight consolidation centers for less than truckload shipments into and out of San Diego County. <u>Response</u>: Freight consolidation is one of several actions the trucking industry may use to achieve off-peak travel targets.
- 4. <u>Criterion</u>: Require operations at freight consolidation centers be conducted in a manner to minimize motor vehicle emissions and traffic congestion, such as low emission service vehicles and appropriate off-peak operations.

<u>Response</u>: The trucking industry may choose to shift to light duty delivery vehicles as a means to achieve off-peak truck travel targets.

5. <u>Criterion</u>: Require establishments shipping or receiving goods by truck to shift some or all shipments to off-peak hours.

<u>Response</u>: Program establishes specific annual off-peak truck travel target which truck operators must achieve.

6. <u>Criterion</u>: Prohibit travel by specified trucks during appropriate peak periods. Criteria for considering which trucks shall be subject to travel restrictions shall include the ability of the class of truck to accelerate, decelerate, merge with, or otherwise operate in a manner than does not interfere with peak period traffic flow. Peak periods during which truck travel shall be restricted may be established separately from other definitions of peak period.

<u>Response</u>: Program establishes specific annual off-peak truck travel targets which truck operators must achieve.

7. <u>Criterion</u>: Require the Cities and the County to revise provisions of local plans and ordinances to be consistent with the purpose and goals of the truck operation control regulations.

<u>Response</u>: Goods Movement/Trucking Advisory Committee will be established to advise SANDAG on amendments to local jurisdiction general plans to support trucking operation goals.

APPENDIX

- o <u>Regional Transportation Demand Management Program and Technical Supplement</u>, San Diego Association of Governments, San Diego 1991.
- o "Transportation Demand Management Ordinance," San Diego Association of Governments, San Diego 1991.

MEASURE TRANSPORTATION DEMAND MANAGEMENT

TACTIC Non-Commute Travel Reduction Program

DESCRIPTION

This measure proposes to develop a work program and schedule be developed during FY 93 for a study to evaluate the feasibility of and develop trip reduction programs for Lindbergh Field, the Stadium, regional shopping centers and other large trip attractions.

AIR QUALITY PURPOSE

The purpose of the measure is to reduce emissions associated with above trip attractions.

RECOMMENDATION

Perform a study to evaluate the feasibility of trip reduction programs for Lindbergh Field, the Stadium, regional shopping centers and other large trip attractions, and, based on the study, develop appropriate trip reduction programs.

TARGETS TO DEMONSTRATE PROGRESS

o Measurable reduction in trips and miles traveled

IMPLEMENTATION TIMING

o Develop work program during FY 93.

PERFORMANCE CRITERIA

- 0 Reduction in miles traveled as measured at the vehicle smog test
- o Reduction in volume of fuel sales
- o Reduction of trips as reported in the periodic travel surveys

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

Cities and County

Adopts program as part of regional trip reduction program Implements program and conducts education and marketing campaign

San Diego Association of Governments

Adopt the Transportation Control Measures Plan for the adoption by the APCB. Support role to the Cities and the County

Air Pollution Control Board (APCB)

Required to adopt the revised Air Quality Plan, including transportation control measures. The APCD may implement the TDM program when a local agency opts to decline the authority to implement the trip reduction program.

COSTS TO IMPLEMENTING AGENCY

Costs will be determined after trip reduction programs have been developed.

FUNDING

Existing:

There is no existing funding for this program.

Potential without Legislation:

Vehicle registration fees (AB 2766) and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax. State Rideshare Marketing funding.

Potential with Legislation:

Increased vehicle registration fees and emission fees.

Discretionary:

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY

High.

RELIABILITY

Moderate, depending on participation in the program. Past experience with major marketing efforts, e.g., water conservation, has been moderately successful.

ENFORCEABILITY

As a voluntary program, this measure is not enforceable.

OTHER IMPACTS

Other impacts that this measure will have will be a decrease in traffic congestion and save motor vehicle fuel.

PUBLIC ACCEPTABILITY

High. The public has indicated a preference for programs with specific goals and flexibility as to how the goals are achieved.

RELATED MEASURES

TDM - Commute Travel Measure College TDM/Transit Program Transit Improvement Program Bicycle Facilities Program Indirect Source Control Measure Market-Based Measures

APCD CRITERIA

There are no APCD Criteria specific to this measure.

REFERENCES

o <u>1990 Regional Transportation Plan</u>, San Diego Association of Governments, San Diego, 1991.

MEASURE TRANSPORTATION CAPACITY EXPANSION

TACTIC Transit Improvements and Expansion

DESCRIPTION

This measure expands on the 1990 Regional Transportation Plan and the seven-year Short Range Transit Plans of the transit districts, the North San Diego County Transit Development Board (NSDCTDB) and the Metropolitan Transit Development Board (MTDB). The measure consists of conversion of the current bus fleet to low emission vehicles, the expansion of bus services using low emission vehicles, and expansion of trolley services.

AIR QUALITY PURPOSE

The purpose of this measure is to support the air quality benefits of the Trip Reduction Ordinance through the expansion of transit, and the corresponding reduction in automobile travel. Air quality benefits are realized through the use of the trolley, through the replacement of the existing bus fleet with low emission vehicles and the use of low emission vehicles on the proposed expanded bus services.

RECOMMENDATION

Level 1: Implementation of currently programmed service improvements by 2000. This includes a 29% increase in bus service and a 130% increase in rail service. If additional state and/or federal funds are available for this purpose, implementation of Level 3 is recommended.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

YEAR 2000 MEASURE: TRANSIT IMPROVEMENTS AND EXPANSION												
LEVEL	TRAVEL REDUCED (%)		EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (%'87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (S/Ib)	
	VMT	TRIPS	ROG	NOX	СО	ROG	NOX	CO	GOVT	OTHER		
1.	1.90	2.05	0.51	-0.89	10.65	0.18	-0.30	0.75	•	-	-	
2.	1.90	2.05	0.82	-0.09	11.05	0.30	-0.05	0.77	3.4		6.44	
3.	2.35	2.52	1.03	-0.04	13.65	0.37	-0.01	1.00	21.5	-	29.7	

STATUS

In the San Diego region, public transit services are provided to communities containing 98% if the population. In 1989, the region's fixed route services operated nearly 479 peak period vehicles over approximately 24 million miles of service, and carried in excess of 55 million total passengers. Since 1983, ridership on the region's transit systems has increased at a greater rate than the rate of population growth. The annual operating cost of transit in 1991 will be approximately \$110 million.

Recent years have seen efforts to expand and improve peak period commuter service. Transit centers have been developed to focus transit service onto the faster trolley and express bus lines, as well as to improve timed transfer connections, thus improving competitiveness with the auto. These efforts will continue into the future and are reflected in future year networks. The Regional Transportation Plan (RTP) 2000 year network represents an increase in the number of transit routes of approximately 25%. The number of routes increases from the 90 routes currently in operation to 113 routes in 2000. This increase includes trolley extensions from Old Town to Del Mar via the coastal corridor, and to La Mesa via Mission Valley, and four additional express bus routes. The remainder of additional service is mostly local feeder service designed to support the added trolley and express bus service. Extensive studies of additional bus services in the I-15 corridor are currently being undertaken by the MTDB. These will be incorporated into the Transportation Control Measures Plan at the next update.

IMPLEMENTATION STRATEGIES

This measure has been analyzed at three levels of implementation, as summarized in the following sections.

Level 1 Implementation

Implementation of Currently Programmed Service Improvements for the Year 2000

Level 1 implementation of the transit tactic assumes the implementation of currently programmed transit services by the year 2000. This includes the expansion of the bus systems from 79,019 revenue bus miles of service in 1990 to an assumed 102,174 miles of service by the year 2000. Trolley service is assumed to increase from 4,136 revenue train miles of service in 1990 to 9,614 train miles of service in 2000. This assumes trolley extensions from Old Town to Balboa on the North Line and from Old Town to the Stadium on the Mission Valley Line are in operation by the year 2000. Level 1 assumes the implementation of this level of service improvement at an average productivity level of 3.0 passengers per mile for bus services and 14.0 passengers per mile for trolley services. These productivity levels reflect an increase over current levels based on the 2-3% improvement in productivity experienced over the last five years and the estimated increase in demand due to the implementation of the TDM program.

In addition to these service improvements, Level 1 assumes that one-half of the bus fleet will be replaced by the year 2000 with low emission vehicles. Based on the Air Resources Board (ARB EMFAC 7E) emission forecasts for the year 2000, a diesel bus is expected to emit 6.24 grams ROG and 22.0 grams NOx per mile at an average speed of 16 miles per hour. Because of the state and federal air quality standards, it was assumed that the transit operators would begin to phase in low emission vehicles as part of their routine bus replacement cycles over the next decade. While no specific technology is recommended, for analysis purposes it was assumed that these vehicles would have emission characteristics similar to compressed natural gas (CNG) buses which emit 1.2 grams of ROG per mile and 9.0 grams of NOx per mile. This compares with the ARB Year 2000 emissions for automobiles at the same average speed of 0.33 grams ROG and 0.50 grams NOx per mile.

No additional costs have been assumed for Level 1. The service improvements and bus replacements are assumed to be funded with the \$2.8 billion in local, state, and federal revenues assumed to be available in the RTP Financial Element. This is dependent on the passage of the 1992 and 1994 Rail Bonds, the receipt of significant federal transit capital funds and a prompt and strong recovery from the current (1991) economic recession.

In addition to the projects discussed above as being included in the Level 1 baseline analysis, the Regional Transportation Plan includes several additional rail corridors which may be implemented after the year 2000. These projects include the extension of the Mission Valley Line from the Stadium to La Mesa, the extension of the Mid-Coast or North Line from Balboa to North City West, and the I-15 Line to Escondido.

Because the implementation of some of the rail corridors identified in the RTP could be accelerated, either to replace one of the corridors currently identified in Level 1 or to take advantage of additional funding opportunities, all of the rail projects recommended in the RTP should be considered as potential candidates for inclusion under Level 1.

Level 2 Implementation

Conversion of Bus Fleet to Low Emission Vehicles

Level 2 builds upon the service improvements assumed in Level 1, with the additional assumption that the remaining half of the bus fleet is also converted to low emission vehicles. The air quality benefit achieved is due to the same level of transit service being provided by an entire fleet of low emission vehicles.

An additional total capital cost of \$20.5 million is estimated for Level 2, which is based on the acquisition of 316 buses at an incremental cost of \$65,000 per vehicle for the additional cost of low emission technology. The additional operating costs of the low emission vehicles were estimated at \$0.05 per mile, or approximately \$870,000 per year. The total annualized operating and capital costs are estimated at \$3.43 million per year.

Level 3 Implementation

Expansion of Transit Service

Level 3 assumes Level 2 as a base and expands the number of bus and trolley miles of service by 17% to meet the demand generated by the TDM program requirements. Bus miles are assumed to increase from 79,019 in 1990 to 136,346 by 2000 and trolley revenue service miles would increase from 4,136 train miles in 1990 to 11,688 miles in 2000. It was assumed that these additional miles of service would be focused on peak-hour headway improvements, plans for increased transit service in the I-15 corridor, and other highly productive service improvements in order to maximize the air quality benefit. Because of the assumed higher productivity services, an average of 3.5 passengers per mile for bus services was assumed in the analysis. It was also assumed that all service expansion would be carried out with low emission vehicles.

In addition to the operating and capital costs identified for Level 2, the service expansion for Level 3 would require an additional \$11.9 million per year in operating costs and \$85 million in total capital costs. The capital costs relate to the need for 106 low emission buses at an estimated \$285,000 each, 25 light rail vehicles at \$1.4 million each, and \$10 million in additional maintenance facility costs. Based on estimated debt service costs for the capital costs, the total annualized operating and capital costs for Level 3 is \$21.5 million per year.

TARGETS TO DEMONSTRATE PROGRESS

The progress of the program can be measured as part of the Regional Transportation Improvement Program, as well as in the development of the Short-Range Transit Plans prepared by MTDB and NCTD. These documents contain the schedules for vehicle acquisitions and the implementation of service improvements by year. Specific implementation targets include revenue bus miles and revenue train miles of service, transit productivity measured in passengers per bus or train mile and emission characteristics of the region's bus fleet.

IMPLEMENTATION TIMING

Level 1 Implementation: Year 2000 RTP Service Improvements

The service improvements recommended in the RTP would be phased in through the Year 2000 based on fund availability. Acquisition of low emission buses would be phased in as the older buses are scheduled for replacement.

Level 2 Implementation: Conversion of Bus Fleet to Low Emission Vehicles

The schedule to replace the current bus fleet with low emission vehicles would be accelerated to provide for complete conversion by the year 2000. Implementation will be dependent on the receipt of additional revenues.

Level 3 Implementation: Expansion of Transit Services

Service improvements in addition to those assumed in Level 1 will be phased in by the Year 2000. Timing is primarily dependent on additional funding.

DETERRENTS TO IMPLEMENTATION

The deterrents to implementation of this measure are:

- o Lack of equipment to be acquired. While several different bus engine technologies are being tested, implementation of this measure depends on the availability of reliable, low emission vehicles in order to achieve the stated air quality benefits.
- o Lack of funds to acquire additional trolley vehicles and low emission buses.
- o Lack of funding to cover the increased operating costs of expanded transit services.
- o The Financial Element of the 1990 Regional Transportation Plan (RTP) compares the estimated operating, maintenance and capital costs of the region's transportation systems through the year 2010 against forecasts of available revenues in 1990 dollars. As reflected in Table 27 of the RTP, this comparison of costs and revenues for the long-range transit plan indicates a financially balanced program through the year 2000 and a \$1.2 billion shortfall by the year 2010. The majority of this shortfall is due to the inclusion of nearly \$1.1 billion in capital costs in the 2000-2010 time period for a number of light rail projects for which there are currently no identified revenues. These projects are all future extensions to the TransNetfunded rail network. Of the remaining shortfall, approximately \$80 million is attributable to bus acquisitions and miscellaneous facility improvements and \$40 million is related to operating shortfalls. The RTP discusses the need for additional funding, particularly capital funding, in order to fund all planned improvements by the year 2010.

The RTP Financial Element is based on the most current cost estimates available at the time from the implementing agencies and on a series of key assumptions regarding future funding. The revenue assumptions are primarily based on the continuation of existing funding sources without assuming the availability of major new sources of revenue. While the RTP identifies no funding limitations in total for the transit plans through the year 2000, this finding is based on several key assumptions. These include the accuracy of the cost estimates for the major rail projects and the availability of state, federal and TransNet revenues allocated to the planned light rail extensions and commuter rail projects. A significant amount of state rail bond revenues (Proposition 108 and 116) and federal UMTA Section 3 funds are assumed to be available to match TransNet revenues. To the extent that these matching funds do not become available in the timeframe assumed, the delivery schedule for the projects will be impacted. Since the adoption of the RTP, updated cost estimates from the MTDB and NCTD for the major rail projects have shown significant cost increases in project costs. Based on updated financial analyses for the TransNet Plan of Finance, the completion date for the TransNet-funded rail extensions will have to be extended from the year 2000 to roughly 2005 unless a major increase in funding occurs. SANDAG is currently working with MTDB on the development of a phasing plan to match the implementation of the rail extensions with available revenues. It is currently estimated that based on available revenues by the year 2000, the North line will be extended from Old Town to Balboa Avenue and the Mission Valley Line will be extended from Old Town to the Stadium. Level 1 implementation levels are based on these trolley extensions for the year 2000 system.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

Future tactics will be developed by the General Managers of the transit operators for the approval of the NSDCTDB and the MTDB through the Short-Range Transit Plan development process. Implementation will be programmed into the Regional Transportation Improvement Program, consistent with the Regional Transportation Plan.

MONITORING & AUDIT PROCEDURES

The NSDCTDB and the MTDB, as the primary transit entities, SANDAG and APCD will monitor the progress of this measure. All required data monitoring is readily available on an annual basis.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

The following agencies are responsible for the implementation of the transit improvements and expansion measure.

Transit Districts

NSDCTDB and MTDB are responsible for the planning and development of bus and light rail transit in their respective districts.

Transit Operators

The transit operators, Chula Vista Transit, County Transit, National City Transit, North County Transit District, San Diego Transit, San Diego Trolley, Inc., and the MTDB for some contract operators, are responsible for the delivery of transit service in their service areas.

San Diego Association of Governments (SANDAG)

SANDAG is responsible for the Transit Element of the Regional Transportation Plan, for the distribution of Transportation Development Act (TDA) and TransNet funds to the transit operators, and for the administration and programming of other state and federal funding programs. The APCD Criteria identifies a support role for SANDAG in implementing this measure.

Air Pollution Control District

The Criteria identifies a support role for the APCD in implementing this measure.

COSTS TO IMPLEMENTING AGENCY

Level 1 Implementation: Currently Programmed Improvements

The 1990 RTP Financial Element identifies a total operating and capital cost of \$1.8 billion from FY91 to FY2000 for recommended service improvements.

Level 2 Implementation: Conversion of Bus Fleet to Low Emission Vehicles

The cost to replace the remaining bus fleet will be:

- 1. Additional cost per low emission vehicle\$ 65,000
- 2. Total cost for 316 vehicles 20,540,000
- 3. Annualized capital costs 2,560,000
- 4. Additional annual cost for fuel/maintenance 871,000
- 5. Total annual operating and capital costs 3,431,000

Level 3 Implementation: Expansion of Transit Service

The cost to expand transit services will be:

- 1. Expanded bus and trolley annual operating costs 11,220,000
- 2. Capital Costs- vehicles/maint. facilities 74,660,000
- 3. Annualized capital costs 10,260,000
- 4. Total annual operating and capital costs 21,480,000

FUNDING

Existing:

Existing funds include Urban Mass Transportation Administration (UMTA) grants, State rail bond and Transit Capital Improvement (TCI) funds, Transportation Development Act (TDA) funds, TransNet (1/2% local sales tax) funds, and other sources. Potential without Legislation:

AB 2766 funds from increased vehicle registration fees. Employer Transportation Subsidies.

Potential with Legislation:

State and/or Federal legislation could be introduced to provide funding from increased vehicle registration and emission fees or other sources.

Discretionary:

All sources available to fund transit are being used to fund the service improvements recommended in the RTP (Level 1).

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY

Level 1 Implementation: Currently Programmed Service Improvements Moderate-High. High feasibility for transit expansion, moderate feasibility for low emission buses.

Level 2 Implementation: Conversion of Bus Fleet to Low Emission Vehicles Moderate. Low emission buses using alternative fuels, such as CNG or methanol, or "clean" diesel engines are still in the developmental stages.

Level 3 Implementation: Expansion of the Transit Service Moderate-High. High feasibility for the trolley expansion as the trolley vehicles have proved to be reliable in service. Moderate for low emission buses as explained above.

RELIABILITY

Moderate. The emissions reductions and reliability of low emission vehicles are still in demonstration stage.

ENFORCEABILITY

Moderate. The Transit Districts are the authorities to implement this measure.

OTHER IMPACTS

In addition to the air quality benefits, improved transit services will result in reductions in traffic congestion, particularly in major travel corridors in the peak hours. The transit improvements are also supportive of efforts to modify traditional land use development patterns to decrease reliance on the automobile.

PUBLIC ACCEPTABILITY:

High. The public has supported increased funds for transit improvements.

APCD CRITERIA:

Criteria: "Alternative Transportation Mode Capacity Expansion, Expanded Transit"

The APCD Criteria are generally consistent with many of the transit policies included in the adopted 1990 RTP Transit Element as summarized below:

1. <u>Criterion</u>: Air quality related transit improvements shall, through ease of use, convenience, comfort, and security, be optimized to attract "choice" riders (those riders who have a choice of modes available) who would otherwise use personal vehicles.

<u>Response</u>: See the Short Range Transit Plans of NSDCTDB and MTDB. See the 1990 RTP Transit Element, Policy 1. Focus of Transit TCM (Level 3) is work trip demand resulting from TDM ordinance.

2. <u>Criterion</u>: Air quality related transit services shall be designed to include feeder transit service to line-haul transit routes to the maximum extent feasible to minimize the number of vehicle trips needed to access transit.

Response: See the 1990 RTP Transit Element, Policies 2 and 17.

3. <u>Criterion</u>: Transit expansion shall be as extensive and implemented as rapidly as feasible to accommodate choice riders induced by other transportation control measures.

Response: This criterion is included in the adopted 1990 RTP Transit Element, Policy 12.

4. <u>Criterion</u>: Transit system design shall minimize travel time and maximize convenience for the largest number of potential riders.

<u>Response</u>: See the adopted 1990 RTP Transit Element, Policy 3; and the Short Range Transit Plans. See also the Service Standards for Transit, prepared for the Regional Growth Management Strategy.

5. <u>Criterion</u>: The trolley shall to the maximum extent feasible be conveniently accessible by walking, bicycle, or feeder transit. <u>Response</u>: This criterion is included in the adopted 1990 RTP Transit Element, Policy 11.

<u>Criterion</u>: Trolley corridors shall be reviewed for potential realignment to go through the areas of greatest ridership potential rather than along the fringes.

Response: See adopted 1990 RTP Transit Element, Policies 12 and 14.

<u>Criterion</u>: Where such realignments prove infeasible, development plans along the Trolley corridors shall maximize the number of potential riders who would otherwise be single-occupant-vehicle drivers.

<u>Response</u>: This criterion is included in the adopted 1990 Regional Transportation Plan, Transit Element, Policy 13.

6. <u>Criterion</u>: Transit-only streets shall be implemented as appropriate in congested, high density activity centers.

<u>Response</u>: Designation of exclusive or transit-only streets are under the authority of the local land use jurisdiction. In the central business district, C Street, from Kettner east to 12th Street, is a transit-only street along major portions in the central city, with local vehicle traffic permitted on some blocks.

7. <u>Criterion</u>: Closing of existing region wide arterial gaps shall be evaluated to enhance transit service.

<u>Response</u>: This criterion is included in the adopted 1990 Regional Transportation Plan, Transit Element, Policy 7b, and the Highway Element, Actions 24 and 25.

RELATED MEASURES:

Employer Trip Reduction Ordinance High Vehicle Occupancy Lanes

REFERENCES:

- o Statewide Study of the Air Quality Benefits of Transportation Control Measures, Sierra Research, Inc., Sacramento, 1991.
- o 1990 Regional Transportation Plan, SANDAG 1991.

MEASURE TRANSPORTATION CAPACITY EXPANSION

TACTIC Vanpool Program

DESCRIPTION

The Vanpool Measure (Levels 2 and 3) provides 7-15 passenger vehicles to employers for use by employees in a rideshare program. The program is proposed to be administered by the transit districts which will provide the vehicles to participating employers. The employers must agree that the vehicle will contain a minimum number of rideshare participants. The charge to employees is assumed to be \$1 per person trip plus fuel costs.

AIR QUALITY PURPOSE

The purpose of the vanpool program is to reduce commute trips in single-occupant autos, with a resulting decrease in emissions and traffic congestion.

RECOMMENDATION

Level 1: Continuation of existing regional vanpool efforts will add 10 vanpools per year or 80 additional vanpool by 2000. If additional state and/or federal funds are available, implementation of Level 3 is recommended.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

YEAR 2000 MEASURE: VANPOOL PROGRAM												
LEVEL	TRAVEL REDUCED (%)		EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (%'87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (S/Ib)	
	VMT	TRIPS	ROG	NOX	CO	ROG	NOX	СО	GOVT	OTHER		
1.	0.02	0.01	0.01	0.02	0.12	0.00	0.01	0.01	-	-	-	
2.	0.25	0.21	0.16	0.24	1.93	0.06	0.08	0.14	8.3	-	28.43	
3.	0.49	0.41	0.31 4	0.47	3.86	0.11	0.16	0.27	16.5	•	28.94	

STATUS

Some employers in the region provide vehicles for rideshare programs, including, for example, San Diego Gas and Electric Company, University of California at San Diego, and Sorrento Motion, a transportation management association. Commuter Computer provides rideshare matching information to the major employers in the San Diego region.

IMPLEMENTATION STRATEGIES

Levels 2 and 3

- o Transit districts purchase or lease vans which are assigned to participating employers to use in employee rideshare programs.
- o Employers guarantee that the van will be used by a minimum number of employees per commute trip.
- o Employees are charged a fee to cover a portion of the costs of the vanpool vehicle.

Level 1 Implementation

Existing vanpool activities will add 10 vanpools per year or 80 vanpools by the year 2000.

Level 2 Implementation

Transit districts provide 1,250 vehicles for the vanpool program.

Level 3 Implementation

Transit districts provide 2,500 vehicles for the vanpool program.

TARGETS TO DEMONSTRATE PROGRESS

- o Adoption of the Vanpool Program
- o Acquisition of vans by transit operators for program, beginning July 1991.
- o Agreements with employers participating in the program, beginning July 1991.
- o Placement of vans and development of employer vanpool programs.

IMPLEMENTATION TIMING

The timing of this measure will depend on demand. It is projected that 500 vans a year could be acquired and placed by the transit operators.

DETERRENTS TO IMPLEMENTATION

There are no deterrents to implementation of this measure, pending acquisition of funding and adoption of an aggressive trip reduction program to stimulate demand.

PERFORMANCE CRITERIA

- o Acquisition and placement of a minimum of up to 500 vanpools per year with employers.
- o Reduction of a specified number of commute trips per day per vanpool vehicle.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION
The implementation and expansion of this measure depends on demand for the vehicles by employers and the rate of participation by the employees.

MONITORING & AUDIT PROCEDURES

The transit operators, SANDAG, APCD, and Commuter Computer will monitor this measure and audit it for effectiveness in reducing commute single-occupant auto trips.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

Transit Districts

Responsible for the acquisition of vehicles and placement with employers participating in the program.

Employers, TMAs, Commuter Computer

Responsible for enlisting employers and employees for the program and monitoring the program's success.

San Diego Association of Governments and the Air Pollution Control District Support role for this measure.

COSTS TO IMPLEMENTING AGENCY

The estimated lease cost of a 12-passenger van is \$950 per month per vehicle. A 2,500 vehicle vanpool program would cost an estimated \$16.5 million.

FUNDING

Existing:

There are no existing funds for this program.

Potential without Legislation:

AB 2766 funds from increase of vehicle registration fees. Employer Transportation subsidies.

Potential with Legislation:

Legislation could be introduced to provide funding from increased vehicle registration and emission fees or other sources.

Discretionary:

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY

High. Vanpools are used for existing rideshare programs.

RELIABILITY

High.

ENFORCEABILITY

Moderate to high. This is a voluntary program to assist employers to meet their trip reduction ordinance goals. Monitoring and audit procedures will be performed by the transit districts, SANDAG, and the APCD.

OTHER IMPACTS

Other impacts will be savings in fuel and a decrease in congestion. There may be other benefits to the participants such as increased employee satisfaction and cost savings.

PUBLIC ACCEPTABILITY

High, since this is a voluntary program.

RELATED MEASURES

Transportation Demand Management Program High Occupancy Vehicle Lane Measure Park-and-Ride Facilities Traffic Flow Improvements

APCD CRITERIA

There were no Criteria established by the APCD for this measure.

MEASURE TRANSPORTATION CAPACITY EXPANSION

TACTIC High Occupancy Vehicle (HOV) Lanes

DESCRIPTION

High Occupancy Vehicle (HOV) facilities are vehicle travel lanes reserved for the exclusive use of buses or carpools. They are most frequently located adjacent to freeway facilities, but can be located on conventional highways or local streets. HOV facilities are also located at freeway onramps, permitting carpools and buses to avoid delay at metered interchanges. The purpose of HOV lanes is to provide a travel time savings as an incentive for transit use and carpool participation. By encouraging carpool and bus ridership, HOV lanes expand the person-carrying capacity of a highway by increasing the number of persons in each vehicle.

A study of congested freeways that lack right-of-way to add lanes will be performed during FY 93 to determine if converting any existing lanes to HOV use would be feasible and desirable, using the criteria in the ARB HOV system guidance.

AIR QUALITY PURPOSE

The air quality benefit of HOV lanes is a reduction in the number of vehicle trips, thus reducing emissions. Where transit riders and carpool members use remote parking lots in order to "parkand-ride," trips are not eliminated through the HOV facility transportation control measure, although there is still a reduction in vehicle miles of travel.

RECOMMENDATION

Level 1: Use of existing I-15 HOV lanes and provision of HOV bypass lanes at metered ramps. If additional state and/or federal funding becomes available for this purpose, implementation of Level 3 is recommended.

TOTAL EMISSION REDUCTIONS AND COST EFFECTIVENESS

YEAR 2000 MEASURE: HOV LANES												
LEVEL	TRAVEL REDUCED (%)		EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (%'87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (\$4b)	
	VMT TRIPS		ROG	NOX	СО	ROG	NOX	СО	GOVT	OTHER		
1.	0.05	0.26	0.03	0.05	0.42	0.01	0.02	0.03	•	•	-	
2.	0.23	0.73	0.15	0.23	1.95	0.10	0.08	0.14	9.5	•	34.25	
3.	0.42	1.22	0.27	0.42	3.52	0.10	0.14	0.25	21.1	•	41.89	

STATUS

As of January 1, 1991 there was one freeway HOV lane in the San Diego region, on I-15 north of the junction with SR-163 to just south of SR-56 (North City Parkway). This is a separated reversible flow two-lane facility, open from 6 a.m. to 9 a.m. for south-bound travel and from 3 p.m. to 6 p.m. for north-bound traffic. The HOV facility can be opened at other times of heavy traffic flow. In the first month of operation, October 1988, the lanes carried an average of 6,200 vehicles a day. In December 1990, the lanes carried an average of 8,720 vehicles a day, an increase of 41%. In the same time period, the parallel lanes of traffic increased 4%.

CALTRANS has continued a program of installing HOV lanes and traffic signals on freeway onramps, controlling access to the freeways and maintaining freeway traffic flow. By January 1, 1991 there were 28 signalized on-ramps with HOV signal by-pass lanes in the San Diego region.

CALTRANS and SANDAG developed a regional Express (HOV) Lane Plan, which was incorporated into the Regional Transportation Plan (RTP) in 1989. Since that time, SANDAG has completed an evaluation of the feasibility of locating HOV lanes on arterial streets (<u>SANDAG</u> Arterial Street High Occupancy Vehicle Lane Concept Development Study, Wilbur Smith and Associates, December 31, 1990). This evaluation recommends the refinement and potential implementation of three arterial street HOV facilities paralleling I-5 and I-8 in the central portion of the metropolitan area. The RTP also specifies a CALTRANS evaluation of HOV lanes on SR-15 (40th Street) and SR-94/125. This study has not yet begun.

The recommended HOV lane plan is based on added HOV lanes. CALTRANS has estimated the cost of converting existing freeway lanes to HOV lanes at \$600 thousand per mile compared to \$3.75 million per mile (two-way) for the facilities included in this program. This includes the costs of enforcement areas every two miles as well as the cost of restriping all lanes to 11-feet to preserve the inside shoulder and create a four-foot painted buffer between the HOV lane and mixed-flow lanes. Conversion of existing lanes to HOV lanes where feasible and appropriate should be pursued on congested freeways that lack right-of-way for adding lanes.

In addition to the HOV lanes included in this program, the TransNet (sales tax) program will provide HOV lanes on Route 125 between Route 54 and Route 52 and on Route 54 between I-805 and Route 125. Due to funding constraints, these facilities are not proposed to be added until the end of the TransNet program (2006-2008).

There are no HOV lanes currently identified in the seven-year Transportation Improvement Program (1992-1999). If additional state and/or federal funds become available for HOV purposes, the facilities would be constructed in the approximate priority order identified in this plan.

IMPLEMENTATION STRATEGIES

The HOV lane facilities which are recommended in this TCM are based on the Regional Express Lane Plan. This Plan provides HOV lane facilities to major activity centers.

Level 1 Implementation

- o Existing HOV lanes: 8 miles available unused capacity.
- o In accordance with the adopted Regional Transportation Plan, HOV bypass lanes shall be provided at all metered freeway entrances, where physically possible.

Level 2 Implementation

Level 1 implementation plus additional lanes:

- o I-5 North, from I-805 to SR-78, serves what is projected to be the most congested freeway segment. CALTRANS has begun design of this facility and has applied for federal demonstration funds for its construction; 16.7 miles, \$61.0 million, (\$3.7 million/mile).
- o I-15 North, from SR-56 to SR-78, extends the existing HOV lanes but is designed to provide concurrent flow lanes in both directions; 12.2 miles, \$51.3 million, (\$4.2 million/mile).
- o Total: 36.9 miles

Level 3 Implementation

Level 2 implementation plus additional lanes:

- o I-15 South, from SR-163 to I-8, extends the existing HOV lanes south to Mission Valley. It would also provide concurrent flow lanes; 4.5 miles, \$16.3 million, (\$3.6-million/mile).
- o I-5 Central, from I-805 to I-8, would serve both University City and Mission Valley, as well as the beach areas; 10 miles, \$62.5 million, (\$6.3 million/mile).
- o I-805 North, from I-5 to SR-52, connects the HOV lanes on I-5 south to the Kearny Mesa employment area. 5 miles, \$13.8 million, (\$2.8 million/mile.)
- o Pacific Highway, from Center City to Sea World Drive, would convert two lanes of the existing six-lane facility for carpool and transit use. This facility would connect directly to HOV lanes on I-5 north of I-8; 4.1 miles, \$7.9 million (\$1.9 million/mile).
- o South Harbor Drive, from Sigsby Street to I-5, would add two HOV lanes to the existing four-lane street; 3.4 miles, \$15.3 million (\$4.5 million/mile).
- o Friars Road, from SR-163 to Zion Avenue, would reconfigure the existing expressway/arterial street with a reversible median HOV lane, which could also be used to access stadium events; 3.5 miles, \$20.8 million (\$5.9 million/mile).
- o Total: 67.4 miles

TARGETS TO DEMONSTRATE PROGRESS

Level 1 Implementation: Existing HOV lanes

Level 2 Implementation:

- o Begin construction by 1993 of HOV lane facilities on I-5 north, from I-805 to SR-78, and on I-15 north, from SR-56 to SR-78.
- o Based on potential use and congestion, these two projects are the highest ranking segments in both the CALTRANS and SANDAG programs.

Level 3 Implementation:

- Begin construction by 1998 of the remaining HOV lane facilities on I-15 south, from SR-163 to I-8, on I-5 central, from I-805 to I-8, and on I-805 north, from I-5 to SR-52.
- o Approval of the HOV lane concept on the arterial streets by the Cities of San Diego and National City by 1998.
- o Conversion of two lanes of Pacific Highway, from Center City to Sea World Drive to HOV lanes by 2003.
- o Addition of two HOV lanes to Harbor Drive from Sigsby to I-5 by 2005.
- o Reconfiguration of Friars Road to include a reversible HOV lane in the median by 2010.

IMPLEMENTATION TIMING

Level 1 Implementation:

The I-15 HOV lanes are existing.

Level 2 Implementation:

In accordance with the Regional Transportation Plan, Caltrans has begun design of facilities in the level 2 implementation, I-5 north of the I-805 junction, and I-15 north of the existing HOV Lanes. These facilities can be implemented by 1993.

Level 3 Implementation:

As the demand for HOV lanes increases, Level 3 will be implemented by the Year 2000.

DETERRENTS TO IMPLEMENTATION

There are no deterrents to implementation, pending funding and right-of-way availability. Because arterial HOV lanes are not currently in use in Southern California, some impediments to implementation should be anticipated.

PERFORMANCE CRITERIA

Construction and implementation of the HOV lane facilities in the time frame designated. Identification of sources of funding for the remaining facilities by 1997.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

CALTRANS, the Cities, and the County will biannually reevaluate the need for additional HOV lanes and identify funding sources. The HOV lanes designated will be added to the Regional Transportation Plan.

MONITORING & AUDIT PROCEDURES

CALTRANS, the Cities, and the County will biennially evaluate the implementation of this measure and report the results to SANDAG.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

State law clearly defines the responsibility for implementing HOV facilities.

CALTRANS

Responsible for implementation of HOV freeway on-ramp by-pass lanes and HOV lanes on freeways and other state highways.

The Cities and the County

Responsible for implementation of HOV lanes on locally controlled streets and roads.

San Diego Association of Governments (SANDAG) and the Air Pollution Control District (APCD) Support role for implementing the HOV Transportation Control Measure as identified in the Criteria.

COSTS TO IMPLEMENTING AGENCY

Level 1 Implementation:

- o Existing freeway HOV lanes
- o HOV lanes on freeway on-ramps included in STIP

Level 2 Implementation:

o Total: \$112.3 million, average \$3.95 million per mile

Level 3 Implementation:

o Total: \$248.9 million, average \$3.69 million per mile

FUNDING

Existing Funding:

No funds are programmed or otherwise available for the construction of HOV lanes prior to the year 2000. TransNet and other local funds are not available.

CALTRANS has applied for demonstration funds for the Implementation Level 2 projects, I-5 north from I-805 to SR-78, and I-15 north, from SR-56 to SR-78.

Potential Funding without Legislation:

AB 2766 funds from increased vehicle registration fees. Regional Development Impact Fees, Federal Demonstration Project funds

Potential Funding with Legislation:

Legislation could be introduced to provide additional funding from increased vehicle registration and emission fees.

Discretionary:

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY

High. HOV facilities are in successful operation in numerous locations throughout the world.

RELIABILITY

High.

ENFORCEABILITY

Medium. Constant enforcement of vehicle occupancy is required if HOV lanes are to be an effective incentive for transit ridership and carpooling.

OTHER IMPACTS

Potential impacts include increased speeds and reduced congestion on freeways. In accordance with current State Policy, HOV lanes on freeways and other State highways can only be provided through the addition of new travel lanes. Since existing lanes cannot be reserved for the exclusive use of buses and carpools, the provision of HOV lanes requires the expansion of a roadway. This improves traffic flow for single occupant vehicles, by removing high occupancy vehicles from the existing general use lanes.

PUBLIC ACCEPTABILITY

Because HOV facilities are normally added to an existing facility, there is little opposition to their construction. In some regions, opposition to the lanes and by-pass facilities has developed because the free-flow HOV facilities are viewed as under-utilized. HOV lanes are effective in encouraging transit use and carpooling only when they offer travel-time savings over the adjacent

general use lanes. This savings is achieved because the lanes are operated in such a way that they are less utilized and therefore offer higher operating speeds.

The safety of concurrent flow HOV lanes is also an issue. Traffic in the HOV lane is travelling at significantly higher speed than those vehicles using the adjacent general use lanes. Studies by CALTRANS indicate that safety is somewhat improved with where new HOV lanes have been added, primarily because the lanes provide additional capacity on highly congested routes.

APCD CRITERIA

<u>Criteria</u>: "Alternative Transportation Mode Capacity Expansion, High Occupancy Vehicle Facilities"

1. <u>Criterion</u>: High Occupancy Vehicle lanes shall be given priority consideration in funding highway capacity expansion on existing highways.

<u>Response</u>: Based on experience in other regions, it is the general policy of CALTRANS to provide HOV lanes on freeways only where there are a total of six general purpose lanes in the facility. Given the current and anticipated demands for HOV lanes, SANDAG staff believes that this is a sound policy which is needed to assure public acceptability of the HOV concept.

With minor exceptions, the proposed freeway expansion is consistent with the APCD criteria and the CALTRANS practice. These exceptions are:

- o State Route 15 in Mid-City, where Caltrans is required to evaluate a design solution to accommodate HOV lanes;
- o State Routes 94 and 125 in La Mesa, where Caltrans is also required to evaluate a design solution to accommodate HOV lanes;
- o A short, isolated section of State Route 163 at Clairemont Mesa Boulevard, where HOV lanes would be of minimal value; and
- o Interstate 8 east of Magnolia in El Cajon.

All other expansion projects provide HOV lanes. See Implementation Strategies above; also Implementation Timing and Funding.

2. <u>Criterion</u>: Adequate provision shall be made for HOV lanes on new highways.

<u>Response</u>: With the exception of State Route 56, where existing right-of-way is severely constrained, all TransNet projects reserve right-of-way for future HOV lanes. HOV lanes are also preserved in State Route 125 (south) and State Route 905 on Otay Mesa. Because of low HOV demand, no reservation for HOV lanes on State Route 125 (north) is currently planned.

3. <u>Criterion</u>: A regional system of High Occupancy Vehicle Lanes shall be provided, when feasible, in all congested corridors, at least those identified in the Regional Transportation Plan, or where queuing onto local streets creates excessive congestion or safety problems.

<u>Response</u>: This criterion is consistent with the adopted 1990 Regional Transportation Plan. See the Implementation Strategies, above; also the 1990 Regional Transportation Plan, Highway and Transportation System Management Elements.

4. <u>Criterion</u>: The Regional High Occupancy Vehicle Facilities Plan shall include transit stops for the transfer of passengers between local transit and transit travelling in High Occupancy Vehicle lane where there is or is the potential for connecting local transit. Where there are

space constraints in the medians, it is not necessary to build the transit stops in the facility itself. Alternative designs for transit-only access should allow transit riders the added convenience and time savings associated with HOV use that might be otherwise unavailable without transit stops.

<u>Response</u>: The Regional High Occupancy Vehicle Facilities Plan, which is a sub-element of the Regional Transportation Plan, currently identifies corridors for HOV lanes and establishes relative priorities for the implementation of those facilities. The need for, effectiveness and practicality of on-line bus stops remains an issue. With SANDAG participation, Caltrans and MTDB are developing prototype on-freeway facilities and identifying potential sites for these facilities. Until the concept is further refined and demonstrated, it should not be included as a regional policy.

5. <u>Criterion</u>: High Occupancy Vehicle bypass lanes shall be provided at all metered freeway entrance ramps where economically feasible and consistent with public safety standards.

<u>Response</u>: This criterion is a restatement of a Regional Transportation Plan policy, (see TSM Policy 7, page 175). CALTRANS is the agency responsible for the HOV bypass lanes at freeway on-ramps. It is the policy of District 11 to provide such lanes where feasible. See Status, above.

6. <u>Criterion</u>: High Occupancy Vehicle lanes shall be provided as appropriate in congested activity centers to eliminate delay for transit and other high occupancy vehicles.

<u>Response</u>: The regional HOV lane system is designed to provide access to activity centers. To provide HOV lanes within such centers would require the use of existing streets. The first arterial street projects are included in the HOV lane program. In addition, the City of San Diego is selectively adding HOV lanes on streets leading to the freeways. See Status, above.

RELATED MEASURES:

Employer Trip Reduction Ordinance College/University Trip Reduction Ordinance Park and Ride Lots

REFERENCES

- o Statewide Study of Air Quality Benefits of Transportation Control Measures, Sierra Research, Inc., 1991.
- o 1990 Regional Transportation Plan, SANDAG, December 1990
- o High Occupancy Vehicle System Plan, District 11, CALTRANS, June 1989
- o HOV Systems Plans as Air Pollution Control Measures (draft), California Air Resources Board, December 1990

MEASURE TRANSPORTATION CAPACITY EXPANSION

TACTIC Park-and-Ride Facilities

DESCRIPTION

Park-and-ride facilities are automobile parking lots for the use of commuters and other motorists. They are provided to encourage and support the use of commuter or express transit and car/van pooling for a portion of longer trips, thus reducing the vehicle miles of travel in the region. Since park-and-ride facilities do not eliminate vehicle trips, they are most effective in outlying areas where trip lengths are longer. Feeder bus service is often not practical in these areas because of low land use intensities. This measure does not include implementation strategies for transitrelated park-and-ride facilities at transit centers as these are included in the Transit Improvements and Expansion Measure.

AIR QUALITY PURPOSE

From an air quality perspective, park-and-ride facilities are effective when they reduce vehicle miles of travel. They are most effective when they are located near access points to High Occupancy Vehicle (HOV) lanes or HOV ramp meter bypass lanes. These HOV facilities provide a travel time savings as an incentive for the use of car/van pooling.

RECOMMENDATION

Level 1: Encourage utilization of existing park-and-ride facilities. If additional State and/or Federal funds are available, implementation of Level 3, the development of 4,800 additional park-and-ride spaces is recommended.

TOTAL EMISSION REDUCTIONS AND COST EFFECTIVENESS

YEAR 200 MEASUR LEVEL	0 E: PARK AND RI TRAVEL REDUCED (%)		DE EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (% 87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (S4b)
	VMT	TRIPS	ROG	NOX	CO	ROG	NOX	CO	GOVT	OTHER	
1.	0.02	-	0.006	0.02	0.14	0.002	0.007	0.01	•	•	•
2.	0.04	•	0.013	0.04	0.21	0.005	0.01	0.01	1.19	•	30.76
3.	0.06	•	0.03	0.06	0.35	0.007	0.02	0.02	2.38	•	36.23

STATUS

There are 47 park-and-ride lots in the San Diego region, located along freeway corridors. These lots contain 3,230 spaces and have an average weekday occupancy of 46% Park-and-ride lots adjacent to freeways are developed by CALTRANS at an average cost per space of \$5,000.

IMPLEMENTATION STRATEGIES

CALTRANS is performing a Park-and-Ride Study to develop a comprehensive Park-and-Ride Plan and a specific implementation program. The Work Scope for the Park-and-Ride Study is included in the Appendix. That Work Scope and the resulting Park-and Ride Plan and implementation program are incorporated into this measure.

Level 1 Implementation

Level 1 implementation assumes a 95% utilization rate of the existing 3,230 spaces. This results in an additional 1,568 park-and-ride spaces used.

Level 2 Implementation

Level 2 implementation provides for the addition of 2,400 park-and-ride spaces, making a total of 4,130 more park-and-ride spaces than currently used in the region. A 95% utilization rate would result in 3,848 spaces occupied daily.

Level 3 Implementation

Level 3 implementation provides for an additional 2,400 park-and-ride spaces beyond level 2. This would result in a total of 6,430 spaces in the region; a 95% utilization rate would result in 6,109 spaces occupied on a daily basis.

Remote park-and-ride facilities are proposed primarily in the major travel corridors which will not contain rail transit facilities by the Year 2000. To avoid security problems, park-and-ride facilities should be located in highly visible areas, be of sufficient size to permit on-site security, and should be well lighted.

Each of these remote park-and-ride facilities would initially contain from 500 to 1,000 free spaces and would provide on-site security. Bicycle access and secure bicycle storage will be provided.

The additional park-and-ride spaces could be located adjacent to the following freeways and roads.

- o I-15 North City, south of Escondido
- o I-805 South Bay, in the vicinity of SR-54
- o Mission Gorge Road
- o I-5 along the North Coast
- o I-15, north of Escondido
- o SR-125, at Lemon Grove/Spring Valley

TARGETS TO DEMONSTRATE PROGRESS

- Level 1 Implementation Utilization of 95% of the existing 3,320 park-and-ride spaces
- Level 2 Implementation Utilization of 95% of 2,400 additional park-and-ride spaces
- Level 3 Implementation Utilization of 95% of 2,400 additional park-and-ride spaces beyond level 2

IMPLEMENTATION TIMING

Caltrans has the responsibility for constructing the park-and-ride facilities adjacent to the major freeways. Since the facilities are to be implemented at the same time as HOV lanes are opened, the timing of implementation is tied to the HOV facility TCM.

Level 1 implementation:

1991: These spaces are available now for utilization.

Level 2 implementation:

1995: These spaces will be available with the construction of adjacent HOV lanes.

Level 3 implementation:

2000: These spaces will be constructed as the need arises and as additional HOV and freeways are built.

DETERRENTS TO IMPLEMENTATION

There are no deterrents to implementation, pending funding and site availability. Vehicle theft has been a problem at certain park-and-ride facilities.

PERFORMANCE CRITERIA

Construction of 2400 spaces by 1995, 4,800 by 2000. Construction and operation of park-andride facilities at the same time as the opening of the HOV lanes and SR-125.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

CALTRANS is proposing to undertake a \$200,000 one-year, park-and-ride plan and program. A draft work scope is included in the appendix.

MONITORING & AUDIT PROCEDURES

CALTRANS and the other implementing agencies will annually survey the usage of the park- andride facilities within their jurisdiction and report the results to SANDAG.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

CALTRANS

Responsible for park-and-ride facilities in broadly defined freeway and state highway corridors.

County of San Diego

Responsible for park-and-ride facilities at Multi-modal Transportation Centers.

Land Use Agencies and Developers

Have responsibility to implement park-and-ride facilities through the development process.

San Diego Association of Governments (SANDAG) and the Air Pollution Control District (APCD) Support role for implementing and enforcing the Park-and-Ride Facilities transportation control measure, as identified in the Criteria.

COSTS TO IMPLEMENTING AGENCY

The estimated total capital cost of the Park-and-Ride Facility measure at Level 3 is \$24 million. This estimate assumes a cost of \$5,000 per space. The average annual operating cost for these facilities is estimated at \$62.50 per space. The total annualized cost for Level 3 is \$2.30 million.

FUNDING:

Existing:

CALTRANS has programmed \$3.2 million in the 1990 STIP for Park-and-Ride lots. These spaces, plus the 1730 currently vacant spaces in the existing CALTRANS lots are assumed for this level.

Potential without Legislation:

Park-and-Ride lots are constructed with highway funds. AB 2766 funds from increased vehicle registration fees.

Potential with Legislation:

Legislation could be introduced to provide additional funding from increased vehicle registration and emission fees.

Discretionary:

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

TECHNOLOGICAL FEASIBILITY:

High. Park-and-Ride lots are commonly used to promote ridesharing throughout the region and the country. RELIABILITY:

High.

ENFORCEABILITY:

Not Applicable.

OTHER IMPACTS:

Reduction of motor vehicle fuel use; potential congestion relief. Park-and-Ride facilities may cause localized CO impacts, traffic congestion and may have adverse visual impacts.

PUBLIC ACCEPTABILITY:

Moderate, properly located and designed park-and-ride facilities are generally acceptable to the public. The lots in operation today have various rates of use, and are troubled by security problems. This tactic proposes to overcome security problems by building larger facilities which can be effectively patrolled. Large facilities, because they would attract a large number of trips and have an adverse visual impact, may be opposed by the communities in which they are located.

APCD CRITERIA

Criteria: "Alternative Transportation Mode Capacity Expansion, Park-and-Ride Facilities"

For purposes of air quality improvements, park-and-ride facilities have a lower priority than providing a convenient feeder transit system. Wherever feasible, convenient feeder transit to line haul transit shall be provided and promoted, rather than providing park- and-ride lots. However, where park-and-ride facilities are necessary, the following design criteria (below) shall apply.

<u>Response</u>: This item is covered in the adopted 1990 Regional Transportation Plan, Highway Element.

1. <u>Criterion</u>: Park-and-ride locations shall serve all trip origin areas that cannot be feasibly served by feeder transit.

<u>Response</u>: The regional park-and-ride facilities identified in this TCM, are targeted for lower intensity, residential areas; areas which are difficult to serve with transit.

2. <u>Criterion</u>: Park-and-ride facilities shall be located at or near other trip generation activities or services such as grocery stores, banks, or day care to minimize or eliminate additional motor vehicle trips to these activities or services.

<u>Response</u>: Specific locations for the regional facilities are not proposed, and would require additional study. This criteria should be used as one of the factors to evaluate potential sites.

3. <u>Criterion</u>: Park-and-ride facilities shall be located to intercept trips as close to the origin as possible.

<u>Response</u>: The general locations recommended for the regional facilities are located at the edge of lower intensity areas, adjacent to freeway access points. This recommendation meets the intent of this criteria.

4. <u>Criterion</u>: Park-and-ride facilities shall be available at regional transit centers in trip origin areas.

<u>Response</u>: Park-and-ride facilities are normally included in the design of transit centers in trip origin areas. Transit centers are included in the Transit TCM.

5. <u>Criterion</u>: Park-and-ride lots shall have adequate spaces to meet demand.

<u>Response</u>: Currently, park-and-ride facilities operate at less than 50% occupancy. A 95% occupancy factor has been used for this TCM.

6. <u>Criterion</u>: Park-and-ride facilities shall target longer trips along corridors with High Occupancy Vehicle Lanes.

<u>Response</u>: The proposed regional facilities are coordinated with the access points to HOV Lanes. See the HOV Lane measure; also, the adopted 1990 Regional Transportation Plan, Highway Element, Policy 11.

7. <u>Criterion</u>: Park-and-ride facilities shall be equipped with secure bicycle storage to minimize vehicle trips.

<u>Response</u>: Bicycle storage is normally included in the design of park-and-ride facilities. This criteria should be used in the evaluation of specific site locations and facility design.

RELATE MEASURES:

Regional Trip Reduction Program College/University Trip Reduction Program Transit Expansion Program High Occupancy Vehicle Lanes

REFERENCES:

- o Statewide Study of the Air Quality Benefits of Transportation Control Measures, Sierra Research, Inc., 1991.
- o 1990 Regional Transportation Plan, SANDAG, San Diego 1991.

MEASURE TRANSPORTATION CAPACITY EXPANSION

TACTIC Bicycle Facilities

DESCRIPTION

Bicycling as a transportation control measure replaces the auto for shorter trips. Bicycling activities include the construction or expansion of bikeways, secure parking or storage facilities, bike racks or space on transit, and locker and shower facilities for cyclists.

AIR QUALITY PURPOSE

The air quality benefits of the bicycle facilities measure is a reduction in the number of vehicle trips, thus reducing emissions. The purpose of the bicycle facilities measure is to replace the use of the auto with bicycling for commute and other purpose shorter trips.

RECOMMENDATION

Level 1: Construction of 25 miles of bikeways per year and other actions to promote bicycle usage. If additional state and/or federal funding is available for this purpose, Level 2 implementation is recommended.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

YEAR 2000 MEASURE: BICYCLE FACILITIES											
LEVEL	TRAVEL REDUCED (%)		EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (%87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (\$/lb)
	VMT TRIPS		ROG	NOX	co	ROG	NOX	СО	GOVT	OTHER	
1.	0.05	0.17	0.07	0.07	0.71	0.02	0.05	0.06	•	-	-
2.	0.09	0.33	0.13	0.13	1.45	0.05	0.05	0.10	3.9	•	20.55
3.	0.14	0.49	0.20	0.20	2.16	0.07	0.07	0.15	5.5	•	18.84

STATUS

By January 1, 1991 in the San Diego region there were 64 miles of bike paths, 334 miles of bike lanes and 133 miles of bike routes. The last five years have seen an annual increase of 25 miles of bikeways.

About \$1 million per year was allocated from Transportation Development Act (TDA) funds for bicycle facilities. With the TransNet funds available since 1988, in excess of \$2 million a year now is allocated to major non-motorized programs and projects in the San Diego region.

The SANDAG Bicycle Facilities Committee annually recommends to the SANDAG Board of Directors a slate of non-motorized projects funded from Transportation Development Act and TransNet sources. Claims for these funds are due March 1 of each year for the following fiscal year. The procedures used in developing a priority list of projects are included in the Transportation Development Act Claim Guidelines listed below.

Bicycle and Pedestrian Facilities

All claims for bicycle and pedestrian facilities must be consistent with SANDAG's adopted nonmotorized plans. Monies for the construction of such facilities shall be allocated by SANDAG pursuant to a priority list of such facilities prepared and adopted by SANDAG for the entire San Diego region.

Two percent of TDA funds are available for bicycle and pedestrian facilities claims for eligible projects as specified in 99233.3 and 99234. Claims can be filed by any city or county using the attached application form and the annual TDA claim form on page 36. All claims will be prioritized annually by SANDAG consistent with the following requirements and criteria (99401).

Procedures for Development of a Priority List of Bicycle and Pedestrian Projects

- 1. Projects must meet the following requirements before being subject to priority review:
 - a. The project must be included in an adopted regional, county, city or community plan.
 - b. If the project abuts other jurisdictions, it must be shown on the adopted plans of the adjacent jurisdictions, or a letter must be submitted from the abutting jurisdiction showing that cooperative efforts are underway.
 - c. Other sources of funding for cooperative projects must be identified.
 - d. Bicycle projects must follow CALTRANS Bike Route Standards from the CALTRANS Highway Design Manual, Section 7-1000; Bikeway Planning and Design Standards.
 - e. Project applications must contain a location map, project limits and appropriate cross sections in addition to statements answering criteria under #2.
- 2. Projects meeting requirement #1 then will be subject to the following criteria in decreasing order of importance:
 - a. Elimination of problem areas on routes which would provide relatively safe travel use, given the character of the users and route conditions. These must be indicated by the applicant.

- b. Service to high use activity centers (economic, educational, cultural, recreational) including access to other transportation systems (i.e., park-and-ride facilities). In the absence of bicycle ADT or pedestrian count data, it will be assumed that higher density urban areas generally have higher demand.
- c. Connection to and continuity of longer routes provided by other means (e.g., State Department of Parks and Recreation) or other jurisdictions to improve regional continuity.
- d. Identification of local effort in providing pedestrian and bicycle routes (either through funding or local participation such as assistance in door-to-door surveys).
- e. Development in conjunction with adopted "scenic highways" route.

Note: Special circumstances will be examined on a case-by-case basis.

- 3. Procedure proposed for review:
 - a. Meetings will be held by the Bicycle Facilities Committee made up of one individual and at least one alternate from the staff of each member agency of SANDAG. These individuals will be designated by the jurisdiction represented. In addition, the committee includes representation form three bicycle user groups, the Port district, and CALTRANS.
 - b. Projects submitted must be authorized and approved by the Council or Board of the submitting agency. SANDAG staff will screen projects to determine that the requirements listed under #1 are satisfied. The Bicycle Facilities Committee will evaluate the proposed projects for the next fiscal year.
 - c. In the preparation of the priority listing for the fiscal year, staff will coordinate with the Bicycle Facilities Committee. Changes suggested by these groups will be reviewed and modifications considered. The final recommendations will be presented to the SANDAG Board of Directors, noting any differences suggested.
 - d. Project proposal applications will be accepted annually until March 1st for review and presentation to the Board for adoption by June.
 - e. Prior to the consideration of projects for the next fiscal year, the Bicycle Facilities Committee will review the status of each previously approved project which remains uncompleted after a period of two years. Based upon this review, the Committee may the recommend a redistribution of these previously committed funds to other projects as part of the development of the priority list of projects for the following fiscal year.

Pedestrian Facilities

Developing pedestrian facilities as well as bicycle facilities is the responsibility of the cities and the County of San Diego. Funding for pedestrian facilities is available through the Transportation Development Act. A number of cities have completed pedestrian needs studies and sidewalk improvement studies funded using Transportation Development Act monies. Design of pedestrian facilities is often combined into the design of bicycle facilities and funded as a unified project. The Bicycle Facilities Committee often considers issues concerning bicycle/pedestrian/vehicle conflict. All bicycle projects approved for Transportation Development Act and TransNet funding have to meet Bikeway Planning and Design Standards produced by the California Department of Transportation. Generally, wider bike paths are recommended when high pedestrian use is expected.

TransNet Highway Program Bicycle Facilities

It is SANDAG policy that new highway facilities developed with TransNet revenues shall include provisions for bicycle use. The TransNet Transportation Improvement Program Ordinance and Expenditure in this measure, which also are identified as bikeway facilities in the Regional Transportation Plan, shall be required to include provisions for bicycle use."

The following TransNet funded highway projects have been identified as being part of the Regional Bikeway System. Designs for the bikeway portions of these projects should be undertaken in conjunction with the design of the roadway projects and CALTRANS should work with the local agencies and SANDAG to complete the projects in a timely manner.

<u>Route 52 - Santo Road to Mast Boulevard</u>: Provide Class 2 bike lanes. Provide adequate right-ofway for Class 1 bike path. Design Oak Canyon and Spring Canyon bridges to facilitate bridge widening for bike path.

Route 56 - Interstate 5 to Interstate 15: Provide 10' two-way bikeway adjacent to state facility.

Route 56 - Espola Road to SR 67: Provide bike lanes adjacent to roadway.

<u>Route 76 - Interstate 5 to Foussat Road (Not a TransNet Project)</u>: Provide 10" two-way bikeway adjacent to state facility.

Route 76 - Foussat Road to Interstate 15: Provide bike lanes adjacent to roadway.

Route 125 - Navajo Road to Grossmont College Drive: Concept to be developed by CALTRANS and the City of El Cajon.

Route 54 - Interstate 805 to SR125: No recommendation at this time. (Proposed alternate routes are adequate)

Route 125 - SR54 to SR94: Provide bike lanes on Sweetwater Road where new construction modifies roadway.

In addition to bicycle facilities, the bus bicycle rack program was begun in 1976. This provides racks holding up to five bicycles on the following services:

- o North County Transit District: bike racks on buses on two routes serving all major cities and most major traffic generators.
- San Diego Transit: bike racks on buses on three routes serving the beach areas and two universities.
- o Service from Center City through Coronado to the Palm Avenue Trolley Station.
- o San Diego Trolley: all trolleys, except during the commute hours of 6 a.m. to 9 a.m. and 3 p.m. to 6 p.m.

More than 700 enclosed bicycle lockers are available at employment sites, transit stations, and park and ride lots throughout the region.

IMPLEMENTATION STRATEGIES

Level 1 Implementation

Bikeways

- o Annually construct approximately 25 miles of new bikeways designed to provide safe accessible facilities.
- o Require bikeways designated on community and general plans in and adjacent to new development to be built as a condition of development. The bikeways shall provide convenient, attractive, and secure travel.
- o Bikeways shall be designated on the regional bicycling map and identified by signs.

Bicycle Parking

- o Require bicycle parking in new development where access for bicycles shall be as high as that for motor vehicles.
- o Provide secure bicycle storage at transportation centers and light and commuter rail transit stations.

Bike Storage on Transit

o Equip transit vehicles serving major inter-community routes with bike racks.

Level 2 Implementation

Level 1 implementation plus these additional actions:

Bikeways

- o Annually construct 50 miles of new bikeways designed to provide safe accessible facilities.
- o Bikeways shall provide access to transportation centers and to routes served by transit vehicles which have bike storage.

Showers and Lockers for Bicyclists

o Shower and locker facilities should be provided for employees in new buildings.

Direct Subsidy to Bicycle Commuters

o Encourage employers to provide a direct subsidy to all bicycle commuters. This subsidy can be administered through the Transportation Demand Management Program.

Level 3 Implementation

Implementation Levels 1 and 2, and expanding two actions:

Bikeways

o Annually construct approximately 75 miles of new bikeways designed to provide safe accessible facilities.

Showers and Lockers for Bicyclists

o Require the provision of shower and locker facilities for employees in new and existing buildings.

TARGETS TO DEMONSTRATE PROGRESS

The progress of the program can be measured as part of the Transportation Demand Management Program and in the biannual Regional Transportation Improvement Program.

IMPLEMENTATION TIMING

Timing for Level 2 implementation is as follows.

Bikeways

o Construction of approximately 50 miles of new bikeways each year, beginning FY 1992.

- Require designated bikeways to be built as a condition of development with an emphasis on 0 bike path facilities by 1994.
- Bikeways shall provide access to existing transportation facilities by 1994 and to future 0 facilities as these are completed.
- Bikeways shall be designated on the Regional Bicycling Map, produced by Commuter Computer, by 1993 and signs provided on new bikeways as they are opened. Bikeways shall be developed in conjunction with all new highway facilities developed with 0
- 0 TransNet funds.

Bicycle Parking

- o Require bicycle parking in new development beginning in 1991 and for existing development by 1995.
- o Secure bike storage shall be provided at transportation centers as they are opened.

Showers and Lockers for Bicyclists

o Shower and locker facilities should be provided for employees in new buildings beginning 1991.

Bike Storage on Transit

o Equip major inter-community routes with bike racks or other storage facilities by 1994.

Direct Subsidy to Bicycle Commuters

o Through the Employment Trip Reduction Ordinance, encourage employers to provide a direct subsidy to all bicycle commuters, as provided in the Transportation Demand Management program, beginning 1991.

DETERRENTS TO IMPLEMENTATION

Pending availability of funding, there are no deterrents to implementation. Bicycle facilities are reviewed in the planning stages by the regional Bicycle Facilities Subcommittee of the SANDAG Regional Transportation Advisory Committee.

PERFORMANCE CRITERIA

The performance criteria are:

- o Construction and implementation of the bicycle facilities as listed in Implementation Level 2, in the time frame indicated.
- o Identification of sources and acquisition of funding to provide the timely implementation.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

Future bicycle facilities tactics will be developed and implementation programs established by the regional Bicycle Facilities Subcommittee of SANDAG, in accordance with the policies of SANDAG and pending the availability of funding.

MONITORING & AUDIT PROCEDURES

The SANDAG Regional Transportation Advisory Committee will annually review the recommendations of the Bicycle Facilities Subcommittee and the Regional Transportation Improvement Program for the implementation of the bicycle facilities measure. The bicycle facilities program shall be included in the Regional Transportation Plan.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

The following agencies are responsible for the implementation of the bicycle facilities measure.

CALTRANS

Responsible for planning and implementation of bicycle facilities on state highways.

SANDAG

Responsible for coordination of planning activities and the allocation of TDA and TransNet funds to bicycle facility projects.

Cities and the County

Responsible for identification of potential bicycling projects and planning coordination with other bike facility projects through SANDAG.

Transit Operators

Responsible for the continuation and maintenance of the bus bike rack program and the use of the trolley by cyclists.

San Diego Port District

The Criteria identifies a primary role for the San Diego Port District for implementation and enforcement responsibilities for this measure.

Air Pollution Control District

The Criteria identifies a support role for implementing this measure for the APCD.

COSTS TO IMPLEMENTING AGENCY

The annual capital costs for a Level 1 program will average \$2 -\$3 million per year by the year 2000. Levels 2 and 3 annual costs will be \$3.9 million and \$5.2 million respectively.

Bikeways

The per-mile cost of a bike path averages \$200,000; the cost of a bike lane averages \$50,000; and the cost of a bike route averages \$5,000. These costs are borne by the jurisdiction in which the facility is located. This cost includes the cost of signs.

Bicycle Parking

The cost of secure bicycle lockers at transportation centers and at buildings and other locations is approximately \$1,000 for a container for four bicycles. This cost is borne by the jurisdiction in which the facility is located or the developer of the facility.

Showers and Lockers for Bicyclists

The cost of showers and lockers for bicyclists is borne at the work site as new or remodeled facilities. The cost per shower is estimated at \$5,000 each in a new facility when installed at the time of building construction.

Bike Storage on Transit

The cost of installing a rack on an urban bus is estimated at \$1,500 each. Storage space on commuter and light rail may be designated luggage space at no additional cost.

Direct Subsidy to Bicycle Commuters

The cost to the employer of a direct subsidy to employees who commute by bicycle is estimated to be equivalent to that of the rideshare allowance offered by employers under the Employer Trip Reduction Program.

FUNDING

Existing

Existing funding sources include Transportation Development Act funds and TransNet funds. These two sources contribute about \$2.5 million per year for the existing region-wide bicycle program. SANDAG has committed funding from the Coastal Conservancy for \$800,000 for various portions of the Bay Route Bikeway.

Potential without Legislation

There are additional existing funding sources such as Coastal Conservancy and the recently passed Propositions 108, 111, and 116. Guidelines for these propositions are yet to be prepared.

AB 2766 funds from increased vehicle registration fees.

Potential with Legislation

Legislation could be introduced to provide additional funding from increased vehicle registration, emission fees or other sources.

Discretionary

TransNet funds will be used to provide the bicycle facilities with the TransNet-funded new highway facilities.

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

PARTICIPATION

In 1990 there were approximately 230,000 trips per day by persons riding bicycles. The Regional Transportation Plan calls for this number of trips to be increased by nearly 50% to 500,000 trips per day by the year 2010. This would increase the mode split (that is, the percent of all trips) for bicycles from 2.5% at present to 3.5% in 2010.

TECHNOLOGICAL FEASIBILITY

High. Bicycle facilities have been developed in the San Diego region for 15 years. The technological feasibility of this program is very high. There is no new technology proposed as part of this tactic. All parts of this program have been proven in Europe and the United States.

RELIABILITY

High. Automobile trips could decrease by around 1% with the implementation of this tactic. Vehicle miles of travel would decrease by about 0.5%. There will be an increase in transit ridership as more cyclists use the improved bike to transit mode.

ENFORCEABILITY

Moderate. Sufficient incentives should mitigate the enforcement of this tactic. As part of the Transportation Demand Management Program, this mode will qualify as an alternative mode to the automobile for those people who cannot or do not wish to rideshare.

OTHER IMPACTS

There will be many positive impacts of this tactic. Capacity on the roadway system will increase with the widespread use of separate bikeway facilities. The population will be more fit and better adjusted psychologically with the addition of moderate exercise. The energy savings should be substantial and proportionate to the decrease in auto trips and vehicle miles of travel.

PUBLIC ACCEPTABILITY

Low to Moderate. This tactic would require members of the public to change significantly their mode of travel and lifestyle. The addition of lockers, showers, and employer incentives should mitigate the change for some. Maybe more acceptable for non-commute trips.

APCD CRITERIA

1. <u>Criterion</u>: Bicycle and pedestrian facilities represent two distinct forms of non-motorized transportation. Recognizing that the safety and access of cyclists and pedestrians may be jeopardized by combined facility use, bicycle facilities shall be designed for bicycle use and pedestrian facilities for pedestrian use to the extent necessary to provide safe, accessible facilities for each.

<u>Response</u>: Design of bicycle facilities is governed by the State of California Streets and Highway Code and use (by cyclists and/or pedestrians) is governed by the State of California Vehicle Code. The State of California Highway Design Manual, Section 1000, governs the design of bicycle facilities, including striping bike lanes. The state law require these regulations be followed by the local jurisdictions in the development of bicycle facilities. The 1990 Regional Transportation Plan, Bicycle Element, reflects these codes and design guidelines. Pedestrian facilities are included in the land use measure.

2. <u>Criterion</u>: The priority for pedestrian and bicycle access to facilities shall be at least as high as motor vehicle access.

<u>Response</u>: See the Implementation Strategies, above. This criterion is included in the adopted 1990 Regional Transportation Plan, Transit Element, Policy 7c.

3. <u>Criterion</u>: Pedestrian and bicycle circulation patterns and paths providing convenient, attractive, secure pedestrian and bicycle travel shall have priority in development design.

<u>Response</u>: See the Implementation Strategies, above.

4. <u>Criterion</u>: The Bicycle Element of the Regional Transportation Plan shall be implemented as expeditiously as feasible.

<u>Response</u>: This is the policy of the San Diego Association of Governments, as evidenced in its adoption of the 1990 Regional Transportation Plan.

5. <u>Criterion</u>: Bicycling shall be enhanced through improved bicycle lane maps, improved bicycle destination signage, . . .

<u>Response</u>: See the Implementation Strategies, above.

(<u>Criterion</u>:)... improved intersections accommodating right turn only traffic, and separate bicycle paths at strategic locations.

<u>Response</u>: These items are covered by the State of California Vehicle Code, Street and Highways Code, CALTRANS Highway Design Manual, and the 1990 Regional Transportation Plan. The Air District may propose, in its Public Education element, a program of expanded education for (a) cyclists to improve their operation of bicycles in a more safe manner and (b) motorists regarding the rights of cyclists.

6. <u>Criterion</u>: Pedestrian and bicycle access shall be designed to provide quick and convenient access to transit nodes.

<u>Response</u>: See the Implementation Strategies, above. See also the Transit transportation control measure.

7. <u>Criterion</u>: Secure bicycle storage at transit stops and on transit vehicles shall be expanded to encourage bicycle-transit trips.

<u>Response</u>: See the Implementation Strategies, above. This criterion is covered in the adopted 1990 Regional Transportation Plan, Bicycle Element.

RELATED MEASURES

Regional Trip Reduction Program College/University Trip Reduction Ordinance Transit Improvement Measure Land Use Measures

REFERENCES

- o Statewide Study of the Air Quality Benefits of Transportation Control Measures, Sierra Research, Inc., 1991
- o 1990 Regional Transportation Plan, SANDAG, 1991 State of California, Streets and Highway Code, Section 2370 et seq.
- o State of California, Vehicle Code, Sections 21200-21211, 21717, and 21966.
- o State of California, Department of Transportation, Highway Design Manual, Sacramento, 1990.

MEASURE TRANSPORTATION SYSTEM MANAGEMENT

TACTICTraffic Flow Improvements

DESCRIPTION

Traffic Flow Improvements include the coordination and optimization of traffic signals and computerized signal control to increase traffic flow and reduce emissions caused by motor vehicle stops and starts.

AIR QUALITY PURPOSE

Traffic flow improvements and traffic signal coordination in particular historically have been shown to provide major benefits in the areas of air quality and energy. Most of the data showing these improvements has been developed using before and after studies on a small grid system or linear arterial system. The results of these studies have shown in the neighborhood of a ten percent reduction in hydrocarbon emissions as well as an improvement in fuel economy.

Implementation of this program will increase average arterial vehicle speed, reduce idling delay, and alter the accel-decel characteristics of vehicles operating within the region. This increase in average vehicle speed will cause a corresponding decrease in hydrocarbon (ROG) and carbon monoxide (CO) emissions. The decrease in emissions will begin immediately upon implementation of the program.

RECOMMENDATION

Level 2 Implementation: Construction of 3 additional traffic signal control facilities and connection of 1,000 additional traffic signals.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

YEAR 2000 MEASURE: TRAFFIC FLOW IMPROVEMENTS												
LEVEL	TRAVEL REDUCED (%)		EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (%87)			ANNUALIZED COST (\$ millions)		COST EFFECT- IVENESS (ROG + NOX) (\$/(b)	
	VMT TRIPS		ROG	NOX	СО	ROG	NOX	<u></u>	GOVT	OTHER		
1.	•	•	0.29	0.29	6.40	0.10	0.10	0.46	•	•	-	
2.	•	•	0.58	0.58	12.8	0.20	0.20	0.90	3.28	•	3.9	

STATUS

The Traffic Flow Improvement Tactic for the Regional Air Quality Plan proposes a regionwide traffic signal coordination program to provide optimization for all traffic signals within the County of San Diego. Currently, about 900 of the region's 2,000 signalized intersections have been interconnected and optimized as part of the State of California Fuel Efficient Traffic Signal Improvement Program (FETSIM). In addition, approximately 10% of the region's signalized intersections.

IMPLEMENTATION STRATEGIES

Level 1 Implementation

Interconnection and Optimization

With existing funding sources it is expected that about 1800 of the anticipated 2,500 signalized intersections by the year 2000 will be interconnected and optimized under the FETSIM program or through equivalent efforts.

Computerization of Traffic Signals

Currently there are about 200 signals operating in a computerized, interconnected mode. Existing funding sources would allow the City of San Diego to computer interconnect about 1,000 signals. The Cities of Carlsbad, Chula Vista and Poway have similar programs and should be able to make substantial progress by the year 2000 using existing funding sources. It is estimated that approximately 1800 signals will be computerized and interconnected by the year 2000.

Level 2 Implementation

Level 2 implementation would result in the necessary upgrading and computer optimization of all the estimated 2,500 signalized intersections by 2000. It would include computer control facilities where necessary and periodic re-optimization of the signal systems.

TARGETS TO DEMONSTRATE PROGRESS

Level 1 implementation will be documented in the Regional Transportation Plan. For Level 2, targets will be as follows.

Control Facilities

Construction of three additional traffic control facilities so that four traffic control facilities in the San Diego region are in operation by 1997.

Computerization of Traffic Signals

Acquisition of traffic signal controllers and the interconnection of an additional 1,000 to achieve a total of 2,500 interconnected traffic signals in the region.

IMPLEMENTATION TIMING

Level 1 Implementation will have no new control facilities but will have an additional 1,200 signals interconnected by the year 2000.

Level 2 implementation will have 3 additional control facilities and additional traffic signal equipment allowing the interconnection of 2,500 signals by the year 2000.

As noted above, construction of the computer control facilities, the wiring, and construction of the communications systems can be done concurrently. The interconnection of the signals can be completed with the control facilities.

DETERRENTS TO IMPLEMENTATION

There are no technical deterrents to implementation of this tactic. The transportation system management measure can be implemented as funding becomes available.

PERFORMANCE CRITERIA

Performance criteria for the successful implementation of this measure are as follows.

- o Acquisition of funding by CALTRANS, the cities and the County.
- o The completion of the facilities construction by 1997 and the interconnection of the signals by 2000.

FUTURE TACTIC DEVELOPMENT & IMPLEMENTATION

CALTRANS, the cities, and the County will evaluate biannually the need for additional interconnection of signals and if appropriate, the identified need will be included in the Regional Transportation Plan.

MONITORING & AUDIT PROCEDURES

CALTRANS, the cities, and the County will biannually review and evaluate the implementation of this measure and report the progress to SANDAG. The evaluation will determine if the planned 10% increase in speed on the arterials and other roadways on which the signals operate on the computerized system is being achieved.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

CALTRANS

Responsible for signalization on state highways, including those in the urban areas.

Cities and the County

Responsible for signalization on streets and roads within their respective areas of jurisdiction.

COSTS TO IMPLEMENTING AGENCIES

The following are estimated costs of implementing Level 2. These costs will be refined through a detailed implementation study to be conducted during FY 1993.

Signal Upgrades (Mast arms, detectors, etc. for one-half of the 1,250 intersections)

\$5,000 each x 650 intersections= \$3.12 M

Upgrade Controllers (Type 170)

\$10,000 each x 300 intersections= \$3.00 M

Optimization Cost (FETSIM)

\$2,000 each x 1,250 intersections= \$2.50 M

Total Cost Through The Year 2000= \$8.62 M

Annual Cost Through 2000= \$1.08 M

Annual Cost of FETSIM Maintenance (at \$500 per intersection per year)

\$500/intersection x 2,500 intersections= \$1.25 M

Annual Cost of Computer Control Facilities= \$0.87 M

Annual Cost of Planning and Inventory= \$0.08 M

TOTAL ANNUAL COST= \$3.28 M

FUNDING

Possible sources of funding for these additional costs include vehicle registration fees, regional development fees, State of California Fuel Efficient Traffic Signal Improvement Program (FETSIM) funds, TransNet funds, and Federal and State road funds.

Existing

Existing funding for this program is the State of California Fuel Efficient Traffic Signal Improvement Program (FETSIM).

Potential without Legislation

AB 2766 funds from increased vehicle registration fees. Potential sources of funding include Development Impact Fees (DIF), TransNet funds allocated to this program by the cities and the County, and federal and state road funds.

Potential with Legislation

Legislation may be introduced to provide additional funds through increased vehicle registration and emission fees.

Discretionary

The Intermodal Surface Transportation Efficiency Act (ISTEA) provides transportation funding for transit and other transportation projects, Congestion Management and Air Quality (CMAQ) funds for transportation control measures, and the flexibility to use highway funds for transit projects and Transportation Control Measures. Every effort must be made to fund measures in the Transportation Control Measure Plan at the optimum level and that such funding receive the highest priority when allocating ISTEA funds.

PARTICIPATION

The transportation system management measure proposes the interconnection of 2,500 traffic signals on arterials, streets, and roads throughout the region. This computerization of the signals should increase speed an average of 10%, reducing pollutants resulting from traffic delay.

TECHNOLOGICAL FEASIBILITY

The technological feasibility of this program has been proven a number of times through the State of California Fuel Efficient Traffic Signal Improvement (FETSIM) Program. Before and after

studies as part of this program have shown that a 10% reduction in emissions is attained when a project is completed. The technological feasibility of this program is very high.

RELIABILITY

High. The existing computerized and linked traffic signals have proven to be reliable. The technology is readily available.

ENFORCEABILITY

The optimization of the signals will be checked on a periodic basis and adjustments will be made as conditions change. Under the program, an audit will have to be done to ensure that all cities are providing their fare share of the costs of the program. There will be no public enforcement required. The enforceability of this tactic will be high.

OTHER IMPACTS

Average vehicle speed will be increased by approximately 10% with a corresponding reduction in emissions. Vehicle trips will not be changed by this tactic but vehicle miles of travel may be reduced because of less out of direction travel.

There will be many other positive impacts of this tactic. The energy required to travel on an average arterial will be reduced 10%. Travel time will be reduced an average of 10% on the arterial segment of the roadway system. Safety will improve with less full stops required and fewer people running red lights. There will be some financial savings on gasoline in the private sector. Since the system will be monitored as part of the computer interconnect, response time will be reduced for signal malfunction and incidence response. One major impact of this tactic is that the emission reduction of this program will take place during times of the day when emissions are typically their highest.

PUBLIC ACCEPTABILITY

This tactic provides a situation where the public will not be required to take any specific action. The benefits of smoother traffic flow will improve safety and decrease travel time as well as decrease emissions. The public acceptability of this program will be very high.

APCD CRITERIA

Criteria: "Transportation System Management"

"Traffic Flow Improvements"

1. <u>Criterion</u>: Any measure to improve the flow of traffic shall not undermine the safety of cyclists or pedestrians.

<u>Response</u>: This criterion is covered by the adopted 1990 Regional Transportation Plan, Highway Element, Policy 13. See also the references to the California Streets and Highway Code and the Vehicle Code in the Bicycle Facilities Measure. See also the Manual on Uniform Traffic Control Devices which governs the purposes, use, and design of traffic signals for motor vehicles, bicyclists, and pedestrians.

2. <u>Criterion</u>: Advanced computer-based traffic signal control systems shall be implemented to minimize travel time, stops and delay on the urban highway network.

<u>Response</u>: The recommended traffic flow measure supports this criterion. See the Level 2 Implementation strategies above.

3. <u>Criterion</u>: First priority shall be given to transit vehicles. On streets with bus frequency of 15 minutes or less, signal timing should favor short cycles compatible with pedestrian traffic.

<u>Response</u>: Signal systems should be designed and operated to accommodate motor vehicle and pedestrian movement in an optimal manner. However, some localities are experimenting with transit override of traffic signals. Results of the demonstration will be monitored by traffic engineers.

4. <u>Criterion</u>: Replacing stop signs with optimized signals shall have a high priority.

<u>Response</u>: There is no definitive evidence that stop signs are more detrimental to air quality than traffic signals. In addition, replacement of stop signs with optimized signals is under the authority of the jurisdiction responsible for the particular intersection. The Manual on Uniform Traffic Control Devices established the "warrants" which are used by these local jurisdictions to determine whether a particular intersection merits (or warrants) a traffic control device and the type. Not all intersections with stop signs merit (or warrant) signals under the rules of the Manual.

5. <u>Criterion</u>: Traffic controls along all regional arterials identified in the Regional Transportation Plan shall be optimized to minimize stops and delay and give priority to regional travel.

<u>Response</u>: See the Implementation Strategy for Level 2 above. This criterion is covered in the adopted 1990 Regional Transportation Plan, Highway Element, Action 13.

6. <u>Criterion</u>: Traffic Signals in all major local and regional activity centers shall be optimized to minimize stops and delay.

<u>Response</u>: See the Implementation Strategy for Level 2, above. This criterion is covered, also, in the adopted 1990 Regional Transportation Plan, Highway Element, Action 13.

7. <u>Criterion</u>: Traffic signals at the street end of freeway on and off ramps shall be coordinated and integrated with the surrounding city street signals.

<u>Response</u>: Where such traffic signals are under the control of the local jurisdiction, they will be coordinated with the surrounding street signals as the measure is implemented under Level 2.

Criteria: "Ramp Metering"

<u>Criterion</u>: The ramp metering program in the Regional Transportation Plan shall be implemented as rapidly as feasible unless research indicates ramp metering causes a net emission increase.

<u>Response</u>: This criterion is covered in the adopted 1990 Regional Transportation Plan, Transportation System Management Element, Policy 6.

RELATED MEASURES

Employment Trip Reduction Ordinance Transit Improvements and Expansion

High Occupancy Vehicle Lanes (Action 3)

REFERENCES

- o Statewide Study of the Air Quality Benefits of Transportation Control Measures, Sierra Research, Inc., Sacramento, CA, 1991.
- o Manual on Uniform Traffic Control Devices, U.S. Department of Transportation, Federal Highway Administration, Washington, DC, 1988.
- o 1990 Regional Transportation Plan, SANDAG, 1991.

MEASURE INDIRECT SOURCE CONTROL

TACTIC Indirect Source Control Program

DESCRIPTION

The purpose of this measure is to reduce emissions associated with motor vehicle access to new or existing indirect sources. An indirect source is defined by the California Air Resources Board as follows: "An indirect source is any facility, building, structure or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant for which there is a state ambient air quality standard. Examples of indirect sources are employment sites, shopping centers, schools, sports facilities, housing developments, airports, commercial or industrial development, and parking lots and garages."

Under the California Clean Air Act, the authority given to the Air Pollution Control District (APCD) to control indirect sources does not infringe on the existing authority of the Cities and the County to plan or control land use and it does not transfer or provide new authority of such land use to the district.

AIR QUALITY PURPOSE

The purpose of the Indirect Source Control Measure is to reduce emissions from motor vehicles associated with land uses identified as indirect sources. The controls will employ transportation control measures and land use measures to attain the air quality goals.

RECOMMENDATION

Level 2 Implementation: Prepare and consolidate policies and design requirements for new development for consideration by local agencies.

TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS

The total emissions reductions and cost effectiveness of this measure have not been modeled by SANDAG and cannot be estimated with confidence at this time.

STATUS

The Air Pollution Control District (APCD) has regulations to control emissions from stationary sources, such as power plants. The California Clean Air Act authorizes the APCD to regulate emissions from indirect sources, such as shopping centers.

The Act requires that the air district, in its plan, make provisions for the development of indirect source control programs.
IMPLEMENTATION STRATEGIES

To respond to the Clean Air Act, the Cities and the County in this region will prepare air quality programs or elements for their respective general plans. These additions to local general plans are important because they represent the integration of air quality considerations with development policies and requirements. The general plan program/elements will identify policies and design requirements for new development that will improve accessibility for pedestrians, transit, and bicycles. These policies and design criteria should make it as least as easy to travel by walking or other modes as it is to travel by car.

The Growth Management Technical Committee will be working with the air district to develop and recommend a common set of development design policies later this year.

Level 1 Implementation

Presently, the Air Pollution Control District, SANDAG, and other governmental and private agencies review environmental documents prepared for new developments and redevelopments. Level 1 Implementation is a program of enhanced review of these documents to determine their conformity with the region's Air Quality Plan.

- o Develop a definition of a "significant" project for review of air quality impacts;
- o Review environmental documents of all significant projects, commenting on those with adverse air quality impacts
- o Determine mitigation measures for adverse air quality impacts and monitoring programs to assure compliance.

Level 2 Implementation

Air quality programs (or elements) are not currently required in the general plans of cities and counties. For Level 2 implementation the air district should work with the Growth Management Technical Committee, cities, interested parties, affected business and agencies to prepare policies and design requirements for new development including but not limited to improving accessibility for pedestrians, transit, and bicycles. These policies and requirements, if approved by the Regional Planning and Growth Management Review Board, would be recommended for adoption to every city, the County, and the Port District. Once adopted, they would become part of the air quality programs/elements of local general plans. The process for developing the indirect source program will be:

- The Air Pollution Control Board will adopt an indirect source control regulation requiring evaluation and mitigation of individual land use development projects.
- A condition for delegating the regulation to local land use agencies in the the Cities, County, and Port District will be their adopting an air quality element into the local general plan or an air quality program that conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality elements be adopted as individual elements of general plans, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.
- Air quality elements for general plans will be developed for implementation as a part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.

- Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.
- If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Quality Strategy, deficiencies will be identified and transmitted to the Regional Growth Management Board.
- Indirect source review program development and implementation shall be completed by 1994.

TARGETS TO DEMONSTRATE PROGRESS

Level 1 Implementation

o Development of process to conduct enhanced reviews of environmental documents for new developments and redevelopments.

Level 2 Implementation

- o Level 1 Implementation
- o Development of the air quality programs for inclusion in general plans

Level 3 Implementation

- o Levels 1 and 2 Implementation
- o General travel reduction program

IMPLEMENTATION TIMING

Level 1 Implementation

The implementation at this level can begin immediately and the process developed by December 1991.

Level 2 Implementation

The implementation at this level will be completed by July 1994.

Level 3 Implementation

The implementation at this level is a contingency measure to be developed following analysis of the Level 2 program and its being found inadequate to help reduce air pollution.

DETERRENTS TO IMPLEMENTATION

There are no deterrents to the implementation of this measure.

TCM Plan

PERFORMANCE CRITERIA

Level 1 Implementation

o Enhanced review of environmental documents for all developments of regional significance resulting in voluntary mitigation of identified impacts

Level 2 Implementation

o Development of design policies and requirements for the air quality program in general plans and inclusion of the program in the general plans of the local land use jurisdictions

Level 3 Implementation

o Development of a General Travel Reduction Program

MONITORING & AUDIT PROCEDURES

As part of the development of the Indirect Source Control Program, the Regional Planning and Growth Management Board and the APCD will establish adequate monitoring and audit procedures to assure full implementation of the measure.

AGENCIES RESPONSIBLE FOR IMPLEMENTATION

Regional Planning and Growth Management Review Board

o Responsible for the Regional Growth Management Strategy, containing the adopted Quality of Life Standards

Cities and the County

o Responsible for General Plans and local land use authority

Air Pollution Control Board

o Responsible for adoption of indirect source control rules, and program delegation to Cities, County, and Port District.

COSTS TO IMPLEMENTING AGENCIES

Level 1 Implementation

o Costs to reviewing agencies for enhanced review of environmental documents

Level 2 Implementation

o Staff time for development and adoption of air quality programs in general plans

Level 3 Implementation

o Costs of developing and implementing program to manage general travel.

FUNDING

Existing:

Existing funding covers costs of review of environmental documents.

Potential without Legislation:

AB 2766 funds from increased vehicle registration fees Potential funds include fees on documents received for new developments and redevelopments and fees on new development.

Potential with Legislation:

TCM Plan

Legislation could be introduced to provide additional funding through increased vehicle registration and emissions fees.

Discretionary:

There are no discretionary funds to be diverted to this measure.

FEASIBILITY

High. Review of environmental documents is an existing program. Air quality programs as components of General Plans have been developed by several cities in the region. Parking management programs are being conducted on a voluntary basis at some shopping centers, at recreational centers, and at the airport.

RELIABILITY

Unknown. The reliability of indirect source controls to significantly reduce air pollution is not known. Current data show a minimal impact on air quality.

ENFORCEABILITY

Moderate. Enhanced review of environmental documents and the development of air quality programs for general plans can be conducted by agreement among the participating agencies. The air district has authority to enforce adopted rules concerning indirect source controls.

OTHER IMPACTS

Other impacts of the implementation of this measure could be motor vehicle fuel savings and traffic congestion decrease.

PUBLIC ACCEPTABILITY

Public acceptance of strict controls on personal travel for shopping and recreation is not known. Public acceptance of travel to the commercial airport by other than motor vehicle is high.

APCD CRITERIA

INDIRECT SOURCE CONTROL

<u>Criteria</u>: "The transportation control measure plan submittal shall suggest a regional process, including the following features, for developing a District indirect source review program to ensure that developments are designed to facilitate use of alternate transportation modes to the maximum extent feasible."

- 1. <u>Criterion</u>: The Air Pollution Control Board will adopt an indirect source control regulation requiring evaluation and mitigation of individual land use development projects. <u>Response</u>: See the Level 2 Implementation strategy, above.
- 2. <u>Criterion</u>: A condition for delegating the regulation to local land use agencies in the Cities, County, and Port District will be their adopting an air quality element into the local general plan or an air quality program than conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality elements be adopted as individual elements of general plan, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.

Response: See the Level 2 Implementation strategy, above.

3. <u>Criterion</u>: Air quality elements for general plans will be developed for implementation as part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.

<u>Response</u>: See the Level 2 Implementation strategy, above.

4. <u>Criterion</u>: Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.

<u>Response</u>: This item will be resolved during the preparation of the air quality policies and design requirements by the Regional Planning and Growth Management Review Board and the air district.

5. <u>Criterion</u>: If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Quality Strategy, deficiencies will be identified and transmitted to the Regional Planning and Growth Management Review Board.

<u>Response</u>: This item will be resolved during the development of the air quality program by the Regional Planning and Growth Management Board and the air district.

6. <u>Criterion</u>: Indirect source review program development and implementation shall be completed by 1994.

LAND USE

<u>Criterion</u>: A model air quality element for comprehensive land use plans shall be developed for consideration by the Cities, the County, the Port District, and other applicable jurisdictions.

<u>Response</u>: The Growth Management Technical Committee has recommended that the local jurisdictions have the option of developing either an air quality element or an air quality program for local planning purposes.

Criteria: "Jobs-Housing Balance"

1. <u>Criterion</u>: Each major statistical area (as defined by SANDAG and concurred by the District) shall, to the extent feasible, contain affordable housing for the employment spectrum in that area.

<u>Response</u>: SANDAG uses for its planning purposes major statistical areas as defined by the U.S. Bureau of the Census. The SANDAG report, Jobs and Housing Balance, prepared for the Regional Growth Management Technical Committee for its review is under discussion by that committee and further analysis of the issue has been requested by the Committee.

2. <u>Criterion</u>: Land use policies and programs shall be established to attract appropriate employers to overly residential areas and to encourage appropriate housing in and near industrial and business areas.

<u>Response</u>: The Regional Board will propose land use policies following results of its studies.

Criteria: "Mixed Use Development"

<u>Criterion</u>: Development designed to maximize walking and minimize vehicle use by providing housing, employment, education, shopping, recreation, and any support facilities within convenient proximity shall be maximized.

<u>Response</u>: The Regional Board will propose policies and design requirements that will improve accessibility for pedestrians, transit, and bicycles.

Criteria: "Transit Corridor Development"

1. <u>Criterion</u>: City, County, and Port District land use plans, zoning ordinances, and development policies shall be designed to foster transit ridership.

Response: The Cities and the County are preparing programs to do this.

2. <u>Criterion</u>: High residential densities shall be encouraged within walking distance of major transit routes.

<u>Response</u>: This will be included in the design requirements noted above that will be contained in the air quality elements/programs. See the Indirect Source Control measure.

3. <u>Criterion</u>: Industrial and commercial development shall focus at transit nodes.

<u>Response</u>: It is the policy of the transit districts, as stated in their Short Range Transit Plans that transit shall strive to serve the commercial and industrial areas.

4. <u>Criterion</u>: Developments shall have convenient access to transit.

<u>Response</u>: This is proposed to be included in the policies and design requirements of the air quality element/program of the Cities' and the County's general plans.

5. <u>Criterion</u>: Multiuse development at transit centers shall offer facilities such as day care, groceries, banking, etc.

<u>Response</u>: The developers of transit centers should favor the type of facilities that will discourage additional auto trips. <u>Response</u>: See Implementation Timing, above.

RELATED MEASURES

Transportation Demand Management Program Transit Improvements and Expansion Park-and-Ride Facilities Bicycle Facilities Land Use Program

REFERENCES

o <u>California Clean Air Act Guidance for the Development of Indirect Source Control</u> <u>Programs</u>, California Air Resources Board, Sacramento 1990.

SANDAG RESOLUTION NO. 92-49 ADDENDUM

On March 27,1992, the SANDAG Board of Directors approved Resolution 92-49 adopting the amended Transportation Control Measure Plan, Appendices and Regional Trip Reduction Program; and including the following amendments:

Notwithstanding anything to the contrary set forth in the Plan;

- 1. A socio-economic study will be conducted and the Plan will be reviewed in light of the results of that study; and
- 2. The implementing agencies, i.e., cities and subregional entities, shall determine if an employer's plan is "at least as effective" as the APCD's mitigation measures in achieving the trip reduction program targets (refers to item 13 of the Air Quality Subcommittee's agreement, TCM Appendices, page 202); and
- 3. No additional fees will be imposed on the private sector other than what has already been agreed to and filing fee shall be at the discretion of implementing agencies (refers to item 8 of the Air Quality Subcommittee's agreement, TCM Appendices, page 202); and
- 4. The Plan will be reviewed periodically and when other options are available, such as marketbased measures, it can be revised accordingly (for addition to item 6 of the Air Quality Subcommittee's agreement, TCM Appendices, page 201); and
- 5. Enhanced CEQA review is not part of the Indirect Source Program (for addition to the Indirect Source Controls Programs section, TCM Appendices, page 204).

TDM PROGRAM

MODEL REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

June 30, 1992

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SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

POLICY GUIDELINES

I. A comprehensive Regional Transportation Demand Management (TDM) Program shall be developed for adoption by the SANDAG Board of Directors to achieve the following goal:

"It shall be the goal of the San Diego Association of Governments, SANDAG, to develop and facilitate the implementation of an on-going, proactive, and cost-effective Regional Transportation Demand Management Program to preserve regional mobility, improve regional environmental quality and economic viability, conserve limited energy resources, and reduce the negative impacts of regional traffic congestion."

"Transportation Demand Management shall imply actions to influence traveler behavior by mode, frequency, time, route, or trip length, in order to improve the efficiency and effectiveness of the Region's transportation systems."

II. The comprehensive Regional TDM Program shall measurably and significantly support the Region's air quality improvement goals and the California Clean Air Act of 1988.

There are five basic air quality criteria. They include: (a) Air quality plans must include reasonably available transportation control measures, (b) transportation control measures must achieve an average vehicle occupancy of 1.5 or more persons per vehicle during weekday commute hours by 1999, (c) there shall be no net increase in vehicle emissions after 1997, (d) vehicle trips shall increase no faster than the rate of population growth, and (e) a 5% yearly reduction in emissions until state air quality standards are met.

- III. The Regional TDM Program shall be coordinated with the efforts of adjacent regions and the state to assure maximum compatibility and integration of effort.
- IV. Development of a comprehensive Regional TDM Program shall address all major contributors to the traffic stream including such major trip generators as employment, colleges and universities, schools and institutions, goods movement, commercial, major activities and events, and recreational travel.
- V. The near-term focus of the Regional TDM Program shall be on the largest components of the principal period traffic stream including freeway travel, employment travel, high school, college and university student travel, and goods movement.
- VI. The other components of the traffic stream including institutional travel, commercial travel, major activity and event travel, and recreational travel, shall be developed for implementation in conjunction with the policies and programs for the larger components of the traffic stream, but shall not delay the early implementation of the larger components policies and programs.
- VII. The Regional TDM Program, to the greatest extent possible, shall achieve its objectives based on an incentive-driven, benefit-oriented approach, and shall include the broadest

possible base of participation to maximize the results while minimizing the impacts upon any particular traffic component or user.

- VIII. The Regional TDM Program, to the extent possible, shall achieve its objectives in cooperation with and in support of the Regional Long-Range Transit Development Plan to insure that the planned investment in transit facilities and equipment designed to carry at least 300% increase in ridership by the year 2010 is achieved.
- IX. Regional Land Use and Development Policies and Programs supportive of a Comprehensive Regional TDM Program, including for example, aggressive efforts to encourage the development of transportation alternatives, the promotion of balanced business/residential communities, and the use of transportation futurist concepts, shall be developed as part of an indirect source control program and implemented by the Region's cities, the County and the Port District.

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

FEATURES OF THE DRAFT MODEL PROGRAM AND ORDINANCE

The draft Regional TDM Program and Ordinance includes the following concepts:

- 1. The Regional TDM Program and Ordinance is specifically designed as a comprehensive regional traffic management program for adoption by each of SANDAG's member agencies.
- 2. The Regional TDM Program and Ordinance includes objectives for each of the larger components of the Principal Travel Period traffic stream including non-commute travel, employment travel, high school, college and university student travel, and goods movement travel. The objectives for each of the larger traffic components are listed below:
 - a. The objectives of the Freeway Traffic Element policies and programs shall lead to the achievement of a 1.5 average vehicle occupancy** for all area freeways and regional arterials during the principal travel period by the year 2000. The strategies and tactics of this element are included as an integral part of the Regional Transportation Plan and Regional Transportation Improvement Plan.
 - b. The objectives of the Employment Traffic Element policies and programs shall lead to the achievement of a 1.5 Average Vehicle Ridership (AVR) for regionwide employment traffic during the Principal Travel Period by the year 2000.
 - c. The objectives of the High School, College and University Traffic Element policies and programs shall lead to the achievement of a 1.5 student Average Vehicle Ridership during the Principal Travel Period by the year 2000.

Included as part of the High School, College and University Traffic Element is the Student Transit/Shuttle Subsidy Program designed to increase high school, college and university student transit ridership by 1% per year over a twenty-year period, achieving a 12% student transit ridership rate by the year 2000; and, a 22% ridership by the year 2010.

- d. The objectives of the Goods Movement Traffic Element policies and programs, if implemented as a contingency measure, shall lead to the achievement of a 25% off-peak truck travel rate by the year 2000; and 35% by the year 2010.
- ** Measure specified by the California Clean Air Act

The objectives of the Goods Movement Traffic Element shall also lead to a 50% reduction in the number of regional truck incidents by the year 2000; and, a 50% reduction in the average amount of delay per incident by the year 2000.

3. According to traffic models based upon the Series 7 growth forecasts, the scheduled provisions of TransNet, and additional facilities identified in the Regional Transportation Plan, the achievement of the annual targets prescribed in the Employment Traffic Element alone will produce the results listed in the table below. These results combined with the added benefits of the High School, College and University, and Goods Movement Traffic Elements provide for a significant improvement in the projected heavy congestion of our region's roadways.

Year/Program	Heavy Congestion <u>Miles</u>	Percent Heavy <u>Congestion</u>	AVR
1988 Freeway Conditions	26 miles	11%	1.19
2000 w/o TDM	59 miles	22%	1.18
2000 with Employment Element	43 miles	16%	1.50
2010 w/o TDM	80 miles	29%	1.18
2010 with Employment Element	35 miles	12%	1.60

- 4. The Regional TDM Program and Ordinance is specifically designed and sized for regional implementation and, therefore, it is intended to be adopted as written by the cities and the County in order to establish a regionally uniform and equitable TDM program.
- 5. Each of the cities and the County shall adopt the Regional TDM Program and Ordinance consistent with the trip reduction regulation to be adopted by the Air Pollution Control Board.
- 6. The level of funding provided shall be adequate to support the operations of the Regional TDM Program and Ordinance, including each of the Regional TDM Program traffic elements (non-commute travel, employment travel, high school, college and university student travel, and goods movement travel).
- 7. Funding for the Regional TDM Program and Ordinance shall be from a combination of AB 2766 funds, ISTEA funds and legislative or other actions by the implementing agencies (i.e. motor vehicle registration fee, local gasoline tax subventions, emission fees, parking surcharge, parking violation surcharge, congestion pricing, development impact fees, filing fees and other market-based approaches).
- 8. The administrative and implementation responsibilities for the Regional TDM Program and Ordinance shall be delegated by the Air Pollution Control Board to local and subregional agencies that adopt ordinances consistent with and at least as stringent as the trip reduction regulation to be adopted by the Air Pollution Control Board.
- 9. The local and subregional agencies shall manage and coordinate the delivery of services to assist employers, high school, college and universities, and goods movement/trucking providers. The implementing agencies shall provide such services as: regionally consistent administration, marketing, education, publications and promotional materials; assistance in conducting surveys, designing programs and plans; and, providing computerized matching

services. Supporting agencies such as the Air Pollution Control District and Commuter Computer may provide some of these services.

- 10. The implementing agencies shall provide administrative, marketing and computing functions. Subregional offices may be established to coordinate localized services provided each employer, high school, college and university, and goods movement provider. These services will be based upon the local conditions and the transportation resources available.
- 11. The Regional TDM Program and Ordinance shall require employers, high schools, colleges and universities and goods movement providers to participate. The phasing of participation is based upon employer, high school, college or university, and goods movement provider size and location.
- 12. The Regional TDM Program and Ordinance shall require each employer, high school, college and university, and goods movement provider to take actions to achieve prescribed annual AVR and travel reduction targets.
- 13. The Regional TDM Program and Ordinance shall initially focus on the voluntary achievement of annual AVR Targets and require only that employers, high schools, colleges and universities, and goods movement providers file an annual TDM Report of the results of their voluntary TDM actions.
- 14. The Regional TDM Program and Ordinance provides that if an employer, high school, college or university, or goods movement provider falls short of achieving its annual AVR Target through voluntary actions, then the employer, high school, college or university, or goods movement provider must further strengthen its program by filing a TDM Statement/Plan and thereby selecting and implementing TDM actions designed to attain the next annual AVR Target.
- 15. The Regional TDM Program and Ordinance provides that if an employer, high school, college or university, or goods movement provider falls short of achieving its annual AVR Target and fails to implement and carry out its TDM Statement/Plan, then the employer, high school, college or university, or goods movement provider may be found in violation of the Regional TDM Program and Ordinance and the Regional Air Quality Plan, and shall be subject to civil penalties for violation. The purpose of this provision is to insure the commitment and participation of all.
- 16. The Regional TDM Program and Ordinance shall promote the formation of Transportation Management Associations allowing employers, high schools, colleges and universities, and goods movement providers to be considered on a group or collective basis, if desired.
- 17. The Regional TDM Program and Ordinance may require (in a separate document at a later date) that developers, building owners and building operators offer tenants the opportunity to form a TMA, distribute and post TDM information, and provide a certified TDM coordinator to assist tenants in meeting their TDM objectives.

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

TDM INSTITUTIONAL STRUCTURE

Program Administrative Responsibility

The plan provides that each of the Cities and the County shall have the option to adopt and implement the Regional TDM Program or decline at which point the APCD will retain the authority to implement the program.

The administrative responsibilities for the Regional TDM Program and Ordinance shall be delegated by the Air Pollution Control Board to local and subregional agencies that adopt ordinances consistent with and at least as stringent as the trip reduction regulation to be adopted by the Air Pollution Control Board.

Employers with multiple worksites in different jurisdictions throughout the county may have all their sites subject to the District regulation rather than being subject to the differing ordinances of the various jurisdictions where the worksites are located.

The implementing agencies, in a cooperative effort, will manage and coordinate the delivery of services to assist employers, high schools, colleges and universities, and goods movement providers.

Enforcement Responsibility

Violation of the TDM Ordinance would constitute a violation of the trip reduction ordinance. The implementing agencies would enforce the trip reduction program by selective audit.

Funding Responsibility

The public sector implementation costs of the trip reduction program should not exceed available resources: AB 2766 funds in accordance with the Memorandum of Agreement (between SANDAG and the APCB concerning use of AB 2766 funds, dated June 1990); the local share of the 1/2 cent transportation sales tax and filing fees only to be used to cover administrative costs, at the option of the implementing entities; and other state and federal funds made available for this purpose. No additional fees, will be imposed on the private sector.

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

EMPLOYMENT TRAFFIC ELEMENT

A. PURPOSE AND INTENT

The purpose of this Regional Transportation Demand Management (TDM) Program and Ordinance is to specify Employer responsibilities for reasonable efforts to reduce vehicle trips and to protect the public health, safety, and general welfare through Transportation Demand Management actions. The focus of this program is to reduce traffic congestion and improve public health and safety by reducing the number of employees who drive alone in motor vehicles to work sites during Principal Travel Period.

B. DEFINITIONS

See XI Glossary, of the Technical Supplement.

C. CATEGORIES OF PARTICIPANTS

- 1. **Tier I Employer**: An-Employer who employs one hundred (100) or more Employees¹ at a Work Site on any week day (M-F).
- 2. **Tier II Employer:** An Employer who employs 60-99 Employees¹ at a Work Site on any week day (M-F).
- 3. **Tier III Employer:** An Employer who employs 25-59 Employees¹ at a Work Site on any week day (M-F). (Contingency Measure)
- 4. **Tier IV Employer:** An Employer who employs 11-24 Employees¹ at a Work Site on any week day (M-F). (Contingency Measure)

Tiers III and IV are reserved for implementation as a contingency measure to be implemented upon adoption of an implementing rule or regulation by the Air Pollution Control Board, if the Air Pollution Control Board determines or the State Air Resources Board finds that the District is failing to meet interim goals or not making adequate progress toward attainment of applicable state ambient air quality standards.

Note: A work program will be developed in FY 93 to address a trip reduction program for business trips made directly from home to field and real estate agents.

D. PHASING

1. <u>Tier I Employers</u> shall begin compliance with this Ordinance concurrent with its adoption.

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

- 2. <u>Tier II Employers</u> shall begin compliance with this Ordinance concurrent with the first anniversary of its adoption.
- 3. <u>Tier III Employers</u> shall begin compliance with this Ordinance concurrent with the implementation of the contingency measure.
- 4. <u>Tier IV Employers</u> shall begin compliance with this Ordinance one year after the implementation of the contingency measure.

E. REQUIREMENTS

1. <u>Performance Requirements</u>

a. Each Employer shall utilize the procedures outlined in the Technical Supplement (includes examples of reports, plans, and calculations, and alternative fuel credits) to achieve during the 6 to 10 a.m. principal travel period the annual Average Vehicle Ridership Targets listed below.

Minimum Average Vehicle Ridership (AVR) Targets:

YEAR	FY'91	FY'92	<u>FY'93</u>	<u>FY'94</u>	<u>FY'95</u>	
AVR-Ia	(1.40)	(1.45)	1.55*	1.65	1.70	
AVR-Ib	(1.35)	(1.40)	1.45*	1.50	1.55	
AVR-Ic	(1.35)	(1.40)	1.45*	1.50	1.55	
AVR-II _a		(1.40)	(1.45)	1.55*	1.65*	
AVR-II _b		(1.35)	(1.40)	1.45*	1.50*	
AVR-II _c		(1.20)	(1.25)	1.30*	1.35*	
AVR-III _a			(1.45)	(1.55)	1.65*	
AVR-III _b			(1.40)	(1.45)	1.50*	
AVR-III			(1.25)	(1.30)	1.35*	
AVR-IV				(1.55)	(1.65)	۰ ۴
AVR-IV _b				(1.45)	(1.50)	7
AVR-IV _c				(1.30)	(1.35)	
PTP**	Α	Α	Α	Α	Α	

8

YEAR	<u>FY'96</u>	FY'97	<u>FY'98</u>	FY'99 and beyond
AVR-Ia	1.75	1.80	1.85	1.90
AVR-Ib	1.60	1.65	1.70	1.75
AVR-Ic	1.60	1.65	1.70	1.75
AVR-II _a	1.70	1.75	1.80	1.85
AVR-II _b	1.55	1.60	1.65	1.70
AVR-II _c	1.40	1.45	1.50	1.50
AVR-III _a	1.70*	1.75	1.80	1.85
AVR-III _b	1.55*	1.60	1.65	1.70
AVR-III _c	1.40*	1.45	1.50	1.50
AVR-IVa	1.70*	1.75*	1.80	1.85
AVR-IV _b	1.55*	1.60*	1.65	1.70
AVR-IV _c	1.40*	1.45*	1.50	1.50
PTP**	Α	Α	Α	Α

* Requires TDM Reports Only, No Plans

() Indicates Target Years Prior to Employer Tier Implementation

**Principal Travel Period: A: 6:00-10:00 a.m.

 $I_a = Employers (100+ Employees^1)$ within San Diego Centre City Planning Area

 $I_b = Employers (100+ Employees^1)$ within Incorporated Area of Region

 $I_c = Employers (100+ Employees^1)$ within Unincorporated Area of Region

 $II_a = Employers$ (60-99 Employees¹) within Centre City Planning Area

 $II_b = Employers$ (60-99 Employees¹) within Incorporated Area

 $\Pi_c = \text{Employers} (60-99 \text{ Employees}^1)$ within Unincorporated Area

 $III_a = Employers (25-59 Employees^1)$ within Centre City Planning Area

III_b = Employers (25-59 Employees¹) within Incorporated Area

 $III_c = Employers$ (25-59 Employees¹) within Unincorporated Area

 $IV_a = Employers (11-24 Employees^1)$ within Centre City Planning Area

 $IV_b = Employers (11-24 Employees^1)$ within Incorporated Area

 $IV_c = Employees (11-24 Employees^1)$ within Unincorporated Area

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

- b. Each Employer shall file an annual TDM Report with the TDM Program Administrator according to the filing schedule established by the TDM Program Administrator.
- c. Each Employer who fails to achieve its annual AVR Target shall file a TDM Statement/Plan as defined in the Technical Supplement. The TDM Statement/Plan shall be filed with the TDM Program Administrator.
- d. A Transportation Management Association (TMA/TMO) or other service provider, may be granted authority by an Employer to prepare and/or execute an Employer's TDM Report or TDM Statement/Plan. However, the responsibility for achieving the requirements of this Ordinance shall remain with the Employer. If a group of Employers in a TMA/TMO collectively meets the AVR Target, Employers within the TMA/TMO do not need to individually meet the annual target.
- e. Each Employer shall designate an Employer Transportation Coordinator for each work site to serve as representative between the TDM Program Administrator and the Employer.

2. <u>Reporting Requirements</u>

- a. The Employer shall file an annual TDM Report showing arrival times and percentage of travel by each mode for its employees and the calculation of their Average Vehicle Ridership for each work site as established in the Technical Supplement.
- b. TDM Reports shall be submitted according to the filing schedule established by the TDM Program Administrator.
- c. Employers may choose to file a consolidated TDM Report for all its Work Sites, provided the data are shown separately by Work Site.

3. **TDM Plan Requirements.**

- a. An Employer who fails to achieve its annual AVR Target shall develop, file, and implement a TDM Statement/Plan designed to attain the annual AVR Target and conforming to criteria outlined in the Technical Supplement.
- b. The TDM Statement/Plan shall be submitted to the TDM Program Administrator within 90 days after the date of receipt of notification from the TDM Program Administrator of the Employer's failure to achieve the AVR Target.
- c. Implementation of TDM Statements/Plans shall begin within 30 days of the acceptance date. Rejected TDM Statements/Plans must be revised and resubmitted within 30 days of notification of rejection. After notification, failure to submit an acceptable plan within 30 days will subject the Employer to enforcement provision Section H.2.
- d. TDM Reports, following submittal of a TDM Statement/Plan, shall be submitted according to the Employer's initial TDM Report date.

EMPLOYMENT ELEMENT

e. An Employer may choose to consolidate required TDM Statements/Plans for more than one Work Site under this requirement.

F. INCENTIVES

Incentives are described in Section VII of the Technical Supplement.

G. TDM COMPLIANCE

1. Each time an Employer fails to achieve its annual AVR Target it shall develop and file a TDM Statement/Plan to further strengthen its TDM Program. Filing a TDM Statement/Plan requires the Employer to either implement the appropriate set of preapproved mitigation measures presented in the Technical Supplement (Section VIII.F.) or select and implement new TDM actions including, but not limited to, those listed in the Technical Supplement (Sections VIII.E. and VIII.F.) These actions shall be designed to meet the Employer's Annual AVR Target by its next TDM Report due date.

An Employer who achieves its annual AVR Targets, having filed a TDM Statement/Plan, is no longer required to file a TDM Statement/Plan unless its AVR Target is subsequently missed.

2. An Employer failing to achieve its annual AVR Target and failing to implement and carry out its TDM Statement/Plan, shall be in violation of the Regional TDM Ordinance and the Regional Air Quality Plan and subject to enforcement provisions.

H. ENFORCEMENT

- 1. An Employer which fails to file an annual TDM Report when due shall be in violation of this Ordinance. Each day in which the Employer fails to file the TDM Report, following the date when due, shall constitute a separate and additional violation of this Ordinance. Under this provision, each separate and additional violation of this Ordinance shall be subject to an administrative civil penalty of \$5.00 per employee, up to a maximum penalty of \$500.00 for each day of violation. [Health & Safety Code, Section 42402.5, when imposed by the APCD].
- 2. An Employer which fails to file a TDM STATEMENT/PLAN when due shall be in violation of this Ordinance. Each day in which the employer fails to file the TDM Plan, following the date when due, or has not met the requirements of Section E.C.3. for resubmittal of a TDM Plan, shall constitute a separate and additional violation of this Ordinance. Under this provision, each separate and additional violation of this Ordinance shall be subject to an administrative civil penalty of \$5.00 per employee, up to a maximum penalty of \$500.00 for each day of violation. [Id.]
- 3. An Employer who fails to achieve its annual AVR Target and fails to implement and carry out its TDM Statement/Plan, as determined by the TDM Program Administrator or the TDM Appeals Board, is in violation of this Ordinance. Violation of this provision shall subject the employer to the maximum civil penalties established by law. [Health & Safety Code, Sections 42402, 42402.1, and 42402.2 when imposed by the APCD, maximum currently \$25,000 per day per violation]

EMPLOYMENT ELEMENT

I. AUDIT AND REVIEW

A triennial performance audit and review of the Regional TDM Program and Ordinance shall be conducted by APCD. The review will be conducted at a noticed public hearing and will include a report by the APCD. The report will assess the effectiveness, costs, benefits and identify further opportunities available for the achievement of program objectives.

The regulation implementing the Employment Element will also be examined in light of any new developments as part of the annual and triennial review of the Regional Air Quality Strategy as required by state law.

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

EMPLOYMENT TRAFFIC ELEMENT TECHNICAL REQUIREMENTS

I. REFERENCE AND INTENT

- A. <u>Reference</u>. This document contains the Technical Requirements of the Regional Transportation Demand Management Ordinance, ______ Municipal Code Sections _____ Through _____. The Ordinance should be reviewed prior to using this document.
- B. <u>Intent</u>. These Technical Requirements are intended to provide guidance, detailed information, and examples to assist Employers, High Schools, Colleges and Universities, Goods Movement/Trucking Providers and Transportation Management Associations in meeting the requirements of the Regional Transportation Demand Management Ordinance.
- C. <u>Definitions</u>. The meaning of terms used in these Technical Requirements can be found in Section XI, "Glossary".
- D. <u>Ouestions</u> regarding the Regional Transportation Demand Management Ordinance and these Technical Requirements should be referred to the Transportation Demand Management Administrator.

II. WORK SITE REQUIREMENTS

- A. <u>New Hire Orientation Program</u>. Employers shall provide all new hires with a commute alternatives information packet. To assist Employers in preparing commute alternative information packets, Transportation Management Associations, Commuter Computer, the Transportation Demand Management Administrator will have information about commute alternatives. The new hire information packet shall include but not be limited to information about the following topics, as appropriate to the specific Work Site:
 - o Alternative Transportation incentives offered to Employees by the Employer
 - o Alternative Work Hour programs offered to Employees by the Employer
 - o On-site amenities and information resources
 - o Air quality, traffic congestion, commute costs, and other conditions that necessitate Transportation Demand Management strategies.
 - o Carpool matching service
 - o Bus, trolley and rail service to the Work Site vicinity
 - o Bicycle facilities including bicycle routes, lockers, racks, showers and dressing areas in the Work Site vicinity
 - o New Hire Transportation Survey
- B. Employee Transportation Demand Management Information. Each Employer shall develop and maintain Employee Transportation Demand Management information that provides all Employees with current information regarding commute options and rideshare services available to them. Such information shall be accessible and available at each Work Site. Employers may simply establish a centrally located bulletin board or kiosk for display of information. As an alternative, electronic bulletin boards, company newsletters, and other communication delivery methods may be used.

Employee Transportation Demand Management information shall include but not be limited to the following items, as appropriate to the specific Work Site:

- o List of Alternative Transportation incentives offered to Employees
- o List of Alternative Work Hour programs offered to Employees
- o Alternative Transportation promotional material
- o Information on carpool matching service
- o Space for carpool and vanpool riders-wanted advertisements
- o Transit pass information
- o Information about bus, trolley, and rail service to the Work Site vicinity
- o Information about bicycle facilities, including bicycle routes, lockers, racks, showers and dressing areas in the Work Site vicinity

A program for updating the Employee Transportation Demand Management information shall also be provided. The Employee Transportation Coordinator is suggested as the appropriate person to maintain the system.

III. CALCULATION OF AVERAGE VEHICLE RIDERSHIP (AVR)

- A. <u>Purpose</u>. The Average Vehicle Ridership or AVR is the statistic used to measure the Employer's success at minimizing the number of Employees who drive alone to each Work Site during the Principal Travel Period. The AVR is calculated by the Transportation Demand Management Administrator for each Work Site using information in an TDM report provided by the Employer or Transportation Management Association. The calculated AVR shall be rounded to the nearest thousandth of an integer (0.0005 would round to 0.0010). See "TDM Reports", Section V, regarding TDM Reports.
- B. AVR Calculation. The AVR is calculated as follows:
 - 1. $\underline{AVR} = A/B$

The number of Employees who are scheduled to report to the Work Site during the 6 to 10 a.m. principal travel period (A); divided by the total number of vehicles driven by these Employees to the Work Site during the 6 to 10 a.m. principal travel period (B).

Note: Alternative Fuel and VMT Reduction Program Credits are not defined at the time of this publication. When developed, they will be adjustments to the number of vehicles (B) in the denominator of the equation. Campuses will not be considered satellite offices for VMT Reduction Program Credits.

- 2. <u>Calculations and Examples</u>.
 - a. AVR = A/B, where
 - A = the number of Employees who are scheduled to report to the work site during the 6 to 10 a.m. principal travel period.
 - B = Number of vehicles or vehicle equivalents driven by these Employees in reporting to the Work Site during the 6 to 10 a.m. principal travel period.

The number of Employee vehicles is calculated by adding the number of vehicles and vehicle equivalents driven by Employees in reporting to the work site during the 6 to 10 a.m. principal travel period. Vehicle equivalents represent the portion of vehicles operated by Employees who use an alternative commute mode, alternative work hour schedule or telecommute.

Vehicle equivalents are determined by the number of days per week vehicles are operated by Employees to the Work Site by mode divided by five days per week. Vehicle equivalents for alternative work hour schedules or compressed work week schedules are determined by the portion of Employee vehicles reduced per week based upon a five day week (5 vehicles). Vehicle equivalents for common compressed work week schedules are as follows: 9 day/80 hour schedule = 0.9 vehicle, 4 day/40 hour schedule = 0.8 vehicle, 3 days/36 hour schedule = 0.6 vehicle.

b. Worksheet Example:

AVR = A/B	
Number of Employees reporting to Work Site betw	veen 6 and 10 a.m(A)
Number of Vehicles or Vehicle Equivalents/6 Compressed week Telecommute Walk Bicycle Carpool Vanpool Transit Trolley Rail Drive Alones	5 to 10 a.m.
Total Vehicles	(B)
Total AVR [A/B]	(AVR)

IV. AVR TARGETS

- A. <u>Definition</u>. The AVR Target is the value that the Work Site AVR, or Average AVR is compared to in the TDM Report. AVR Targets are as follows:
 - 1. Tier I Employers (100 or more Employees¹)

	Tier I _a	Tier I _b	Tier I _C
FY	AVR Target	AVR Target	AVR Target
1991	(1.40)	(1.35)	(1.35)
1992	(1.45)	(1.40)	(1.40)
1993	1.55 ²	1.45*	1.45*
1994	1.65	1.50	1.50
1995	1.70	1.55	1.55
1996	1.75	1.60	1.60
1997	1.80	1.65	1.65
1998	1.85	1.70	1.70
1999 and beyond	1.90	1.75	1.75

Tier Ia - Employers, Centre City Planning Area

Tier Ib - Employers, Incorporated Area of Region

Tier I_c - Employers, Unincorporated Area of Region

¹Full-time employee equivalents (to be addressed as part of the regulatory process). ²*Requires TDM Reports Only, No Plans () Indicates Target Years Prior to Employer Tier Implementation

2. Tier II Employers (60-99 Employees¹)

	Tier II _a	Tier II _b	Tier II _C
FY	AVR Target	AVR Target	AVR Target
1991	(1.35)	(1.30)	(1.15)
1992	(1.40)	(1.35)	(1.20)
1993	(1.45)	(1.40)	(1.25)
1994	1.55*	1.45*	1.30*
1995	1.65*	1.50*	1.35*
1996	1.70	1.55	1.40
1997	1.75	1.60	1.45
1998	1.80	1.65	1.50
1999 and beyond	1.85	1.70	1.50

Tier II_a - Employers, Centre City Planning Area

Tier IIb - Employers, Incorporated Area of Region

Tier II_c - Employers, Unincorporated Area of Region

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

	Tier III _a	Tier III _b	Tier III _c
FY	AVR Target	AVR Target	AVR Target
1991	(1.35)	(1.30)	(1.15)
1992	(1.40)	(1.35)	(1.35)
1993	(1.45)	(1.40)	(1.40)
1994	(1.55)	(1.45)	(1.45)
1995	1.65 *	`1. 50 [′] *	1.50*
1996	1.70*	1.55*	1.55*
1997	1.75	1.60	1.60
1998	1.80	1.65	1.65
1999 and beyond	1.85	1.70	1.70

3. Tier III Employers (25-59 Employees¹) (Contingency Measure)

Tier III_a - Employers, Centre City Planning Area

Tier III_b - Employers, Incorporated Area of Region

Tier III_c - Employers, Unincorporated Area of Region

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

Tier IV _a	Tier IV _b	Tier IV _C
AVR Target	AVR Target	AVR Target
(1.35)	(1.30)	(1.15)
(1.40)	(1.35)	(1.20)
(1.45)	(1.40)	(1.25)
(1.55)	(1.45)	(1.30)
(1.65)	(1.50)	(1.35)
1.70*	1.55*	1.40*
1.75*	1.60*	1.45*
1.80	1.65	1.50
1.85	1.70	1.50
	$\begin{array}{c} \text{Tier IV}_{a} \\ \underline{\text{AVR Target}} \\ (1.35) \\ (1.40) \\ (1.45) \\ (1.55) \\ (1.65) \\ 1.70* \\ 1.75* \\ 1.80 \\ 1.85 \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

4. Tier IV Employers (11-24 Employees¹) (Contingency Measure)

Tier IV_a - Employers, Centre City Planning Area

Tier IV_b - Employers, Incorporated Area of Region

Tier IV_c - Employers, Unincorporated Area of Region

B. <u>AVR Targets for Employers Who Did Not File in the Previous Year</u>. An Employer who is required to file a TDM Report, although not having been required to file a TDM Report during the previous year, shall have the following AVR Targets:

The Employer shall have the same AVR Target as other Employers in the same Employer category.

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

V. TDM REPORTS

A. Filing Requirements.

- 1. Employers that must comply with the Ordinance shall file annual TDM Reports. TDM Reports shall be submitted to the Transportation Demand Management Administrator.
- 2. Late TDM Reports are subject to penalties as stated in the Ordinance.

B. <u>TDM Survey Method</u>.

- 1. To file a TDM Report, Employers will collect necessary data by a written Employee survey or other statistically accurate methodology approved by the applicable TDM Administrator. Surveys shall be conducted within 90 days of the due date of the TDM Report.
- 2. The required standard survey form (Exhibit A) will be made available by the Transportation Demand Management Administrator upon request. Employers shall collect the completed survey forms and submit the originals, together with a TDM Report Form (Exhibit B) for each Work Site, to the Transportation Demand Management Administrator for processing.
- 3. The Employer's AVR will be calculated by the Transportation Demand Management Administrator. Tabulated results will be given to the Employer. The Employer will be notified if a Transportation Demand Management Statement/Plan is required as a result.
- 4. The Employer shall survey all Employees at each Work Site. The Employer shall submit all completed Employee surveys with its TDM Report or Statement/Plan. TDM Reports shall include survey responses from at least 75% of the Employees at each Work Site. An Employer who does not achieve at least 75% survey response rate shall be required to resurvey its Employees. Calculation of an Employer's AVR shall be based upon the Employee surveys submitted (minimum 75%) by the Employer.

C. <u>TDM Report Contents</u>.

- 1. The TDM Report shall consist of the completed TDM Report Form and all original Employee surveys.
- 2. The Employer shall include the Employer Ridesharing Incentives Survey Form (Exhibit D) in the TDM Report. This survey assists the Employer and the Transportation Demand Management Administrator in determining which Transportation Demand Management actions are the most successful.

D. Consolidated TDM Reports.

- 1. An Employer may file a Consolidated TDM Report for its multiple Work Sites, provided that each Work Site is represented and described separately.
- 2. TDM Report Forms are required for each Work Site included in a Consolidated TDM Report.

- 3. Work Site Summary Forms (Exhibit C) are required for Consolidated TDM Reports.
- 4. Employers filing a Consolidated TDM Report that meets the AVR Target, on average, do not need to meet the AVR Target at individual Work Sites. The average AVR for a Consolidated TDM Report shall be calculated by weighing the average of all included Work Site AVRs by the number of Employees who report to each Work Site during the Principal Travel Period. The AVR shall be calculated separately for Work Sites with 100 or more Employees¹, 60-99 Employees¹, and if the contingency measure is implemented, 25-59 Employees¹, and 11-24 Employees¹ because Employers have different AVR Targets. As an alternative, an AVR can be calculated for all the included Work Sites if the Tier I Employer's AVR Target is applied.
- 5. <u>Example</u> Consolidated TDM Report for an Employer with multiple Work Sites:

Work Site	AVR	Employees Reporting to the Work Site During the <u>6 to 10 a.m. Principal Travel Period</u>
А	1.200	30
В	1.250	500
Ĉ	1.050	100
D	1.100	40

Average AVR for Tier I Employers = (500 + 100) / (500 + 1.250) + (100 + 1.100) = 600 / 491 = 1.222

Average AVR for Tier III Employers = (30 + 40) / (30 + 1.200) + (40 + 1.100) = 70 / 61 = 1.147

- 6. If the Consolidated TDM Report fails to meet the AVR Target, then only Work Sites that have individually failed to meet the AVR Target shall require an Employer's submission of a TDM Statement/Plan.
- E. <u>Collective AVR Reports</u>.
 - 1. A group of Employers may file a TDM Report in a collective effort through a Transportation Management Association. Each Employer and each Employer's Work Sites shall be surveyed separately. An Employer in the group that has additional Work Sites outside the geographical area of the Transportation Management Association may include those Work Sites in the Collective TDM Report. To represent Employers, a Transportation Management Association must meet the criteria as specified in "Transportation Management Associations", Section X.
 - 2. TDM Report Forms are required for each Work Site included in a Collective TDM Report.
 - 3. Work Site Summary Forms (Exhibit C) are required for Collective TDM Reports.

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

- 4. If a group of Employers within a Transportation Management Association, on average, collectively meet the AVR Target, then those Employers do not need to individually meet their AVR Target. The average AVR for a Collective TDM Report shall be calculated by weighing the average of all included AVRs. The average AVR shall be calculated separately for Work Sites with 100 or more Employees¹, 60-99 Employees¹, and if the contingency measure is implemented, 25-59 Employees¹, and 11-24 Employees¹ because Employers have different AVR Targets. As an alternative, an average AVR can be calculated for all the included Work Sites if the Tier I Employer's AVR Target is applied.
- 5. Example A Collective TDM Report for a group of Employers, some with multiple Work Sites, filing through a Transportation Management Association:

			Employees Reporting
			to the Work Site During the
Employer	Work Site	AVR	6 to 10 a.m. Principal Travel Period
#1	Α	1.100	50
#2	В	1.150	25
	С	1.150	60
	D	1.200	150
	Е	1.250	100
	F	1.100	40
#3	G	1.250	500
#4	Н	1.100	200
	Ι	1.150	100
	J	1.200	70
	K	1.100	50
#5	L	1.400	50
	М	1.150	45
AVR for Tie	r I Employer = (50	+60 + 150 + 100	+500 + 200 + 100 + 70 + 50 + 50)
/ [(50) + 1.100) + (60 + 1	.150) + (150 + 1.2	(200) + (100 + 1.250) + (500 + 1.250)
+ (20	0 + 1.100) + (100 - 100)	+ 1.150) + (70 + 1	.200) + (50 + 1.100) + (50 + 1.400)]
= 133	30 / 1155 = 1.152 A	VR	

- Average AVR for Tier III Employer = (25 + 40 + 45) / (25 + 1.150) + (40 + 1.100) + (45 + 1.150) = 110/97 = 1.134 AVR
- 6. If the Collective TDM Report fails to meet the AVR Target, then each Work Site that has failed to meet the AVR Target shall be required to submit a Transportation Demand Management Statement/Plan.
- F. Filing Schedule.
 - 1. TDM Report due dates shall be established by the Transportation Demand Management Administrator.
 - 2. Employers will be notified at least 90 days in advance by the Transportation Demand Management Administrator that a TDM Report is due. Extensions

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

of the due date may be granted by the Transportation Demand Management Administrator.

- 3. Employers with Work Sites having different due dates may consolidate into a single due date. The Consolidated TDM Report shall be due upon the earliest due date for the Work Sites to be included in the Consolidated TDM Report.
- 4. A Collective TDM Report filed by Employers through a Transportation Management Association shall be due upon the earliest due date for the Work Sites to be included in the Collective TDM Report.
- 5. A Transportation Management Association may divide the Employer Work Sites it represents into groups to facilitate surveying and reporting. Each group may have a Collective TDM Report and a separate due date. Each group's Collective TDM Report shall be due upon the earliest due date for the Work Sites to be included. The grouping of Work Sites by a Transportation Management Association cannot be modified except as approved by the Transportation Demand Management Administrator.
- 6. If an Employer is filing a TDM Report through a Transportation Management Association, but not in a collective effort with other Employers, then the TDM Report shall be due upon the Employer's due date established by the Transportation Demand Management Administrator.

VI. INCENTIVES

- A. <u>Public Recognition</u>. The Transportation Demand Management Program Administrator shall give recognition to Employers who meet their annual AVR Target. The form(s) of recognition may include the following:
 - 1. Publication of Employer AVR results.
 - 2. Certificates of achievement to the qualifying Employers and Transportation Management Associations
 - 3. Awards banquet honoring outstanding achievement and innovation.
 - 4. Public recognition for qualifying Employers and Transportation Management Associations
- B. <u>Tax Credits</u>. Federal and state tax incentives may be available to Employers for expenses incurred in providing ridesharing incentives to Employees. The Transportation Demand Management Administrator will provide current information, upon request, about pertinent legislation.
 - 1. Currently, state and federal law provides that transit subsidies paid to Employees by the Employer up to the amount of \$21.00/month are non-taxable.

VII. TRANSPORTATION DEMAND MANAGEMENT STATEMENTS/PLANS

A. Filing Requirements.

- 1. Employer Transportation Demand Management Statements/Plans are required if an Employer fails to meet its AVR Target. The Employer Transportation Demand Management Statement/Plan is intended to outline additional actions to be implemented by the Employer in order to reach its next Annual AVR Target. Employers may utilize the services of Transportation Management Associations to assist in the preparation and implementation of Employer Transportation Demand Management Statements/Plans. Transportation Management Associations may also represent Employers during the Transportation Demand Management Statement/Plan review process.
- 2. Employer Transportation Demand Management Statements/Plans shall be specific for single Work Sites, although Employers may submit a consolidated plan as long as each Work Site is addressed individually.
- 3. Employers filing a Collective TDM Report that have failed to meet the AVR Target and have individually failed to meet the AVR Target shall be required to submit a Transportation Demand Management Statement/Plan. The plan must be filed by the individual Employer, but may include individual and/or group actions to be implemented by the Employer in order to reach its next Annual AVR Target.
- 4. Late Employer Transportation Demand Management Statements/Plans are subject to penalties as stated in the Ordinance.
- B. <u>Notification</u>. When the TDM Report Form indicates failure to achieve the annual AVR target, the Transportation Demand Management Administrator shall notify the Employer if an Employer Transportation Demand Management Statement/Plan is due. The Statement/Plan shall be due 90 days from receipt of notification.
- C. <u>Statement/Plan Contents</u>. An Employer Transportation Demand Management Statement/Plan shall include the following:
 - 1. A copy of the most recent TDM Report Form.
 - 2. A copy of the previous Employer Transportation Demand Management Statement/Plan for the Work Site, if applicable.
 - 3. Listing of existing Transportation Demand Management actions in place at the Work Site, including but not limited to the actions listed in the "Menu of Transportation Demand Management Actions", Section VIII.E, or "Pre-Approved Mitigation Measures," Section VIII.F.
 - 4. Statement of which existing Transportation Demand Management Actions will be maintained, will be enhanced, and which will be discontinued. (Not required if pre-approved Mitigation Measures Selected)
 - 5. Listing of new Transportation Demand Management Actions that will be implemented at the Work Site including but not limited to those listed in the

Menu of Transportation Demand Management Actions, or pre-approved APCD Mitigation Measures.

- 6. Statement of implementation schedule for new and existing Transportation Demand Management Actions. (Not required if pre-approved Mitigation Measures selected)
- D. <u>Statement/Plan Review</u>. (For Employer designed TDM Statements/Plans only)
 - 1. Employer Transportation Demand Management Statements/Plans will be reviewed and approved by the applicable Transportation Demand Management Administrator to ensure the plan is complete and workable.
 - 2. Employer Transportation Demand Management Statements/Plans shall be implemented within 30 days of acceptance. Rejected Transportation Demand Management Statements/Plans shall be revised and resubmitted within 30 days of notification. After notification, failure to submit an acceptable plan within 30 days will subject the Employer to enforcement provision Section H.2. of the Ordinance. (For Appeals - see Ordinance Section I.)
 - 3. In cases in which an Employer submits a consolidated Employer Transportation Demand Management Statement/Plan for multiple Work Sites, each Work Site will be reviewed individually.

E. Menu of Transportation Demand Management Actions

- 1. <u>Purpose</u>. The following menu provides a variety of Transportation Demand Management Actions that an Employer may choose to implement to help achieve its next Annual AVR Target. An Employer is not limited to the actions listed here. Pre-Approved Mitigation Measures are listed in Section VIII.F.
- 2. <u>Alternative Work Hour Programs</u>.
 - a. Compressed work week schedule
 - (1) 3/36 schedule
 - (2) 4/40 schedule
 - (3) 9/80 schedule
 - b. Flextime available to Employees who rideshare
 - c. Staggered work hours
- 3. Transportation Management Association Membership.
- 4. General Incentives.
 - a. "Guaranteed ride home" program for Employees who rideshare
 - b. Transportation allowance in lieu of parking or transit subsidies
 - c. Awards/recognition/bonus to Employees who use alternative commute modes
 - d. Provide fleet vehicles for ridersharers
 - e. Provide rental vehicles (hourly basis) for personal business
 - f. Provide shuttle service to retail and/or transit centers
- 5. Transit.
 - a. Pass sales at Work Site
 - b. Subsidized passes
 - c. "Occasional-use" parking permits for regular transit users
- 6. <u>Carpool</u>.
 - a. Parking subsidy for carpoolers
 - b. Maintain current carpool matching list
 - c. Carpool bulletin board
 - d. Provide company vehicles
7. <u>Vanpool/Buspool</u>.

- a. Provide company vehicles
- b. Subsidize private vehicles
- c. Subsidize vanpool passenger fares
- 8. Bicycling.
 - a. Provide Bicycle Incentive Allowance
 - b. Bike lockers at Work Site
 - c. Shower/locker facilities
 - d. Improve bike access to Work Site
- 9. Walking.
 - a. Provide Walking Incentive Allowance
 - b. Shower/locker facilities
 - c. Improve pedestrian access to Work Site
- 10. <u>Telecommuting</u>.
 - a. Provide telecommuting program and policy
 - b. Provide company computers
 - c. Subsidize private computers
 - d. Establish satellite office locations for telecommuting

11. On-Site Amenities.

- a. Child-care
- b. Post office
- c. Banking services
- d. Cafeteria/deli/restaurant
- e. Fleet vehicles for Employees' use during workday
- f. Commuter Lounge for waiting/connecting
- 12. Parking Management Strategies.
 - a. Preferential parking for carpools and vanpools

- b. Implement paid parking on the Work Site with proceeds to fund Alternative Commute Mode incentives
- c. Limit the availability of all-day on the Work Site parking for singleoccupant vehicles
- d. Provide reduced parking pricing for carpools and vanpools
- 13. <u>Alternative Fuels¹</u>
 - a. Provide alternative fuel fleet vehicles
 - b. Subsidize fuel costs for employees that use alternative fuel vehicles
- 14. <u>VMT Reduction Strategies²</u>
 - a. Reduced Employer Commuter VMT through use of alternative or satellite Work Sites

¹Alternative Fuel and VMT Reduction Program Credit is not defined or available at the time of this publication.

F. Pre-Approved Mitigation Measures

1. <u>Mitigation Measures - Year One</u>

An Employer whose AVR calculation for 1994 in the case of a Tier I Employer, 1996 in the case of a Tier II Employer, two years after the contingency measure is implemented in the case of a Tier III Employer, and three years after the contingency measure is implemented in the case of a Tier IV Employer is less than the required annual AVR Target shall certify to the TDM Administrator implementation of the following trip reduction actions within 90 days of submittal of the TDM Report.

- a. A Guaranteed Ride Home Program for Employee ridesharers shall be provided by the Employer.
- b. Bike lockers or bike racks shall be provided by the Employer to all persons electing to ride bicycles to work.
- c. "Occasional Use" parking shall be made available for regular ridesharers.

2. Mitigation Measures - Second Year

An Employer whose AVR calculation for 1995 or later in the case of a Tier I Employer, 1997 or later in the case of a Tier II Employer, three years after the contingency measure is implemented or later in the case of a Tier III Employer, and four years after the contingency measure is implemented or later in the case of a Tier IV Employer is less than the required annual AVR Target shall certify to the TDM Administrator implementation of the following trip reduction actions within 90 days of submittal of the TDM Report.

- a. All the trip reduction actions required in Subsection F.1. above shall be implemented.
- b. All Employees shall be offered a monthly public transit pass subsidy equal to at least 50% of the full cost of the pass or the existing subsidy, whichever is greater.
- c. Financial incentives equivalent to the transit pass subsidy shall be offered to all Employees to encourage ridesharing and non-motorized alternative transportation. Equivalent transit pass subsidy shall be either the average transit pass subsidy received by Employees, or half of the San Diego Trolley Monthly Regular Ready Pass price, whichever is greater. A financial incentive as determined herein shall be offered for each motor vehicle trip reduced. This means, each person in a two-person carpool that saves one trip shall receive onehalf of the financial incentive. A three-person carpool saves two trips, and will receive twice the equivalent financial incentive shared among the three persons. The same concept will apply to the vanpools and non-motorized commute.

3. <u>Mitigation Measures - Third Year</u>

If the Employer AVR calculation submitted after the required trip reduction actions in Subsection F.2. above is below the required annual AVR Target the Employer shall certify to the TDM Administrator implementation of the following trip reduction actions within 90 days of the submittal of the TDM Report.

- a. All trip reduction actions required in Subsection F.1. above shall be continued.
- b. All Employees shall be offered the subsidy and incentives specified in Subsection F.2.b. and F.2.c. and an economic differential between solo drivers and commuters who do not drive alone of equivalent value to a the minimum stated below.

The economic differential shall provide direct economic incentive to avoid solo driving and may consist of a cash subsidy to those Employees who do not drive alone or a parking charge or other charge to solo drivers. The minimum economic differential shall be \$30 a month, or \$1.50 a day, or a prorated hourly charge or incentive.

Where an Employer provides a direct subsidy as partial or full payment for Employee parking of a single occupancy vehicles in facilities not owned, contracted-for, or controlled by the Employer, the direct subsidy shall not reduce the Employee's cost of parking at those facilities below the appropriate minimum economic differential shown in the table below.

For determining the minimum economic differential for part-time Employees working less than eight hours per day, the Employer may prorate by dividing the daily economic differential by eight and multiplying by the number of hours the part-time Employee works.

OR

All Employees shall be offered a monthly public transit pass subsidy equal to 100% of the full cost of the pass. Financial incentives equivalent to the transit pass subsidy shall be offered to all Employees to encourage ridesharing and non-motorized alternative transportation. Equivalent transit pass subsidy shall be either the average transit pass subsidy received by Employees, or the San Diego Trolley Monthly Regular Ready Pass price, whichever is greater. A financial incentive as determined herein shall be offered for each motor vehicle trip reduced. This means, each person in a two-person carpool that saves one trip shall receive one-half of the financial incentive. A three-person carpool saves two trips, and will receive twice the equivalent financial incentive shared among the three persons. The same concept will apply to the vanpools and nonmotorized commute.

- c. A program incorporating flexible work hours shall be provided for transit users, bicyclists and pedestrians to the maximum extent feasible due to the nature of the Employer's business activities.
- 4. Mitigation Measures Fourth Year

If an Employer's AVR calculation submitted after the required trip reduction actions in Subsection F.3. above, is below the required annual AVR Target, the Employer shall certify to the TDM Administrator implementation of the following trip reduction actions within 90 days of submittal of the TDM Report.

- a. All trip reduction actions required in Subsections F.1. and F.3.c above shall be continued.
- b. All Employees shall be offered a monthly public transit pass subsidy equal to 100% of the full cost of the pass. Financial incentives equivalent to the transit pass subsidy shall be offered to all Employees to encourage ridesharing and non-motorized alternative transportation. Equivalent transit pass subsidy shall be either the average transit pass subsidy received by Employees, or the San Diego Trolley Monthly Regular Ready Pass price, whichever is greater. A financial incentive as determined herein shall be offered for each motor vehicle trip reduced. This means, each person in a two-person carpool that saves one trip shall receive one-half of the financial incentive. A three-person carpool saves two trips, and will receive twice the equivalent financial incentive shared among the three persons. The same concept will apply to the vanpools and nonmotorized commute.
- c. The Employer shall provide an economic differential between solo drivers and commuters who do not drive alone of equivalent value to the appropriate minimum economic differential shown in the table below.

Where an Employer provides a direct subsidy as partial or full payment for Employee parking of a single occupancy vehicles in facilities not owned, contracted-for, or controlled by the Employer, the direct subsidy shall not reduce the Employee's cost of parking at those facilities below the appropriate minimum economic differential shown in the table below.

The minimum economic differential shall be implemented within 90 days of submittal of the Employer AVR verification following the effective date of the standards. Revenues from any parking charges shall be kept by the Employer to defray the cost of Employee incentives and other costs to implement the requirements of this ordinance.

For determining the minimum economic differential for part-time Employees working less than eight hours per day, the Employer may prorate by dividing the daily economic differential by eight and multiplying by the number of hours the part-time Employee works.

An exemption from the economic differential may be obtained after the final AVR standard has been met, and the Employer demonstrates to the satisfaction of the Air Pollution Control Officer that the AVR standard can be maintained without the economic differential.

	First Time Subject to Subsection F.4.	Second Time AVR is Below Standard	<u>Third Time</u> <u>AVR is Below</u> <u>Standard</u>	Fourth and Later Times AVR is Below Standard
Within 0.2 of AVR Standard	\$30 (\$1.50)	\$50(\$2.50)	\$75(\$4)	\$100(\$5)
More than 0.2 below AVR Standard	\$50(\$2.50)	\$75(\$4)	\$100(\$5)	\$100(\$5)

Minimum Monthly Differential (Daily Differential)

If a parking charge is instituted by an employer for purposes of this economic differential requirement, households with gross unadjusted annual income below the levels specified in the table below, and handicapped Employees who must drive a motor vehicle specially equipped to meet their needs may be exempt from the parking charge. An Employer may request an exemption from the parking charge from the Air Pollution Control Officer on a case-by-case basis for Employees required to have personal vehicles for the conduct of business, or garage fleet vehicles at home. Such exemptions may be granted by the Air Pollution Control Officer on a case-by-case basis. Employers may accept certification from Employees concerning household income. Such certifications shall be made available to the Air Pollution Control Officer upon request. An Employee seeking exemption from parking charges based on household income shall provide, upon request by the Air Pollution Control Officer to substantiate the household income. If satisfactory information is not provided, the parking charge exemption shall be removed by the Employer upon notification by the Air Pollution Control Officer.

Gross Unadjusted Annual Income by Household Size¹

1	2	3	4		6	7	8
\$12,247	\$16,428	\$20,609	\$24,790	\$28,971	\$33,152	\$37,333	\$41,514

An Employer shall not be required to impose a parking charge on Employees where such charge violates state or federal minimum wage laws.

¹For additional persons in the household, the household income shall be $41,514 + 4,181 \times (additional person(s))$.

VIII. TRANSPORTATION MANAGEMENT ASSOCIATIONS/ORGANIZATIONS

A. <u>Definition</u>. As defined in the Regional Transportation Demand Management Ordinance, a Transportation Management Association/Organization (TMA/TMO) means a private and/or public service organization with a strategic plan addressing institutional structure, programs, services and funding for the purpose of assisting businesses with implementing transportation control measures (TCMs). Such associations may operate Employee Transportation Coordinator (ETC) Networks, provide commuter services, guaranteed/ emergency ride home services, form vanpools and other related programs. Any TMA/TMO that meets this criteria and opts to apply to the Air Pollution Control District (APCD) or other governmental agencies for funding may need to meet additional criteria.

B. Requirements.

- 1. In order to be recognized by the Transportation Demand Management Administrator for purposes of representing Employers in meeting the provisions of the Ordinance, a Transportation Management Association shall annually submit to the Transportation Demand Management Administrator a written statement demonstrating that it possesses each of the attributes contained in the definition of a Transportation Management Association/Organization, as defined in the Ordinance.
- 2. The statement to be submitted to the Transportation Demand Management Administrator will include the following:
 - a. Current funding source(s) and business status (profit, non-profit).
 - b. A description of the geographic area it currently serves.
 - c. A list of the Transportation Management Association/Organization Board of Directors.
 - d. Current list of Employers served by the Transportation Management Association/Organization.
 - e. An inventory of the Transportation Management Association/ Organization products and services. These may include on-site rideshare matching, vanpool formation, parking management programs, on-site sale of transit passes, formation and operation of Employee Transportation Coordinator Network(s), a guaranteed/ emergency ride home program, or other Transportation Demand Management-related services.

IX. GLOSSARY

This Glossary defines terms used in the Technical Requirements.

"Alternative Commute Modes" shall mean all commute modes including bicycling, buspool, carpool, transit, vanpool, telecommuting and walking, but excludes driving alone.

"Alternative Work Hour Programs" shall mean any method for shifting the work day of an Employee so that the work day starts outside of the Principal Travel Period. Such programs include, but are not limited to: (1) compressed work schedules; (2) staggered work hour programs; (3) flextime.

"Average Vehicle Ridership" or "AVR" shall mean the number of employees reporting to work site between 6 a.m. and 10 a.m. divided by the number of vehicles or vehicle equivalents driven by these employees to the work site.

"Average AVR" shall mean the weighed average AVR for a Collective TDM Report or Consolidated TDM Report.

"Bicycling" shall mean commuting by bicycle.

"Buspool" shall mean an express bus service with limited pickups and destination stops, guaranteed seats and advance ticket purchase. Buspools are sometimes administered by the riders themselves.

"Carpool" shall mean a motor vehicle occupied by two (2) or more commuters travelling together on a regular basis.

"Collective TDM Report" shall mean a TDM Report filed by a Transportation Management Association representing multiple Employers and Work Sites.

"Commute" shall mean a home-to-work or work-to-home trip made regularly in connection with employment.

"Commute Mode" shall mean the mode which the commuter uses for the longest distance portion of a Commute.

"Commuter Computer" is San Diego's regional ridesharing agency operated by Cooperative Agreement between SANDAG and CALTRANS.

"Compressed Work Week Schedules" shall mean work schedules that compress the traditional 40-hour weekly work period into fewer than five days by adopting a longer work day such as 3/36 (three 12-hour days and two days off per week), 4/40 (four 10-hour days and one day off per week), and 9/80 (eight 9-hour days, one 8-hour day and one day off every two weeks).

"Consolidated TDM Report" shall mean a TDM Report filed by an Employer for more than one Work Site.

"TDM Report" shall mean an annual report filed by an Employer which shows the times and modes Employees use in commuting to work and the Employer's calculation of its annual Average Vehicle Ridership.

"AVR Target" shall mean the Average Vehicle Ridership established by the Transportation Demand Management Ordinance.

"Employee" is any full-time or part-time person employed by an Employer, temporary Employee or any consultant or independent contractor hired by the Employer and who reports to the Work Site. The following shall be exempt from the requirements of the trip reduction program: 1) Business trips made directly from home to the field, 2) Employees of Construction Sites under one-year duration, 3)Disabled persons who must drive a specially equipped vehicle, 4) Real Estate agents, 5) Taxi drivers who lease their vehicles. Exempt individuals shall not be included in the Employer size determination or Employer AVR calculation under the TDM Program and Ordinance.

"Employee Transportation Coordinator" is a person designated by an Employer to act as a Work Site contact between the City, Transportation Management Association, Transportation Demand Management agencies and service groups, and the Employer and its Employees.

"Employees, Number of" for the purpose of determining Employer tier and penalty assignment, shall mean the average number of employees (full-time employee equivalents; to be addressed as part of the regulatory process) who report to the Work Site on a typical week day (M-F).

"Employer" shall mean a sole proprietor, partnership, corporation, unincorporated association, joint venture, or other business entity that employs Employees. Employers are broken down into these categories:

Tier I Employer: An Employer who employs 100 or more Employees¹ at a Work Site on any week day (M-F).

Tier II Employer: An Employer who employs between 60 and 99 Employees¹ at a Work Site on any week day (M-F).

Tier III Employer: An Employer who employs between 25 and 59 Employees¹ at a Work Site on any week day (M-F).

Tier IV Employer: An Employer who employs between 11 and 24 Employees¹ at a Work Site on any week day (M-F).

These categories of Employers relate to the number of Employees¹ at each Work Site and not to the total number of Employees for all Work Sites.

"Flextime" shall mean Employees are given the freedom to choose their starting and leaving times, as long as they work the required hours and perform their responsibilities. Core periods are designated and all Employees must be present during these periods (such as 9:30 a.m. - 11:30 a.m. and 1:30 p.m. to 3:30 p.m.).

"Implementation Date" shall be defined as July 1, 1991.

"On-Site Amenities" shall mean facilities at the Work Site that would reduce a person's reliance on his/her automobile. On-site automatic teller machines, bike

¹Full-time employee equivalents (to be addressed as part of the regulatory process).

racks/lockers, shower and locker facilities, child care facilities, athletic facilities, post offices and restaurants are examples of on-site amenities.

"Ordinance" see "Regional Transportation Demand Management Ordinance".

"Principal Travel Period" or "PTP" shall mean from 6:30 a.m. to 8:30 a.m. weekdays for the Goods Movement Element and 56:00 a.m. to 10:00 a.m. for the Employment Element.

"Transportation Demand Management Administrator" shall mean an Employee appointed by the City, County, APCD or subregional entity to implement the Regional Transportation Demand Management Program Ordinance.

"Regional Transportation Demand Management Ordinance" shall mean article _____, Division _____ of Chapter _____ of the ______ Municipal Code, ______ through ______

"Ridesharing" shall mean the use of Alternative Commute Modes. Although not literally "sharing a ride", bicycling, walking, and telecommuting modes shall be considered to be ridesharing for purposes of the Regional Transportation Demand Management Ordinance and these Technical Requirements.

"SANDAG" shall mean the San Diego Association of Governments.

"Staggered Work Hour Programs" shall mean a fixed scheduling of work hours that spreads the Employees' starting and stopping times over a one to four-hour period, with individual groups of employees designated to report and leave the Work Site at set intervals (usually 15-30 minute periods).

"Telecommute" or "Telecommuting" shall mean working at home, satellite work centers or communicating electronically with the Work Site for an entire work day.

"Transit" shall mean a motor vehicle operated on a for-hire, multiple-occupant, sharedride basis, including bus, shared-ride taxi, and shuttle van.

"Transportation Demand Management" or "TDM" shall mean a comprehensive set of strategies designed to influence travel behavior with respect to mode, time, frequency, route, or distance.

"Transportation Demand Management Actions" shall mean Alternative Work Hour Programs, incentives offered to Employees to encourage Alternative Commute Modes, Telecommuting and use of On-site amenities.

"Transportation Demand Management Plan" or "TDM Plan" shall mean a written plan outlining schedules, steps, programs, work site incentives, amenities, monitoring, evaluation, and corrective actions that will be implemented by an Employer to achieve its AVR Targets.

"Transportation Management Association" or "TMA/TMO" as defined in the Regional Transportation Demand Management Ordinance, a Transportation Management Association/Organization (TMA/TMO) means a private and/or public service organization with a strategic plan addressing institutional structure, programs, services and funding for the purpose of assisting businesses with implementing Transportation

Control Measures (TCMs). Such associations may operate Employee Transportation Coordinator (ETC) Networks, provide commuter services, guaranteed/ emergency ride home programs, for vanpools and other related programs.

Any TMA/TMO that meets this criteria and opts to apply to the Air Pollution Control District (APCD) or other governmental agencies for funding may need to meet additional criteria.

"Trip shall mean a single or one-direction vehicle movement with either the origin and destination inside the boundaries of the San Diego Region.

"Vanpool" shall mean a van used routinely by several (typically six or more) Employees to commute together. The three basic types of vanpools are owner-operated, Employer-operated, and vendor-operated.

"Work Site" shall mean a land area, building or set of contiguous buildings or portions thereof, under the ownership or control of a single Employer where employees perform work.

X. EXHIBITS

- Α.
- Β.
- С.
- Employee Survey Form TDM Report Form Work Site Summary Form Employer Incentives Survey Form D.

HIGH SCHOOL, COLLEGE AND UNIVERSITY ELEMENT

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

HIGH SCHOOL, COLLEGE AND UNIVERSITY TRAFFIC ELEMENT

A. PURPOSE AND INTENT

The purpose of this High School, College and University Traffic Element of the Regional Transportation Demand Management (TDM) Program and Ordinance is to specify to the public and private sectors responsibilities for reasonable efforts to reduce vehicle trips and to protect the public health, safety, and general welfare through Transportation Demand Management actions. The focus of this program is to reduce high school, college and university traffic congestion and improve public health and safety by reducing the number of students who drive alone in motor vehicles to high schools, colleges and universities. The objectives for the High School, College and University Traffic Element shall be implemented in conjunction with the policies and programs for the Employment Traffic Element.

The objectives of the High School, College and University Traffic Element shall lead to the achievement of a 1.5 Average Vehicle Ridership during the 6 to 10 a.m. principal travel period for high school, college and university student travel by the year 2000.

B. DEFINITIONS

See the Technical Supplement, Section X, Glossary.

C. CATEGORIES OF PARTICIPANTS

- 1. **Tier I Institution:** A High School, College or University which provides educational services to one hundred (100) or more students.
- 2. Tier II Institution: A High School, College or University which provides educational services to 60-99 students.
- Note: Issues concerning the feasibility of the High School, College and University Traffic Element for community college students, as well as issues regarding the Program in the record of the public hearing on the adoption of the Revised Regional Air Quality Strategy, will be reviewed and addressed by the College and University TDM Policy Advisory Committee, in consultation with the community colleges, during FY 93.

D. PHASING

- 1. <u>Tier I Institutions</u> shall begin compliance with this Ordinance in the fall term of 1993.
- 2. <u>Tier II Institutions</u> shall begin compliance with this Ordinance in the fall term of 1994.
- E. REQUIREMENTS

1. Performance Requirements

a. Each High School, College and University shall select from and utilize the procedures and strategies outlined in the Regional TDM Technical Supplement, to achieve during the 6 to 10 a.m. principal travel period the annual CAVR Targets listed below. (The technical supplement also includes information outlining the TDM organizational structure, examples of reports, plans and calculations, and technical assistance available.)

Minimum High School, College and University Average Vehicle Ridership (CAVR) Targets:

YEAR	1991	1992	1993	1994	1995
AVR	(1.20)	(1.23)	(1.26)	1.30*	1.33*
YEAR	1996	1997	1998		2000 and beyond
AVR	1.36	1.40	1.43	1.46	1.50

*Requires TDM Reports Only, No Plans ()Indicates Target Years Prior to Program Implementation

- b. Each High School, College and University shall file an annual TDM Report with the TDM Program Administrator according to the filing schedule established by the TDM Program Administrator.
- c. Each High School, College and University which fails to achieve its annual AVR Target shall file a TDM Statement/Plan as defined in the Technical Supplement. The TDM Statement/Plan shall be filed with the TDM Program Administrator.
- d. A Transportation Management Association (TMA/TMO) or other service provider, may be granted authority by a High School, College or University to prepare and/or execute a High School's, College's or University's TDM Report or TDM Statement/Plan. However, the responsibility for achieving the requirements of this Ordinance shall remain with the High School, College or University. If a group of High Schools, Colleges and Universities in a TMA/TMO collectively meets the CAVR Target, High Schools, Colleges and Universities within the TMA/TMO do not need to individually meet the annual target.
- e. Each High School, College or University shall designate a Transportation Coordinator for each site to serve as representative between the TDM Program Administrator and the High School, College or University.

2. <u>Reporting Requirements</u>

- a. Each High School, College or University shall file an annual TDM Report showing arrival times and percentage of travel by each mode for its students and the calculation of their Average Vehicle Ridership for each campus as established in the Technical Supplement.
- b. TDM Reports shall be submitted according to the filing schedule established by the TDM Program Administrator.

c. High Schools, Colleges and Universities with more than one campus may choose to file a consolidated TDM Report for all their Sites, provided the data are shown separately by Site.

3. TDM Plan Requirements.

- a. A High School, College or University which fails to achieve its annual CAVR Target shall develop, file, and implement a TDM Statement/Plan designed to attain the annual CAVR Target and conforming to criteria outlined in the Technical Supplement.
- b. The TDM Statement/Plan shall be submitted to the TDM Program Administrator within 90 days after the date of receipt of notification from the TDM Program Administrator of failure to achieve the CAVR Target.
- c. Implementation of TDM Statements/Plans shall begin within 30 days of the acceptance date. Rejected TDM Statements/Plans must be revised and resubmitted within 30 days of notification of rejection. After notification, failure to submit an acceptable plan within 30 days will subject the Employer to enforcement provisions Section H.2.
- d. TDM Reports, following submittal of a TDM Statement/Plan, shall be submitted according to the High School's, College's or University's initial TDM Report date.
- e. A High School, College or University may choose to consolidate required TDM Statements/Plans for more than one Site under this requirement.

F. INCENTIVES

Incentives are described in Section VII of the Technical Supplement.

G. TDM COMPLIANCE

1. Each time a High School, College or University fails to achieve its annual CAVR Target it shall develop and file a TDM Statement/Plan to further strengthen its TDM Program. Filing a TDM Statement/Plan requires the High School, College or University to select and implement new TDM actions including, but not limited to, those listed in the Technical Supplement (Section VIII.E.). These actions shall be designed to meet the High School's, College's or University's Annual AVR Target by its next TDM Report due date.

A High School, College or University which achieves its annual CAVR Targets, having filed a TDM Statement/Plan, is no longer required to file a TDM Statement/Plan unless its CAVR Target is subsequently missed.

2. A High School, College or University failing to achieve its annual CAVR Target and failing to implement and carry out its TDM Statement/Plan, shall be in violation of the Regional TDM Ordinance and the Regional Air Quality Plan and subject to enforcement provisions.

H. ENFORCEMENT

HIGH SCHOOL, COLLEGE AND UNIVERSITY ELEMENT

- 1. A High School, College or University which fails to file an annual TDM Report when due shall be in violation of this Ordinance. Each day in which the High School, College or University fails to file the TDM Report, following the date when due, shall constitute a separate and additional violation of this Ordinance. Under this provision, each separate and additional violation of this Ordinance shall be subject to an administrative civil penalty of \$5.00 per student, up to a maximum penalty of \$500.00 for each day of violation. [Health & Safety Code, Section 42402.5, when imposed by the APCD].
- 2. A High School, College or University which fails to file a TDM Statement/Plan when due shall be in violation of this Ordinance. Each day in which the employer fails to file the TDM Statement/Plan, following the date when due, or has not met the requirements of Section E.4.c. for resubmittal of a TDM Statement/Plan, shall constitute a separate and additional violation of this Ordinance. Under this provision, each separate and additional violation of this Ordinance shall be subject to an administrative civil penalty of \$5.00 per student, up to a maximum penalty of \$500.00 for each day of violation. [Id.]
- 3. A High School, College or University which fails to achieve its annual AVR Target and fails to implement and carry out its TDM Statement/Plan, as determined by the TDM Program Administrator or the TDM Appeals Board, is in violation of this Ordinance. Violation of this provision shall subject the institution to the maximum civil penalties established by law. [Health & Safety Code, Sections 42402, 42402.1, and 42402.2 when imposed by the APCD, maximum currently \$25,000 per day per violation]

I. AUDIT AND REVIEW

A triennial performance audit and review of the Regional TDM Program and Ordinance shall be conducted by APCD. The review will be conducted at a noticed public hearing and will include a report by the APCD. The report will assess the effectiveness, costs, benefits and identify further opportunities available for the achievement of program objectives.

The regulation implementing the High School, College and University Element will also be examined in light of any new developments as part of the annual and triennial review of the Regional Air Quality Strategy as required by state law.

J. STRATEGIES TO ACHIEVE TDM PROGRAM REQUIREMENTS

1. <u>Rideshare Promotion Program</u>

The High Schools, Colleges and Universities shall establish Rideshare Promotion Programs to develop, implement, and promote student commute alternatives in order to achieve the regional high school, college and university AVR Targets. The TDM Program will provide marketing and educational materials to support campus rideshare promotion programs in a manner similar to the support provided employers in the Employment Traffic Element.

It is envisioned that campuses will establish rideshare promotional offices and services to encourage carpools, vanpools, transit, walking, bicycling, telelearning, and other alternative modes or trip reduction technologies.

2. <u>Student Transit/Shuttle Subsidy Program</u> (Dependent on Additional Funding)

The High School, College and University Traffic Element shall provide funding for a Student Transit/Shuttle Subsidy Program. This funding shall be used to subsidize a transit pass program for high school, college and university students; and, to support the development and operation of local campus shuttle services. The applicable TDM Program Administrator shall coordinate the operation of the Student Transit/Shuttle Subsidy Program with the Metropolitan Transit Development Board and North County San Diego Transit District and shall coordinate and assist with regional marketing and promotional efforts.

The objective of the Student Transit/Shuttle Subsidy Program is to increase overall college and university student transit ridership by 1% per year over a twenty-year period, achieving a 12% student ridership rate by the year 2000; and, a 22% student ridership rate by the year 2010. This program is a primary strategy and an integral part of the high school, college and university effort to reduce the student drive alone rate.

The twenty-year student transit subsidy program is outlined below.

Year	1990	1991	1992	1993	1994	1995
% Rides	3	4	5	6	7	8
Passes	3600	5400	7200	9000	10800	12600
Cost (000s)	1,296	1,944	2,592	3,240	3,888	4,536
Year		1996	1997	1998	1999	2000
% Rides		9	10	11	12	13
Passes		14400	16200	18000	19800	21600
Cost* (000s)		5,184	5,832	6,480	7,128	7,776
Year		2001	2002	2003	2004	2005
% Rides		14	15	16	17	18
Passes		23400	25200	27000	28800	30600
Cost* (000s)		8,424	9,072	9,720	10,368	11,016
Үеаг		2006	2007	2008	2009	2010
% Ride		19	20	21	22	23
Passes		32400	34200	36000	37800	39600
Cost* (000s)		11,664	12,312	12,960	13,608	14,256

<u>Regional Student Transit/Shuttle Subsidy Program Targets:</u>

Cost * = 50% pass subsidy + 50% local services x 9 months

The initial funding for the Student Transit/Shuttle Subsidy Program will be provided by the Regional TDM Program. Additional resources to support the Student Transit/shuttle Subsidy Program may be required as the program progresses and student ridership targets are achieved. These new funding sources will have to be identified and utilized to achieve the year 2000 and 2010 target goals. Additional funding sources may include, but are not limited to: gasoline tax, transportation sales tax, motor vehicle registration fee, the inclusion of an alternative mode transportation fee within campus parking permit fees; an alternative mode transportation surcharge on metered or pay parking; an

HIGH SCHOOL, COLLEGE AND UNIVERSITY ELEMENT

alternative mode transportation surcharge on all campus parking violation fines and forfeitures; the addition of an alternative mode transportation fee to campus student fees; and, other local, state and federal resources.

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

HIGH SCHOOL, COLLEGE AND UNIVERSITY TRAFFIC ELEMENT TECHNICAL REQUIREMENTS

I. REFERENCE AND INTENT

- A. <u>Reference</u>. This document contains the Technical Requirements of the Regional Transportation Demand Management Ordinance, _____ Municipal Code Sections Through ____. The Ordinance should be reviewed prior to using this document.
- B. <u>Intent</u>. These Technical Requirements are intended to provide guidance, detailed information, and examples to assist High Schools, Colleges and Universities in meeting the requirements of the Regional Transportation Demand Management Ordinance.
- C. <u>Definitions</u>. The meaning of terms used in these Technical Requirements can be found in Section X, "Glossary".
- D. <u>Questions</u> regarding the Regional Transportation Demand Management Ordinance and these Technical Requirements should be referred to the Transportation Demand Management Administrator.

II. CAMPUS REQUIREMENTS

- A. <u>New Student Orientation Program</u>. High Schools, Colleges and Universities shall provide all new Students with a commute alternatives information packet. To assist High Schools, Colleges and Universities in preparing commute alternative information packets, Transportation Management Associations, Commuter Computer, and the Transportation Demand Management Administrator will have information about commute alternatives. The new Student information packet shall include information about the following topics, as appropriate to the specific Campus:
 - o Alternative Transportation and ridesharing incentives offered to Students by the High School, College or University
 - o Alternative Work and Class Schedule programs offered to Students who rideshare by the High School, College or University
 - o On-site amenities and information resources
 - o Air quality, traffic congestion and other conditions that necessitate Transportation Demand Management strategies.
 - o Carpool matching service
 - o Bus, trolley and rail service to the Campus vicinity
 - o Bicycle facilities including bicycle routes, lockers, racks, showers and dressing areas in the Campus vicinity
- B. <u>Campus Transportation Demand Management Information</u>. Each High School, College and University shall develop and maintain Student Transportation Demand Management information to provides all Students with current information regarding commute options and rideshare services available to them. Such information shall be accessible and available at each Campus. High Schools, Colleges and Universities may establish centrally located bulletin boards or kiosks, electronic bulletin boards, Campus newsletters or newspapers, and other communication delivery methods for display of information.

Campus Transportation Demand Management information shall include the following items, as appropriate to the specific Campus:

- o List of Alternative Transportation and ridesharing incentives offered to Students
- o List of Alternative Class Schedule programs offered to Students who rideshare
- o Alternative Transportation and ridesharing promotional material
- o Information on carpool matching service.
- o Space for carpool and vanpool riders-wanted advertisements
- o Transit pass information
- o Information about bus, trolley, and rail service to the Campus vicinity
- o Information about bicycle facilities, including bicycle routes, lockers, racks, showers and dressing areas in the Campus vicinity

A program for updating the Campus Transportation Demand Management information shall also be provided. The Campus Transportation Coordinator is suggested as the appropriate person to maintain the system.

III. CALCULATION OF CAMPUS AVERAGE VEHICLE RIDERSHIP (CAVR)

- A. <u>Purpose</u>. The High School, College and University Average Vehicle Ridership (CAVR) is the statistic used to measure the Campus' success at minimizing the number of Students who drive alone to each Campus. The CAVR is calculated by the Transportation Demand Management Administrator for each Campus using information in a TDM report provided by the High School, College, University or Transportation Management Association. The calculated CAVR shall be rounded to the nearest thousandth of a percent (0.0005 would round to 0.0010). See "TDM Reports", Section V., regarding TDM Reports.
- B. <u>CAVR Calculation</u>. The CAVR is calculated as follows:
 - 1. $\underline{CAVR} = A/B$

The number of Students who are scheduled to report to the Campus during the 6 to 10 a.m. principal travel period (A); <u>divided by</u> the total number of vehicles driven by these Students who are scheduled to report to the Campus during the 6 to 10 a.m. principal travel period (B).

Note: Alternative Fuel and VMT Reduction Program Credits are not defined at the time of this publication. When developed, they will be adjustments to the number of vehicles (B) in the denominator of the equation. Campuses will not be considered satellite offices for VMT Reduction Program Credits.

- 2. <u>Calculations and Examples</u>.
 - a. CAVR = A/B, where
 - A = the number of Students who are scheduled to report to the Campus during the 6 to 10 a.m. principal travel period
 - B = Number of vehicles or vehicle equivalents driven by these Students in reporting to the Campus during the 6 to 10 a.m. principal travel period

The number of Student vehicles is calculated by adding the number of vehicles and vehicle equivalents driven by Students in reporting to the Campus during the 6 to 10 a.m. principal travel period. Vehicle equivalents represent the portion of vehicles operated by Students who use an alternative commute mode, alternative work hour schedule or telecommute.

Vehicle equivalents are determined by the number of days per week vehicles are operated by Students to the Campus by mode divided by five days per week.

b. Worksheet Example:

CAVR = A/B

Number of Students at the Campus/6 to 10 a.m. principal travel period _____ (A)

Number of Vehicles or Vehicle Equivalents/6 to 10 a.m. principal travel period

Compressed Week Telecommute Walk Bicycle Carpool Vanpool Transit Trolley Rail Drive Alones	
Total Vehicles	(B)
Total CAVR [(A/B)]	(CAVR)

IV. CAVR TARGETS

- A. <u>Definition</u>. The CAVR Target is the value that the Campus AVR, or Average CAVR is compared to in the TDM Report. CAVR Targets are as follows:
- Tier I Campuses with more than one hundred (100) students

Filing Year (starting fall term)	CAVR Target	
1991	-	
1992	(1.23)	
1993	1.261	
1 994	1.30	
1995	1.33	
1996	1.36	
1997	1.40	
1998	1.43	
1999	1.46	
2000 and beyond	1.50	

Tier II Campuses with sixty to ninety nine (60-99) students

Filing Year (starting fall term)	CAVR Target	
1991	-	
1 992	(1.23)	
1993	(1.26)	
1994	1.30 ¹	
1995	1.331	
1996	1.36	
1997	1.40	
1998	1.43	
1999	1.46	
2000 and beyond	1.50	

B. <u>CAVR Targets for Campuses That Did Not File in the Previous Year</u>. A High School, College or University that is required to file an TDM Report, although not having been required to file a TDM Report during the previous year, shall have the following CAVR Targets:

The High School, College or University shall have the same CAVR Target as other Campus in the same Campus category.

¹Indicates years with TDM Reporting Only, No TDM Plans Required ()Indicates CAVR Targets before Implementation Program

V. CAVR REPORTS

- A. Filing Requirements.
 - 1. High Schools, Colleges and Universities that must comply with the Ordinance shall file annual TDM Reports. TDM Reports shall be submitted to the Transportation Demand Management Administrator.
 - 2. Late TDM Reports are subject to penalties as stated in the Ordinance.

B. <u>TDM Survey Method</u>.

- 1. To file an TDM Report, High Schools, Colleges and Universities will collect the necessary data by a written Student survey or statistically accurate methodology approved by the Transportation Demand Management Administrator. Surveys shall be conducted within 90 days of the due date of the TDM Report.
- 2. The required standard survey form (Exhibit A) will be made available by the Transportation Demand Management Administrator upon request. High Schools, Colleges and Universities shall collect the completed survey forms and submit the originals, together with a TDM Report Form (Exhibit B) for each Campus, to the Transportation Demand Management Administrator for processing.
- 3. The High School, College or University CAVR will be calculated by the Transportation Demand Management Administrator. Tabulated results will be given to the High School, College or University. The High School, College or University will be notified if a Transportation Demand Management Plan is required as a result.
- 4. High Schools, Colleges and Universities shall survey all Students at each Campus. Campuses shall submit all completed Student surveys with its TDM Report or Plan. TDM Reports shall include survey responses from at least 75% of the Students at each Campus. A High School, College or University which does not achieve at least 75% survey response rate shall be required to resurvey its Students. Calculation of a High School's, College's or University's AVR shall be based upon the Student surveys submitted (minimum 75%) by the High School, College or University.
- C. <u>TDM Report Contents</u>.
 - 1. The TDM Report shall consist of the completed TDM Report Form and all original Student surveys.
 - 2. The High School, College or University shall include the High School, College/University Ridesharing Incentives Survey Form (Exhibit D) in the TDM Report. This survey assists the High School, College or University and the Transportation Demand Management Administrator in determining which Transportation Demand Management actions are the most successful.

D. <u>Consolidated TDM Reports</u>.

- 1. A High School, College or University may file a Consolidated TDM Report for its multiple Campuses, provided that each Campus is represented and described separately.
- 2. TDM Report Forms are required for each Campus included in a Consolidated TDM Report.
- 3. Campus Summary Forms (Exhibit C) are required for Consolidated TDM Reports.
- 4. High Schools, Colleges or Universities filing a Consolidated TDM Report that meets the CAVR Target, on average, do not need to meet the CAVR Target at individual Campuses. The average CAVR for a Consolidated TDM Report shall be calculated by weighing the average of all included Campus AVRs by the number of Students who report to each Campus. The average CAVR shall be calculated separately for Campuses.
- 5. <u>Example</u> Consolidated TDM Report for a High School, College or University with multiple Campuses:

<u>Campus</u>	Size	CAVR	Students Reporting to the Campus During the <u>6 to 10 a.m. Principal Travel Period</u>
Α	I	1.200	20
В	L	1.250	500
С	L	1.050	100
D	Ι	1.100	40

Average CAVR for Campuses =

(500 + 100 + 20 + 40) / (500 + 1.250) + (100 + 1.100)+ (20 + 1.200) + (40 + 1.100) = 660 / 544 = 1.213 CAVR

5. If the Consolidated TDM Report fails to meet the CAVR Target, then only Campuses that have individually failed to meet the CAVR Target shall require a High School, College or University's submission of a Transportation Demand Management Plan.

E. <u>Collective TDM Reports</u>.

1. A group of High Schools, Colleges or Universities may file a TDM Report in a collective effort through a Transportation Management Association. Each High School, College or University and each High School's, College's or University's Campuses shall be surveyed separately. A High School, College or University in the group that has additional Campuses outside the geographical area of the Transportation Management Association may include those Campuses in the Collective TDM Report. To represent High Schools, Colleges and Universities, a Transportation Management Association must meet the criteria as specified in "Transportation Management Associations", Section IX.

- 2. TDM Report Forms are required for each Campus included in a Collective TDM Report.
- 3. Campus Summary Forms (Exhibit C) are required for Collective TDM Reports.
- 4. If a group of High Schools, Colleges or Universities within a Transportation Management Association, on average, collectively meet the CAVR Target, then those High Schools, Colleges and Universities do not need to individually meet their CAVR Target. The average CAVR for a Collective TDM Report shall be calculated by weighing the average of all included CAVRs. The average CAVR shall be calculated separately for Campuses.
- 5. Example A Collective TDM Report for a group of High Schools, Colleges or Universities, some with multiple Campuses, filing through a Transportation Management Association:

High School College or <u>University</u>	l, <u>Campus</u>	CAVR	Students Reporting to the Campus During the 6 to 10 a.m. Principal Travel Period
#1	Α	90%	50
#2	B	85%	25
	Ē	85%	60
	ñ	80%	150
	Ā	75%	100
	ц Т	00%	40
#2	C C	70 /u 750	500
#J #A	U u	7570	200
11-4	n t	9070	200
	1 I	83%	100
	J	80%	70
	K	90%	50
#5	L	60%	50
	M	95%	45
Average CAV	R for Campu	ses = (50 + 6)	0 + 150 + 100 + 500 + 200
± 100 ± 1	$70 \pm 50 \pm 50$	$\pm 25 \pm 40 \pm$	$45)/[(50 \pm 1.100)]$
$\pm (60 \pm 1)$	150 ± 150	+20+40+	$(100 \pm 1.250) \pm (500 \pm 1.250)$
+(00+)	(1.130) + (130)	1 + 1.200 + 1	$(100 \pm 1.250) \pm (500 \pm 1.250)$
+ (200 +	1.100) + (10)	N + 1.150) +	(70 + 1.200) + (50 + 1.100)
+ (50 + 1	(.400) + (25)	+ 1.150) + (4	40 + 1.100) + (45 + 1.050)]
= 1440 /	1252 = 1.15	0	

- 6. If the Collective CAVR Report fails to meet the CAVR Target, then each Campus that has failed to meet the CAVR Target two successive years shall be required to submit a Transportation Demand Management Plan.
- F. Filing Schedule.
 - 1. TDM Report due dates shall be established by the Transportation Demand Management Administrator.

- 2. High Schools, Colleges and Universities will be notified at least 90 days in advance by the Transportation Demand Management Administrator that an TDM Report is due. Extensions of the due date may be granted by the Transportation Demand Management Administrator.
- 3. High Schools, Colleges and Universities with Campuses having different due dates may consolidate into a single due date. The Consolidated TDM Report shall be due upon the earliest due date for the Campuses to be included in the Consolidated TDM Report.
- 4. A Collective TDM Report filed by High Schools, Colleges and Universities through a Transportation Management Association shall be due upon the earliest due date for the Campuses to be included in the Collective TDM Report.
- 5. A Transportation Management Association may divide the High School, College and University Campuses it represents into groups to facilitate surveying and reporting. Each group may have a Collective TDM Report and a separate due date. Each group's Collective TDM Report shall be due upon the earliest due date for the Campuses to be included. The grouping of Campuses by a Transportation Management Association cannot be modified except as approved by the Transportation Demand Management Administrator.
- 6. If a High School, College or University is filing an TDM Report through a Transportation Management Association, but not in a collective effort with other High Schools, Colleges and Universities, then the TDM Report shall be due upon the High School, College or University's due date established by the Transportation Demand Management Administrator.

VI. INCENTIVES

- A. <u>Public Recognition</u>. The Transportation Demand Management Administrator shall give recognition to High Schools, Colleges and Universities who meet their annual CAVR Target. The form(s) of recognition may include the following:
 - 1. Publication of High School, College and University CAVR results.
 - 2. Certificates of achievement to the qualifying High Schools, Colleges and Universities and Transportation Management Associations
 - 3. Regional Awards banquet honoring outstanding achievement and innovation.
 - 4. Public recognition for qualifying High Schools, Colleges and Universities and Transportation Management Associations
- **B.** <u>Tax Credits</u>. Federal and state tax incentives may be available to High Schools, Colleges and Universities for expenses incurred in providing ridesharing incentives to Students. The Transportation Demand Management Administrator will provide current information, upon request, about pertinent legislation.
 - 1. Currently, state and federal law provides that transit subsidies paid to Students by High Schools, Colleges and Universities up to the amount of \$15.00/ month are non-taxable.

VII. HIGH SCHOOL, COLLEGE AND UNIVERSITY TRANSPORTATION DEMAND MANAGEMENT PLANS

- A. <u>Filing Requirements</u>.
 - 1. High School, College and University Transportation Demand Management Plans are required if a Campus fails to meet its CAVR Target. The High School, College and University Transportation Demand Management Plan is intended to outline additional actions to be implemented by the High School, College or University in order to reach its next Annual AVR Target. High Schools, Colleges and Universities may utilize the services of Transportation Management Associations to assist in the preparation and implementation of High School, College or University Transportation Demand Management Plans. Transportation Management Associations may also represent High Schools, Colleges and Universities during the Transportation Demand Management Plan review process.
 - 2. High School, College and University Transportation Demand Management Plans shall be specific for a single Campus, although High Schools, Colleges and Universities may submit a consolidated plan as long as each Campus is addressed individually.
 - 3. High Schools, Colleges and Universities filing a Collective TDM Report that have failed to meet the CAVR Target and have individually failed to meet the CAVR Target shall be required to submit a Transportation Demand Management Plan. The plan must be filed by the individual High School, College or University, but may include individual and/or group actions to be implemented by the High School, College or University in order to reach its next Annual CAVR Target.
 - 4. Late High School, College or University Transportation Demand Management Plans are subject to penalties as stated in the Ordinance.
- B. <u>Notification</u>. When the TDM Report Form indicates failure to achieve the annual CAVR target, the Transportation Demand Management Administrator shall notify the High School, College or University if a High School, College or University Transportation Demand Management Plan is due. The Plan shall be due 90 days from receipt of notification.
- C. <u>Plan Contents</u>. A High School, College or University Transportation Demand Management Plan shall include the following:
 - 1. A copy of the most recent TDM Report Form.
 - 2. A copy of the previous High School, College or University Transportation Demand Management Plan for the Campus, if applicable.
 - 3. Listing of existing Transportation Demand Management actions in place at the Campus, including but not limited to the actions listed in the "Menu of Transportation Demand Management Actions", Section VIII.E.
 - 4. Statement of which existing Transportation Demand Management Actions will be maintained, will be enhanced, and which will be discontinued.

- 5. Listing of new Transportation Demand Management Actions that will be implemented at the Campus, including but not limited to those listed in the Menu of Transportation Demand Management Actions.
- 6. Statement of implementation schedule for new and existing Transportation Demand Management Actions.
- D. <u>Plan Review</u>.
 - 1. High School, College and University Transportation Demand Management Plans will be reviewed and approved by the applicable Transportation Demand Management Administrator to ensure the plan is complete and workable.
 - 2. High School, College and University Transportation Demand Management Plans shall be implemented within 30 days of acceptance. Rejected Transportation Demand Management Plans shall be revised and resubmitted, within 30 days of notification. After notification, failure to submit an acceptable plan within 30 days will subject the High School, College/University to enforcement provision Section H.2. of the Ordinance. (For Appeals - see Ordinance Section I.)
 - 3. In cases in which a High School, College or University submits a consolidated High School, College or University Transportation Demand Management Plan for multiple Campuses, each Campus will be reviewed individually.

E. Menu of Transportation Demand Management Actions.

- 1. <u>Purpose</u>. The following menu provides a variety of Transportation Demand Management Actions that a High School, College or University may choose to implement to help achieve its AVR Target. A High School, College or University is not limited to the actions listed here.
- 2. Alternative Work Hour Programs.
 - a. Compressed work week schedule
 - (1) 3/36 schedule
 - (2) 4/40 schedule
 - (3) 9/80 schedule
 - b. Flextime available to Students who rideshare
 - c. Staggered work hours
- 3. Transportation Management Association Membership.
- 4. <u>General Incentives</u>.
 - a. "Guaranteed ride home" program for Students who rideshare
 - b. Transportation allowance in lieu of parking or transit subsidies
 - c. Awards/recognition/bonus to Students who use alternative commute modes
 - d. Provide fleet vehicles
 - e. Provide rental vehicles (hourly basis) for personal business
 - f. Provide shuttle service to retail and/or transit centers
- 5. Transit.
 - a. Pass sales at Campus
 - b. Subsidized passes
 - c. "Occasional-use" parking permits for regular transit users

- 6. <u>Carpool</u>.
 - a. Parking subsidy for carpoolers
 - b. Maintain current carpool matching list
 - c. Carpool bulletin board
 - d. Provide company vehicles
- 7. Vanpool/Buspool.
 - a. Provide company vehicles
 - b. Subsidize private vehicles
 - c. Subsidize vanpool passenger fares
- 8. Bicycling.
 - a. Provide Bicycle Incentive Allowance
 - b. Bike lockers at Campus
 - c. Shower/locker facilities
 - d. Improve bike access to Campus
- 9. Walking.
 - a. Provide Walking Incentive Allowance
 - b. Shower/locker facilities
 - c. Improve pedestrian access to Campus
- 10. <u>Telecommuting</u>.
 - a. Provide telelearning program and policy
 - b. Provide school computers
 - c. Subsidize computer purchase program
 - d. Establish satellite office locations for telelearning

- 11. On-Site Amenities.
 - a. Child-care
 - b. Post office
 - c. Banking services
 - d. Cafeteria/deli/restaurant
 - e. Fleet vehicles for Students' use during schoolday
 - f. Commuter Lounge for waiting/connecting
- 12. Parking Management Strategies.
 - a. Preferential parking for carpools and vanpools
 - b. Implement paid parking on the Campus with proceeds to fund Alternative Commute Mode incentives
 - c. Limit the availability of all-day on the Campus parking for singleoccupant vehicles
 - d. Provide reduced parking pricing for carpools and vanpools
- 13. <u>Alternative Fuels/VMT Programs</u>¹
 - a. Provide alternative fuel fleet vehicles
 - b. Subsidize fuel costs for Students that use alternative fuel vehicles

¹Alternative Fuel/VMT Program Credit is not defined or available at the time of this publication.

VIII. TRANSPORTATION MANAGEMENT ASSOCIATIONS

A. <u>Definition</u>. As defined in the Transportation Demand Management Ordinance, a Transportation Management Association/Organization (TMA/TMO) means a private and/or public service organization with a strategic plan addressing institutional structure, programs, services and funding for the purpose of assisting businesses with implementing transportation control measures (TCMs). Such associations may operate Student Transportation Coordinator (ETC) Networks, provide commuter services, guaranteed/emergency ride home services, form vanpools and other related programs. Any TMA/TMO that meets this criteria and opts to apply to the Air Pollution Control District (APCD) or other governmental agencies for funding may need to meet additional criteria.

B. <u>Requirements</u>.

- 1. In order to be recognized by the Transportation Demand Management Administrator for purposes of representing High Schools, Colleges and Universities, in meeting the provisions of the Ordinance, a High School, College/University Transportation Management Association shall annually submit to the Transportation Demand Management Administrator a written statement demonstrating that it possesses each of the attributes contained in the definition of a Transportation Management Association, as defined in the Ordinance.
- 2. The statement to be submitted to the Transportation Demand Management Administrator will include the following:
 - a. Current funding source(s) and business status (profit, non-profit).
 - b. A description of the geographic area it currently serves
 - c. A list of the Transportation Management Association Board of Directors.
 - d. Current list of clients served by the Transportation Management Association.
 - e. An inventory of the Transportation Management Association products and services. These may include on-site rideshare matching, vanpool formation, parking management programs, onsite sale of transit passes, formation and operation of transportation network(s), a guaranteed ride home program, or other Transportation Demand Management-related services.

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GLOSSARY IX.

See Section X, Glossary, Employment Technical Supplement.

Χ. **EXHIBITS**

- Α.
- Β.
- Ĉ.
- Student Survey Form CAVR Report Form Campus Summary Form High School, College/University Incentives Survey Form D.

GOODS MOVEMENT/TRUCKING ELEMENT (CONTINGENCY MEASURE)

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

GOODS MOVEMENT/TRUCKING TRAFFIC ELEMENT

(CONTINGENCY MEASURE)

This is a contingency measure to be implemented upon adoption of an implementing rule or regulation by the Air Pollution Control Board, if the Air Pollution Control Board determines or the State Air Resources Board finds that the District is failing to meet interim goals or not making adequate progress toward attainment of applicable state ambient air quality standards.

A. PURPOSE AND INTENT

The purpose of this Goods Movement/Trucking Traffic Element of the Regional TDM Program and Ordinance is to establish responsibilities for reasonable efforts to reduce traffic congestion, improve air quality and to protect the public health, safety, and general welfare through TDM actions. The focus of this program is to reduce the impacts of goods movement/trucking on traffic congestion, improve public health and safety by reducing the number of truck incidents, and improve truck circulation.

The objectives of the Goods Movement/Trucking Traffic Element shall lead to the achievement of a 25% reduction in goods movement/truck traffic during the Principal Travel Period by the year 2000; and a 35% reduction by the year 2010, to reduce the number of truck incidents by 50% by the year 2000; and, to reduce the average amount of delay per incident by 50% by the year 2000.

B. DEFINITIONS

See Technical Supplement, Section XI, Glossary

C. CATEGORIES OF PARTICIPANTS

- 1. Tier I Goods Movement/Trucking Provider: An Employer who employs 100 or more employees at a work site on an average week day (M-F) and who operates heavy duty vehicles for transporting goods and/or materials.
- 2. Tier II Goods Movement/Trucking Provider: An Employer who employs 50-99 employees and who operates heavy duty vehicles for transporting goods and/or materials.
- 3. Tier III Goods Movement/Trucking Provider: An Employer who employs 25-49 employees and who operates heavy duty vehicles for transporting goods and/or materials.
- 4. Tier IV Goods Movement/Trucking Provider: An Employer who employs 11-24 employees and who operates heavy duty vehicles for transporting goods and/or materials.
- Note: A work program will be developed by SANDAG during FY 92-93 to address concerns regarding restrictions on delivery schedules, as well as exemptions from the Goods Movement Travel Reduction Program proposed by the Construction Industry Federation. These proposed exemptions include:
 - o Heavy duty vehicles engaged in the production of transit mixed concrete, including hauling of portland cement and cement treated base products;
 - o Heavy duty vehicles engaged in the production of hot-mixed concrete, including hauling of asphaltic cement, cut back asphaltic concrete and asphaltic emulsions;
 - o Heavy duty vehicles engaged in the production of sized aggregate including oversized rock, sand, and base materials;
 - o Heavy duty vehicles that must operate during the peak period in order to conform with restrictions or requirements imposed on daily starting and/or ending times, or duration of operations as a result of any government issued permit conditions or regulations or executed labor, private or government contract provisions in force prior to the effective date of the transportation control measures program.
 - o Employees who can demonstrate to the implementing agency that the shifting of delivery schedules from peak to non-peak would cause a shift in commute patterns of employees from non-peak to peak hours.
 - o Trucks engaged exclusively in the transport of perishable products which require daytime delivery, or products which require daylight delivery for bona fide safety reasons.

D. PHASING

- 1. <u>Tier I Goods Movement/Trucking Providers</u> shall begin compliance with this Ordinance concurrent with implementation of the contingency measure.
- 2. <u>Tier II Goods Movement/Trucking Providers</u> shall begin compliance with this Ordinance one year after the implementation of the contingency measure.
- 3. <u>Tier III Goods Movement/Trucking Providers</u> shall begin compliance with this Ordinance two years after the implementation of the contingency measure.
- 4. <u>Tier IV Goods Movement/Trucking Providers</u> shall begin compliance with this Ordinance three years after the implementation of the contingency measure.

E. REQUIREMENTS

- 1. <u>Performance Requirements</u>
 - a. Each business providing goods movement/trucking services shall select from and utilize the procedures and strategies outlined in the Regional TDM Technical Supplement to achieve the annual Off-Peak Truck Travel targets listed below.

YEAR	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	
OPTT	2.5%	5.0%	7.5%	10.0%	12.5%	
PTP*	Α	Α	Α	Α	Α	
YEAR	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	2000	
OPTT	15.0%	17.5%	20.0%	22.5%	25.0%	
PTP*	Α	Α	Α	Α	Α	
YEAR	<u>2001</u>	2002	2003	<u>2004</u>	2005	
OPTT	26.0%	27.0%	28.0%	29.0%	30.0%	
PTP*	Α	Α	Α	Α	Α	
YEAR	2006	<u>2007</u>	2008	<u>2009</u>	<u>2010</u>	
OPTT	31.0%	32.0%	33.0%	34.0%	35.0%	
PTP*	Α	A	Α	Α	Α	

Minimum Goods Movement/Trucking Off-Peak Truck Travel % (OPTT) Targets:

*Principal Travel Period: A: 6:30-8:30 a.m.

- b. Each Goods Movement/Trucking Provider shall file an annual TDM Report with the TDM Program Administrator according to the filing schedule established by the TDM Program Administrator.
- c. Each Goods Movement/Trucking Provider who fails to achieve its annual OPTT Target shall file a TDM Plan as defined in the Technical Supplement. The TDM Plan shall be filed with the TDM Program Administrator.
- d. A Transportation Management Association (TMA/TMO) or other service provider, may be granted authority by a Goods Movement/Trucking Provider to prepare and/or execute a Goods Movement/Trucking Provider TDM Report or TDM Plan. However, the responsibility for achieving the requirements of this Ordinance shall remain with the Goods Movement/Trucking Provider's. If a group of Goods Movement/Trucking Providers in a TMA/TMO collectively meets the OPTT Target, Goods Movement/Trucking Providers within the TMA/TMO do not need to individually meet the annual target.
- e. Each Goods Movement/Trucking Provider shall designate a Transportation Coordinator for each work site to serve as representative between the TDM Program Administrator and the Goods Movement/Trucking Provider.

2. 3. <u>Reporting Requirements</u>

- a. The Goods Movement/Trucking Provider shall file an annual TDM Report showing arrival times and percentage of peak and off-peak travel by its heavy duty vehicles and the calculation of the percentage of off-peak truck travel for each work site as established in the Technical Supplement.
- b. TDM Reports shall be submitted according to the filing schedule established by the TDM Program Administrator.

c. Goods Movement/Trucking Provider may choose to file a consolidated TDM Report for all its Work Sites, provided the data are shown separately by Work Site.

3. 4. TDM Plan Requirements.

- a. A Goods Movement/Trucking Provider who fails to achieve its annual OPTT Target shall develop, file, and implement a TDM Plan designed to attain the annual OPTT Target and conforming to criteria outlined in the Technical Supplement.
- b. The TDM Statement/Plan shall be submitted to the TDM Program Administrator within 90 days after the date of receipt of notification from the TDM Program Administrator of the Goods Movement/Trucking Provider's failure to achieve the OPTT Target.
- c. Implementation of TDM Statements/Plans shall be an within 30 days of the acceptance date. Rejected TDM Statements/Plans must be revised and resubmitted, within 30 days of notification of rejection. After notification, failure to submit an acceptable plan within 30 days will subject the Goods Movement/Trucking Provider to enforcement provision Section H.2.
- d. TDM Reports, following submittal of a TDM Statement/Plan, shall be submitted according to the Goods Movement Provider's initial TDM Report date.
- e. An Employer may choose to consolidate required TDM Statements/Plans for more than one Work Site under this requirement.

F. INCENTIVES

Incentives are described in Section VII of the Technical Supplement.

G. TDM COMPLIANCE

1. Each time a Goods Movement/Trucking Provider fails to achieve its annual OPTT Target it shall develop and file a TDM Statement/Plan to further strengthen its TDM Program. Filing a TDM Statement/Plan requires the Goods Movement/Trucking Provider to select and implement new TDM actions including, but not limited to, those listed in the Technical Supplement (Section VIII.E.). These actions shall be designed to meet the Goods Movement/Trucking Provider's Annual OPTT Target by its next TDM Report due date.

A Goods Movement/Trucking Provider who achieves its annual OPTT Targets, having filed a TDM Statement/Plan, is no longer required to file a TDM Statement/Plan unless its OPTT Target is subsequently missed.

2. A Goods Movement/Trucking Provider failing to achieve its annual OPTT Target and failing to implement and carry out its TDM Statement/Plan, shall be in violation of the Regional TDM Ordinance and the Regional Air Quality Plan and subject to enforcement provisions.

H. ENFORCEMENT

1. A Goods Movement/Trucking Provider which fails to file an annual <u>TDM Report</u> when due shall be in violation of this Ordinance. Each day in which the Goods Movement/ Trucking Provider fails to file the TDM Report, following the date when due, shall constitute a separate and additional violation of this Ordinance. Under this provision, each separate and additional violation of this Ordinance shall be subject to an administrative civil penalty up to a maximum penalty of \$500.00 for each day of violation. [Health & Safety Code, Section 42402.5, when imposed by the APCD].

- 2. A Goods Movement/Trucking Provider which fails to file a <u>TDM STATEMENT/PLAN</u> when due shall be in violation of this Ordinance. Each day in which the employer fails to file the TDM Statement/Plan, following the date when due, or has not met the requirements of Section E.C.3. for resubmittal of a TDM Statement/Plan, shall constitute a separate and additional violation of this Ordinance. Under this provision, each separate and additional violation of this Ordinance shall be subject to an administrative civil penalty Goods Movement/Trucking Provider up to a maximum penalty of \$500.00 for each day of violation. [Id.]
- 3. A Goods Movement/Trucking Provider who fails to achieve its annual OPTT Targets and fails to implement and carry out its TDM Statement/Plan, as determined by the TDM Program Administrator or the TDM Appeals Board, is in violation of this Ordinance. Violation of this provision shall subject the Goods Movement/Trucking Provider to the maximum civil penalties established by law. [Health & Safety Code, Sections 42402, 42402.1, and 42402.2 when imposed by the APCD, maximum currently \$25,000 per day per violation]

GOODS MOVEMENT/TRUCKING ELEMENT (CONTINGENCY MEASURE)

I. AUDIT AND REVIEW

A triennial performance audit and review of the Regional TDM Program and Ordinance shall be conducted by APCD. The review will be conducted at a noticed public hearing and will include a report by the APCD. The report will assess the effectiveness, costs, benefits and identify further opportunities available for the achievement of program objectives.

In the event the Goods Movement/Trucking Element is implemented as a contingency measure, the regulation implementing the Element will also be examined in light of any new developments as part of the annual and triennial review of the Regional Air Quality Strategy as required by state law.

J. STRATEGIES TO ACHIEVE TDM REQUIREMENTS

1. Off-Peak Delivery Program

Each Goods Movement/Trucking Service Provider will develop, implement, and promote a Non-Peak Period Delivery Program in order achieve its annual Regional Off-Peak Delivery Program Targets.

The objectives of the Off-Peak Period Delivery Program shall lead to the achievement of a 25% reduction in goods movement/trucking traffic during the Principal Travel Period by the year 2000; and a 35% reduction by the year 2010.

The annual Off-Peak Deliver Program targets are shown below:

Minimum Goods Movement/Trucking Off-Peak Truck Travel % (OPTT) Targets:

YEAR	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
OPTT	2.5%	5.0%	7.5%	10.0%	12.5%
PTP*	A	A	A	A	A
YEAR	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	2000
OPTT	15.0%	17.5%	20.0%	22.5%	25.0%
PTP*	A	A	A	A	A
YEAR	2001	2002	2003	<u>2004</u>	2005
OPTT	26.0%	27.0%	28.0%	29.0%	30.0%
PTP*	A	A	A	A	A
YEAR	2006	2007	2008	2009	2010
OPTT	31.0%	32.0%	33.0%	34.0%	35.0%
PTP*	A	A	A	A	A

*Principal Travel Period: A: 6:30-8:30 a.m.

Policy Recommendations To Support Off-Peak Truck Travel Targets:

- * Establish regionwide delivery and noise curfew guidelines to assist in the development of off-peak delivery programs and schedules.
- * Promote off-peak delivery programs and schedules through the use of sound mitigation design features rather than placing limitations of delivery times.
- * Establish commercial loading zone guidelines to achieve optimum efficiency and strict enforcement of requirements.
- * Promote the use of the number three lane by three axle and larger trucks to improve the efficient use of freeway on/off ramps and auto/truck interaction.
- * Include a Goods Movement Circulation Element in the Regional Transportation Plan to insure the establishment of efficient and effective goods movement circulation systems and facilities.
- * Develop goods movement circulation guidelines for local municipalities.
- * Develop goods movement circulation design standards for new development.
- * Investigate the utilization of High Occupancy Vehicle (HOV) lanes or other facilities for goods movement travel.

2. Incident Management Program

The Goods Movement/Trucking Traffic Element will provide funding for a Incident Management Program. The Program will consist of the establishment of: 1) a Regional Incident Management Team to develop, implement and promote incident management strategies and technology, 2) a Regional Incident Prevention Program to develop and implement a driver education program to improve car-truck interactions, and a truck safety and operations program to improve the safe operation of trucks on the roadways; and, 3) a Regional Traffic Information Network to provide the state-of-the-art delivery of traffic information to motorists.

The objective of the Regional Incident Management Team and Traffic Information Network components of the Incident Management Program is intended to reduce the average congestion delay per truck incident by 50% by the year 2000. The objective of the Incident Prevention Program component is to reduce Truck incidents by 50% by the year 2000. Thus, the accumulative objective of the Incident Management Program is to achieve a 75% reduction in the amount of regional congestion delay due to truck incidents or breakdowns by the year 2000.

The Regional Incident Management Team and the Traffic Information Network components will be developed, in cooperation with Caltrans, the California Highway Patrol, the proposed Regional Traffic Operations Center, and the private sector business involved in incident management and traffic information.

The Regional Traffic Information Network will employ high-resolution video, electronic sensors, an AM radio network, and changeable electronic message boards to provide accurate and timely traffic information to motorists. These systems will provide the foundation for a regional on-board traffic information system.

The annual Regional Incident Management Congestion Delay Targets are shown below:

INCIDENT CONGESTION DELAY TARGETS:

Year	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
% Delay	95.0	90.0	85.0	80.0	75.0
Year	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
% Delay	70.0	65.0	60.0	55.0	50.0

The Regional Incident Prevention Program will provide for the development, implementation, and promotion of a driver educational safety program and a vehicle safety program in order to achieve the regional Goods Movement/Trucking incident prevention targets shown below:

INCIDENT PREVENTION PROGRAM TARGETS:

Year <u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
% incident 95.0	90.0	85.0	80.0	75.0
Year <u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
% incidents 70.0	65.0	60.0	55.0	50.0

The agencies implementing the Regional TDM Program will promote the development and distribution of marketing and educational materials for a driver educational safety program. The driver educational safety program will employ existing driver educational programs to promote better truck-automobile freeway interaction, such as a greater emphasis in Department of Motor Vehicle publications concerning truck-automobile interaction and insurance reductions for adult driver safety programs. The agencies implementing the Regional TDM Program will coordinate this program with the appropriate agencies.

The agencies implementing the Regional TDM Program will promote the improvement of existing truck safety programs that lead to increased operational safety of trucks.

SAN DIEGO ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION DEMAND MANAGEMENT PROGRAM

GOODS MOVEMENT/TRUCKING TRAFFIC ELEMENT TECHNICAL REQUIREMENTS

(CONTINGENCY MEASURE)

I. REFERENCE AND INTENT

- A. <u>Reference</u>. This document contains the Technical Requirements of the Regional Transportation Demand Management Ordinance, _____ Municipal Code Sections ____ Through ____. The Ordinance should be reviewed prior to using this document.
- B. <u>Intent</u>. These Technical Requirements are intended to provide guidance, detailed information, and examples to assist Goods Movement Transporters in meeting the requirements of the Regional Transportation Demand Management Ordinance.
- C. <u>Definitions</u>. The meaning of terms used in these Technical Requirements can be found in Section XI, "Glossary".
- D. <u>Ouestions</u> regarding the Regional Transportation Demand Management Ordinance and these Technical Requirements should be referred to the Transportation Demand Management Administrator.

II. TERMINAL REQUIREMENTS

- A. <u>New Hire Orientation Program</u>. Transporters shall provide all new hires with a commute alternatives information packet. To assist Transporters in preparing commute alternative information packets, Transportation Management Associations, Commuter Computer, and the Transportation Demand Management Administrator will have information about commute alternatives. The new hire information packet shall include information about the following topics, as appropriate to the specific Terminal:
 - o Alternative Transportation and ridesharing incentives offered to Drivers by the Transporter
 - o Alternative Work Hour programs offered to Drivers by the Transporter
 - o On-site amenities and information resources
 - o Air quality, traffic congestion and other conditions that necessitate Transportation Demand Management strategies.
 - o Carpool matching service
 - o Bus, trolley and rail service to the Terminal vicinity
 - o Bicycle facilities including bicycle routes, lockers, racks, showers and dressing areas in the Terminal vicinity
- B. <u>Driver Transportation Demand Management Information</u>. Each Transporter shall develop and maintain Driver Transportation Demand Management information that provides all Drivers with current information regarding Off-Peak Truck Travel Schedule options available to them. Such information shall be accessible and available at each Terminal. Transporters may simply establish a centrally located bulletin board or kiosk for display of information. As an alternative, electronic bulletin boards, company newsletters, and other communication delivery methods may be used.

Driver Transportation Demand Management information shall include the following items, as appropriate to the specific Terminal:

- o List of Trip Reduction and Air Quality incentives offered to Drivers
- o List of Off-Peak Truck Travel Programs offered to Drivers
- o Trip Reduction and Off-Peak Truck Travel promotional material
- o Information on Trip Consolidation and Off-Peak Truck Travel scheduling

A program for updating the Driver Transportation Demand Management information shall also be provided. The Terminal Transportation Coordinator is suggested as the appropriate person to maintain the system.

III. CALCULATION OF THE OFF-PEAK TRUCK TRAVEL RATE (OPTT)

- A. <u>Purpose</u>. The Off-Peak Truck Travel Rate or OPTT is the statistic used to measure the Transporter's success at minimizing the number of Trucks that operate during the Principal Travel Period. The OPTT is calculated by the Transportation Demand Management Administrator for each Terminal using information in a TDM report provided by the Transporter or Transportation Management Association. The calculated OPTT shall be rounded to the nearest tenth of a percent (0.05 would round to 0.10). See "OPTR Reports", Section V, regarding OPTR Reports.
- B. <u>OPTT Calculation</u>. The OPTR is calculated as follows:
 - 1. <u>OPTT</u> = 100% x A/B

The number of Trucks scheduled for operation outside the Principal Travel Period (A); divided by the total number of Trucks scheduled for operation during the 24-hour day (B) times 100%. If a truck is scheduled for operation during both the Principal Travel Period and outside the Principal Travel Period, it shall not be counted in the number of trucks operating outside the Principal Travel Period (A).

Note: Alternative Fuel and VMT Reduction Program Credits are not defined or available at the time of this publication. When developed, they will be in the form of adjustments to the number of vehicles (B) in the denominator of the equation.

- 2. <u>Calculations and Examples</u>.
 - a. OPTT = 100% x A/B, where
 - A = the number of Trucks scheduled for operation exclusively outside the Principal Travel Period (A) (See Section III.B.1.)
 - B = Number of Trucks scheduled for operation during the 24-hour day

The number of Trucks scheduled for operation during the Principal Travel Period is calculated by adding the number of Truck equivalents of operation during the Principal Travel Period. Truck equivalents represent the portion of Truck operation during the Principal Travel Period.

Truck equivalents are determined by the number of weekdays each truck is operated during the Principal Travel Period divided by five days per week. Truck equivalents for compressed operation schedules are determined by the portion of Truck trips per week based upon a five day week. Principal Travel Period Truck equivalents for common compressed operation schedules are as follows: 9 day/80 hour schedule = 0.9, 4 day/40 hour schedule = 0.8, 3 days/36 hour schedule = 0.6.

b. Worksheet Example:

OPTT = 100% x A/B	
Number of Trucks scheduled outside the Principal Travel Period	(A)
Number of Trucks scheduled by Terminal/ 24 hour day	(B)
Total OPTT [100% x (A/B)]	(OPTT)

IV. OPTT TARGETS

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- A. <u>Definition by Transporter Size</u>. The OPTT Target is the value that the Terminal OPTT, or Average OPTT is compared to in the OPTT Report. OPTT Targets are as follows:
 - 1. Tier I Transporters (100 or more Employees)

FY	Min. OPTT Target
1991	(2.5%)
1992	(5.0%)
1993	7.5% ¹
1994	10.0%
1995	12.5%
1996	15.0%
1997	17.5%
1998	20.0%
1999	22.5%
2000	25.0%
2001	26.0%
2002	27.0%
2003	28.0%
2004	29.0%
2005	30.0%
2006	31.0%
2007	32.0%
2008	33.0%
2009	34.0%
2010 and beyond	35.0%

¹*Requires TDM Reports Only, No Plans () Indicates CAVR Targets Before Implementation

2. Tier II Transporters (50-99 Employees)

EY	Min. OPTT Target
1991	
1992	(2.5%)
1993	(5.0%)
1994	7.5%*
1995	10.0%*
1996	12.5%
1997	15.0%
1998	17.5%
1999	$20.0\%^{1}$
2000	22.5%
2001	25.0%
2002	26.0%
2003	27.0%
2004	28.0%
2005	29.0%
2006	30.0%
2007	31.0%
2008	32.0%
2009	33.0%
2010	34.0%
2011 and beyond	35.0%

¹*Requires TDM Reports Only, No Plans () Indicates CAVR Targets Before Implementation

3. Tier III Transporters (25-49 Employees)

FY	Min. OPTT Target
1991	
1992	
1993	(2.5%)
1994	(5.0%)
1995	7.5%*
1996	10.0%*
1997	12.5%
1998	15.0%
1999	17.5%
2000	20.0%
2001	22.5%
2002	25.0%
2003	26.0%
2004	27.0%
2005	28.0%
2006	29.0%
2007	30.0%
2008	31.0%
2009	32.0%
2010	33.0%
2011 and beyond	34.0%

4. Tier IV Transporters (11-24 Employees)

FY	Min. OPTT Target
1991	
1992	
1993	
1994	(2.5%)
1995	(5.0%)
1996	7.5%*1
1997	10.0%*
1998	12.5%
1999	15.0%
2000	17.5%
2001	20.0%
2002	22.5%
2003	25.0%
2004	26.0%
2005	27.0%
2006	28.0%
2007	29.0%
2008	30.0%
2009	31.0%
2010	32.0%
2011 and beyond	33.0%

B. <u>OPTT Targets for Transporters Who Did Not File in the Previous Year</u>. A Transporter who is required to file an TDM Report, although not having been required to file an TDM Report during the previous year, shall have the following OPTT Targets:

The Transporter shall have the same OPTT Target as other Transporters in the same Transporter category.

^{1*}Requires TDM Reports Only, No Plans () Indicates CAVR Targets Before Implementation

V. TDM REPORTS

- A. Filing Requirements.
 - 1. Transporters that must comply with the Ordinance shall file annual TDM Reports. TDM Reports shall be submitted to the Transportation Demand Management Administrator.
 - 2. Late TDM Reports are subject to penalties as stated in the Ordinance.
- B. <u>Truck TDM Survey Method</u>.
 - 1. To file a TDM Report, Transporters will collect the necessary data by a written Driver/Truck survey or other statistically accurate methodology approved by the TDM Administrator. Surveys shall be conducted within 90 days of the due date of the TDM Report.
 - 2. The required standard survey form (Exhibit A) will be made available by the Transportation Demand Management Administrator upon request. Transporters shall collect the completed survey forms and submit the originals, together with a TDM Report Form (Exhibit B) for each Terminal, to the Transportation Demand Management Administrator for processing.
 - 3. The Transporter's OPTT will be calculated by the Transportation Demand Management Administrator. Tabulated results will be given to the Transporter. The Transporter will be notified if a Transporter Transportation Demand Management Plan is required as a result.
 - 4. Transporters shall survey all Drivers/Trucks at each Terminal. The Transporter shall submit all completed Driver/Truck surveys with its TDM Report or Plan. TDM Reports shall include survey responses from at least 75% of the Drivers/Trucks at each Terminal or work site. A Transporter who does not achieve at least 75% survey response shall be required to resurvey. Calculation of a Transporter's OPTT shall be based upon the Driver/Truck surveys submitted (minimum 75%) by the Transporter.
- C. <u>TDM Report Contents</u>.
 - 1. The TDM Report shall consist of the completed TDM Report Form and all original Driver/Truck surveys.
 - 2. The Transporter shall include the Transporter Incentives Survey Form (Exhibit D) in the TDM Report. This survey assists the Transporter and the Transportation Demand Management Administrator in determining which Transportation Demand Management actions are the most successful.
- D. Consolidated TDM Reports.
 - 1. A Transporter may file a Consolidated TDM Report for its multiple Terminals, provided that each Terminal is represented and described separately.
 - 2. TDM Report Forms are required for each Terminal included in a Consolidated TDM Report.

- 3. Transporters filing a Consolidated TDM Report that meets the OPTT Target, on average, do not need to meet the OPTT Target at individual Terminals. The average OPTT for a Consolidated TDM Report shall be calculated by weighing the average of all included Terminal OPTTs by the number of Trucks based at each Terminal. The average OPTT shall be calculated separately for Terminals with 100 or more Employees, 50-99 Employees, 25-49 Employees, and Terminals with 11 to 24 Employees, because Transporters have different annual OPTT schedules according to their size. As an alternative, an average OPTT can be calculated for all the included Terminals if the Tier I Transporter's OPTR Target is applied.
- 4. <u>Example</u> Consolidated OPTT Report for a Transporter with multiple Terminals:

Trucks Onemains

Terminal	OPIT	From the Terminal
Α	20%	20
В	25%	500
С	5%	100
D	10%	40

Average OPTT for Tier I Transporters = 100% x [(500 x 25%) + (100 x 5%)/(500 + 100)] =100% x 130/600 = 21.6%

Average OPTT for Tier II Transporters = 100% x [(20 x 20%) + (40 x 10%)/(20 + 40)] =100% x 8/60 = 13.3%

- 5. If the Consolidated TDM Report fails to meet the OPTT Target, then only Terminals that have individually failed to meet the OPTT Target shall require a Transporter's submission of a Transporter Transportation Demand Management Plan.
- E. <u>Collective TDM Reports</u>.
 - 1. A group of Transporters may file a TDM Report in a collective effort through a Transportation Management Association. Each Transporter and each Transporter's Terminals shall be surveyed separately. A Transporter in the group that has additional Terminals outside the geographical area of the Transportation Management Association may include those Terminals in the Collective TDM Report. To represent Transporters, a Transportation Management Association must meet the criteria as specified in "Transportation Management Associations", Section X.
 - 2. TDM Report Forms are required for each Terminal included in a Collective TDM Report.
 - 3. Terminal Summary Forms (Exhibit C) are required for Collective TDM Reports.

- 4. If a group of Transporters within a Transportation Management Association, on average, collectively meet the OPTT Target, then those Transporters do not need to individually meet their OPTT Target. The average OPTT for a Collective TDM Report shall be calculated by weighing the average of all included OPTTs. The average OPTT shall be calculated separately for Terminals with 100 or more Employees, 50-99 Employees, 25-49 Employees, and Terminals with 11 to 24 Employees, because Transporters have different annual OPTT Target schedules depending upon their size. As an alternative, an average OPTT can be calculated for all the included Terminals if the Tier I Transporter's OPTT Target is applied.
- 5. Example A Collective TDM Report for a group of Transporters, some with multiple Terminals, filing through a Transportation Management Association:

			Trucks Operating
<u>Fransporter</u>	<u>Terminal</u>	<u>OPTT</u>	From the Terminal
#1	Α	10%	50
#2	В	15%	25
	С	15%	60
	D	20%	150
	Ε	25%	100
	F	10%	40
#3	G	25%	500
#4	Н	10%	200
	I	15%	100
	J	20%	70
	ĸ	10%	50
#5	Ĺ	40%	50
	M	5%	45

Average OPTT for Tier I Transporter = $[[(50 \times 10\%) + (60 \times 15\%) + (150 \times 20\%) + (100 \times 25\%) + (500 \times 25\%) + (200 \times 10\%) + (100 \times 15\%) + (70 \times 20\%) + (50 \times 10\%) + (50 \times 40\%)] / (50 + 60 + 150 + 100 + 500 + 200 + 100 + 70 + 50 + 50)] = x 100\% = [268/1330] \times 100\% = 20.2\%$

Average OPTT for Tier II Transporter = [(15% x 25) + (10% x 40) (5% x 45) / (25 + 40 + 45) x 100%= [12/110] x 100% = 9.1%

- 6. If the Collective TDM Report fails to meet the TDM Target, then each Terminal that has failed to meet the TDM Target shall be required to submit a Transportation Demand Management Plan.
- F. Filing Schedule.
 - 1. TDM Report due dates shall be established by the applicable Transportation Demand Management Administrator.
 - 2. Transporters will be notified at least 90 days in advance by the Transportation Demand Management Administrator that a TDM Report is due. Extensions of

the due date may be granted by the Transportation Demand Management Administrator.

- 3. Transporters with Terminals having different due dates may consolidate into a single due date. The Consolidated TDM Report shall be due upon the earliest due date for the Terminals to be included in the Consolidated TDM Report.
- 4. A Collective TDM Report filed by Transporters through a Transportation Management Association shall be due upon the earliest due date for the Transporter Terminals to be included in the Collective TDM Report.
- 5. A Transportation Management Association may divide the Transporter Terminals it represents into groups to facilitate surveying and reporting. Each group may have a Collective TDM Report and a separate due date. Each group's Collective TDM Report shall be due upon the earliest due date for the Terminals to be included. The grouping of Terminals by a Transportation Management Association cannot be modified except as approved by the Transportation Demand Management Administrator.
- 6. If a Transporter is filing a TDM Report through a Transportation Management Association, but not in a collective effort with other Transporters, then the TDM Report shall be due upon the Transporter's due date established by the Transportation Demand Management Administrator.

VI. INCENTIVES

- A. <u>Public Recognition</u>. The Transportation Demand Management Program Administration shall give recognition to Transporters who meet their annual OPTT Target. The form(s) of recognition may include the following:
 - 1. Publication of Transporter OPTT results.
 - 2. Certificates of achievement to the qualifying Transporters and Transportation Management Associations
 - 3. Awards banquet honoring outstanding achievement and innovation.
 - 4. Public recognition for qualifying Transporters and Transportation Management Associations
- B. <u>Tax Credits</u>. Federal and state tax incentives may be available to Transporters for expenses incurred in providing incentives. The Transportation Demand Management Administrator will provide current information, upon request, about pertinent legislation.

VII. TRANSPORTER TRANSPORTATION DEMAND MANAGEMENT PLANS

- A. Filing Requirements.
 - 1. Transporter Transportation Demand Management Plans are required if a Transporter fails to meet its OPTT Target. The Transporter Transportation Demand Management Plan is intended to outline additional actions to be implemented by the Transporter in order to reach its next annual OPTT Target. Transporters may utilize the services of Transportation Management Associations to assist in the preparation and implementation of Transporter Transportation Demand Management Plans. Transportation Management Associations may also represent Transporters during the Transportation Demand Management Plan review process.
 - 2. Transporter Transportation Demand Management Plans shall be specific for each Terminal, although Transporters may submit a consolidated plan as long as each Terminal is addressed individually.
 - 3. Transporters filing a Collective TDM Report that have failed to meet the OPTT Target and have individually failed to meet the OPTT Target shall be required to submit a Transportation Demand Management Plan. The plan must be filed by the individual Transporter, but may include individual and/or group actions to be implemented by the Transporter in order to reach its next annual OPTT Target.
 - 4. Late Transporter Transportation Demand Management Plans are subject to penalties as stated in the Ordinance.
- B. <u>Notification</u>. When the TDM Report Form indicates failure to achieve the annual OPTT target, the Transportation Demand Management Administrator shall notify the Transporter if a Transporter Transportation Demand Management Plan is due. The Plan shall be due 60 days from receipt of notification.
- C. <u>Plan Contents</u>. A Transporter Transportation Demand Management Plan shall include the following:
 - 1. A copy of the most recent TDM Report Form.
 - 2. A copy of the previous Transporter Transportation Demand Management Plan for the Terminal, if applicable.
 - 3. Listing of existing Transportation Demand Management actions in place at the Terminal, including but not limited to the actions listed in the "Menu of Transportation Demand Management Actions", Section IX.
 - 4. Statement of which existing Transportation Demand Management Actions will be maintained, will be enhanced, and which will be discontinued.
 - 5. Listing of new Transportation Demand Management Actions that will be implemented at the Terminal, including but not limited to those listed in the Menu of Transportation Demand Management Actions.
 - 6. Statement of implementation schedule for new and existing Transportation Demand Management Actions.

D. <u>Plan Review</u>.

.

- 1. Transporter Transportation Demand Management Plans will be reviewed and approved by the Transportation Demand Management Administrator to ensure the plan is complete and workable.
- 2. Transporter Transportation Demand Management Plans shall be implemented within 30 days of acceptance. Rejected Transportation Demand Management Plans shall be revised and resubmitted within 30 days of notification. After notification, failure to submit an acceptable plan within 30 days will subject the Transporter to enforcement provision Section H.2. of the Ordinance. (For Appeals -see Ordinance Section I.)
- 3. In cases in which a Transporter submits a consolidated Transporter Transportation Demand Management Plan for multiple Terminals, each Terminal will be reviewed individually.

VIII. MENU OF TRANSPORTATION DEMAND MANAGEMENT ACTIONS

- A. <u>Purpose</u>. The following menu provides a variety of Transportation Demand Management Actions that a Transporter may choose to implement to help achieve its OPTT Target.
- B. Alternative Work Hour Programs.
 - 1. Compressed operation schedule
 - a. 3/36 schedule
 - b. 4/40 schedule
 - c. 9/80 schedule
 - 2. Flextime available to Drivers who operate off-peak
 - 3. Staggered work hours to increase off-peak Operators
- C. Transportation Management Association Membership.
- D. <u>General Incentives</u>.
 - 1. Awards/recognition/bonus to Drivers/Trucks who operate off-peak
 - 2. Provide Incident Prevention Signs
 - 3. Provide Incident Prevention Programs
- E. Alternative Fuels

Provide alternative fuel fleet vehicles

- F. Freight Consolidation
 - 1. Consolidate loads to reduce total trips
 - 2. Use low emission vehicles to distribute freight from terminal.

IX. TRANSPORTATION MANAGEMENT ASSOCIATIONS

A. <u>Definition</u>. As defined in the Regional Transportation Demand Management Ordinance, a Transportation Management Association is a private organization which assumes a role in facilitating Transportation Demand Management actions by Transporters and which has a written work program, a board of directors, and a funding and staffing plan.

B. <u>Requirements</u>.

- 1. In order to be recognized by the Transportation Demand Management Administrator for purposes of representing Transporters in meeting the provisions of the Ordinance, a Transportation Management Association shall annually submit to the Transportation Demand Management Administrator a written statement demonstrating that it possesses each of the attributes contained in the definition of a Transportation Management Association, as defined in the Ordinance.
- 2. The statement to be submitted to the Transportation Demand Management Administrator will include the following:
 - a. Current funding source(s) and business status (profit, non-profit).
 - b. A description of the geographic area it currently serves
 - c. A list of the Transportation Management Association Board of Directors.
 - d. Current list of Transporters served by the Transportation Management Association.
 - e. An inventory of the Transportation Management Association products and services.

X. GLOSSARY

See Section XI, Glossary, Employment Technical Supplement.

XI. EXHIBITS

- A. <u>TDM Driver/Truck Survey Form</u>
- B. TDM Report Form
- C. <u>Terminal Summary Form</u>
- D. Transporter Incentives Survey Form

TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN APPENDICES

March 1992



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Revised January 2, 1992

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SAN DIEGO AIR POLLUTION CONTROL DISTRICT CRITERIA

INTRODUCTION

The California Clean Air Act of 1988 requires the following for the Transportation Control Measures Plan for the San Diego Air Basin.

Section 10 (d): "(1) The (air) district, in consultation with the council of governments. shall develop, approve, and adopt criteria under which the plan shall be developed. (2) The council of governments shall develop and adopt a plan for transportation control measures which meets the criteria established by the district, and shall submit the plan to the district for its review and adoption according to a reasonable schedule developed by the district in consultation with the council of governments. (3) Upon receipt of the plan submitted by the council of governments. the district shall review and approve the plan if it meets the criteria established by the district pursuant to paragraph (1) and has been submitted pursuant to the schedule established under paragraph (2). If the district determines that the plan does not meet the criteria established under paragraph (2), the district shall develop and adopt an alternative plan for transportation control measures."

On November 20, 1990 the SANDAG Board of Directors reviewed the draft criteria developed by the APCD and transmitted comments on it to the APCB. The criteria adopted by the APCB March 12, 1991. The criteria were 20 general criteria, 4 additional comments, and an attachment with specific criteria for each transportation control measure. Following are the general criteria, the general comments, and the responses detailing how this plan meets each one. The specific criteria listed in the attachment are included in the discussion of the appropriate tactics along with the responses to each criterion.

GENERAL CRITERIA

1. <u>Criterion</u>: The plan shall substantially reduce passenger vehicle trips and trip length as expeditiously as practicable. The rate of increase in vehicle trips shall be reduced to or below the rate of population growth.

<u>Response</u>: The plan, especially the Employment Trip Reduction Ordinance, meets this criterion.

2. <u>Criterion</u>: The plan shall achieve a regionwide average vehicle ridership of 1.5 or more during weekday commute hours as expeditiously as practicable, but no later than 1999, and no net increase in vehicle emissions after 1997. The vehicle trip reduction goal shall be in terms of average vehicle ridership, not drive-alone ratio as the latter reduces the incentive for transit promotion, diminishing the opportunity to further reinforce the viability of the region's investment in mass transit.

Response: The Employment Trip Reduction Ordinance measure meets this criterion.

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3. <u>Criterion</u>: The plan shall strive to achieve 25% emission reductions in basinwide emissions of reactive organic compounds and 43% reductions in oxides of nitrogen from the 1987 level by the year 2000. If these emission reductions are not feasible, the plan shall include all feasible transportation control measures for peak and off-peak period travel that reflect the optimal effectiveness level to provide as much reduction as feasible, and be implemented as expeditiously as practicable.

<u>Response</u>: The analysis shows that these reductions, 25% in reactive organic compounds and 43% in oxides of nitrogen, will not be met by the transportation control measures even if fully implemented. Therefore, all feasible transportation control measures are proposed in the plan.

4. <u>Criterion</u>: The transportation control measures shall be developed in coordination and consultation with all affected agencies and the Air Quality Strategy Development Committee, and significant issues raised in the development shall be identified in the plan. The Air Quality Strategy Development Committee shall be the key committee to address and resolve all issues prior to making recommendations to the Board.

<u>Response</u>: The Air Quality Strategy Development Committee have been informed of the development of the plan. The Committee was invited to hold a special meeting at SANDAG April 25, 1991 to review the plan and comment on it, prior to its presentation to the SANDAG Board of Directors. The Chairman declined the request, on grounds there was insufficient time for review and it would be inappropriate for the Committee, which is appointed by the APCB, to comment to SANDAG. The Committee members will receive copies of the plan.

5. <u>Criterion</u>: The plan for Transportation Control Measures shall include a recommended strategy and alternative options for consideration by the Air Pollution Control Board. Each measure shall be evaluated at three implementation levels. These levels shall represent implementation to the maximum extent feasible using: (1) Existing funding sources, (2) Potentially available funding sources, including parking and other fees implemented by the District for which legislation is not required, and (3) Potentially available funding sources including those that would require legislation, such as fuel taxes and vehicle use fees. Resource needs and funding sources shall be identified for each implementation level.

<u>Response</u>: Each transportation control measure contains an evaluation at three levels, with resource needs and funding sources identified.

6. <u>Criterion</u>: For each implementation level, an evaluation shall be preformed by analyzing transportation control strategies using TRANPLAN to determine resulting changes in trips, VMT and speeds. The assumptions and justifications for the assumptions shall be documented, and TRANPLAN outputs shall conform to District format specifications. Any emission reductions determined by the San Diego Association of Governments shall

be submitted to the District with supporting documentation. The District shall submit any revisions to the emission reductions to the San Diego Association of Governments for inclusion in the transportation control measure analysis.

<u>Response</u>: The evaluation for each implementation level was conducted using a CALTRANS-funded and ARB-reviewed special program designed for evaluation of TCMs. This program is more appropriate and accurate for this purpose than TRANPLAN. The reductions are described for each TCM; future revisions to the emissions reductions will be included as appropriate.

7. <u>Criterion</u>: The cost-effectiveness, technological feasibility, total emission reduction potential for reactive organic compounds, oxides of nitrogen and carbon monoxide, rate of emission reduction, public acceptability, and enforceability shall be determined for each control measure at each implementation level. The proposed transportation control measure plan and alternative options shall be evaluated in terms of the same factors, with special attention to synergistic effects and other interactions among measures in the plan.

<u>Response</u>: These requirements are included for each proposed transportation control measure.

8. <u>Criterion</u>: The performance criteria and the target levels to demonstrate expeditious progress shall be specified for each control measure. Monitoring and audit procedures to effectively track implementation and progress of each transportation system management measure by the District shall be recommended. Monitoring and audit procedures to effectively track regionwide average vehicle ridership necessary to determine compliance with the California Clean Air Act requirement for 1.5 persons per passenger vehicle during weekday commute house shall be recommended.

<u>Response</u>: These are included with each measure.

9. <u>Criterion</u>: In light of projected funding limitations, the proposed plan shall include an analysis of benefits and recommendations as appropriate for redirecting discretionary funds from highway capacity expansion projects to other projects that accelerate expansion of alternative transportation modes.

Response: This criterion is discussed for each measure.

10. <u>Criterion</u>: Revenues from all air quality related fees shall be deposited with the District for allocation to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost-effective measures, and total emission reduction potential. The parking fee program may be structured to allow facilities to retain a portion of the parking charges from their employees to help fund incentive programs provided sufficient funding,m as determined by the District, for District transportation related programs is provided to the District. <u>Response</u>: Revenue allocations are described in those measures which may produce revenues.

11. <u>Criterion</u>: Market-based measures, which increase the cost of driving, may be suggested, but may not replace, regulatory measures. Suggested market-based measures shall be designed to be implemented within a District regulatory structure and shall include approaches that do not require legislation. Market-based measure that may require implementing legislation may be suggested as long term measures.

Response: Market-based measures are not included in the TCM plan.

12. <u>Criterion</u>: The regional plan for transportation control measures shall suggest a regional process for implementing long term measures, and for developing and implementing future transportation control measures that may become feasible with the emergence of new technologies, enabling legislation, or legal requirements.

<u>Response</u>: Each measure describes the implementation agencies responsible for that measure. SANDAG does not have the expertise to prognosticate future transportation control measures not now available.

13. <u>Criterion</u>: The plan shall include sufficient incentives to induce solo drivers into alternative transportation modes, and provide for a sufficient supply of alternative transportation modes (e.g., transit, HOV lanes, vanpools) to meet the demand induced by the transportation control measures. An assessment of how much transit expansion will be necessary to meet the demand induced by the transportation control measures and of transit operating funding needs to support that expansion shall be included.

<u>Response</u>: The plan provides for these incentives in the proposed transportation demand management and transportation system expansion measures. Transit expansion is addressed in the transit expansion measure.

14. <u>Criterion</u>: Incorporated herein by reference are all applicable guidance documents. including California Clean Air Act Transportation Requirements Guidance, California Clean Air Act Guidance for the Development of Indirect Source Control Programs, Guidelines to Local Air Districts Considering Transportation Control Measures Directed at Heavy-Duty truck Operations, and Cost-Effectiveness - District Options for Satisfying the Requirements of the California Clean Air Act. The transportation control measures plan shall conform to the these guidance documents as determined by the Air Pollution Control Board.

<u>Response</u>: The plan conforms to the named guidance documents.

15. <u>Criterion</u>: All information necessary for an environmental assessment of the plan, if necessary under the California Environmental Quality Act shall be provided to the District upon request.

<u>Response</u>: Available information will be provided to the District upon receipt of written request.

16. <u>Criterion</u>: If the Air Pollution Control Board adopts a strategy different from the proposed and analyzed strategies, the San Diego Association of Governments shall analyze the transportation control measures in the adopted strategy using TRANPLAN, provide appropriate outputs in a format specified by the District, and determine the overall costeffectiveness of the adopted transportation control measures.

<u>Response</u>: The analysis of adopted transportation control measures, if other than those approved by the San Diego Association of Governments, will be conducted upon written request of the Air Pollution Control Board.

17. <u>Criterion</u>: The attached list of transportation control measures, Addendum I, constitutes the minimum measures to be included in the plan. Transportation control measures requiring local land use decisions should be developed in coordination with local land use jurisdictions. Other measures proposed in the plan must meet the definition of transportation control measures as defined by the California Clean Air Act and be approved by the Air Pollution Control Officer.

<u>Response</u>: The criteria for each transportation control measure is addressed in the appropriate tactic.

18. <u>Criterion</u>: The plan for transportation control measures shall include suggested contingency measures to be implemented a necessary to offset any emission reduction shortfall if other measures are not implemented are not as effective as anticipated.

<u>Response</u>: The plan contains all feasible transportation control measures. If an emission shortfall occurs in the future, it should be address in the 1994 or next appropriate plan update.

19. <u>Criterion</u>: The plan for transportation control measures shall suggest revisions to federal, state, and local laws and regulations that would facilitate or remove barriers to reducing regional travel.

Response: Some feasible legislative changes are suggested in the measures.

20. <u>Criterion</u>: The regional plan for transportation control measures shall not impede pedestrian and bicycle travel, and shall address safety issues associated with such travel as well as transit and park-and-ride lots.

<u>Response</u>: These issues are address in the Bicycle Facilities, Park-and-Ride Facilities, and the Indirect Source Control measures.

GENERAL COMMENTS

1. <u>Comment</u>: The plan for transportation control measures shall be submitted to the Air Pollution Control District by May 1, 1991, in order to meet the June 30, 1991, requirement for submittal of a revised regional air quality strategy to the Air Resources Board. If SANDAG anticipates difficulties in meeting this deadline, SANDAG shall notify the District and suggest a reasonable extension date, subject to approval by the Air Pollution Control Officer.

<u>Response</u>: The plan is scheduled for approval by SANDAG on April 26, 1991, for submission to the District by May 1, 1991.

2. <u>Comment</u>: The Air Pollution Control Board reserves the right to approve or modify the recommended plan for transportation control measures as necessary to meet federal or state requirements applicable to air quality.

<u>Response</u>: The plan meets the criteria and the requirements of the Act, Section 10, (d), and qualifies for approval by the APCB.

3. <u>Comment</u>: The plan for transportation control measures shall, upon adoption by the Air Pollution Control Board, be incorporated in the Regional Transportation Plan and other regional transportation and congestion management plans.

<u>Response</u>: The plan for transportation control measures, if mutually agreed upon by APCD and SANDAG shall, upon adoption, be incorporated in the 1992 Regional Transportation Plan and other transportation and congestion management plans, if consistent with these plans and as required by law.

4. <u>Comment</u>: A Memorandum of Agreement shall be developed between the San Diego Association of Governments and the District that ensures appropriate District involvement in determining the consistency of the Regional Transportation Plan, the Congestion Management Plan, Regional Growth Management Plan, and other regional plans with the Regional Air Quality Strategy. For purpose of developing deficiency congestion management plans which are required to be adopted by cities and the County, the San Diego Association of Governments shall develop a list of approved improvement, programs, and actions, and include those in the plan for transportation control measures.

<u>Response</u>: Regarding the Regional Transportation Plan, the Congestion Management Plan, and other transportation plans, SANDAG has the responsibility under the appropriate laws, to determine consistency with the air quality plan; this responsibility cannot be legally delegated to the District. The District has the authority to review and comment and this authority cannot be diverted by an agreement with SANDAG.

The Regional Growth Management Plan will be developed by the Regional Growth Management Board for adoption by the cities and the County. The District will have the authority to review and comment on the plan which cannot be altered by an agreement with SANDAG.

PRELIMINARY TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN (RB-4)
Sen Diego Association of Governments BOARD OF DIRECTORS

February 22, 1991

AGENDA REPORT NO. RB-4

PRELIMINARY TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN

Introduction

Clean air is one of the most important factors determining the quality of life in the San Diego region. Residents of this area frequently voice a willingness to help protect and improve air quality. The Transportation Control Measures proposed for the Air Quality Plan will give them that opportunity.

This report presents an initial evaluation of the transportation measures most likely to be recommended as part of the plan. They should be reviewed by all interested individuals and organizations. It is my

RECOMMENDATION

that this report be distributed to all interested individuals, organizations and agencies for review and comment.

Discussion

The implementation of the transportation control measures program will help restore clean air to the San Diego region. The controls on transportation will require the involvement of many different government agencies and the cooperation of business and industry and of the motoring public. This collaborative effort will assure the success of the program.

Legislative Requirements

The legislature, in recognizing the necessity of cleaning the state's air, enacted the California Clean Air Act of 1988. This legislation requires each air district to prepare and adopt a plan showing how that district will achieve the state's clean air standards. The plan is supposed to address both additional controls on industrial sources of pollution and transportation control measures to reduce emissions through reducing the use of motor vehicles. The San Diego Association of Governments (SANDAG) is responsible for the development and approval of the transportation control measures, based on criteria adopted by the Air Pollution Control Board, and submittal of the measures to the Air Pollution Control Board (County Board of Supervisors).

Transportation Control Measures

Transportation control measures (TCMs) improve air quality by reducing the emissions from motor vehicles of reactive organic gases (ROG), oxides of nitrogen (NOx), and carbon monoxide (CO). ROG and NOx are of particular concern because it is these emissions, in the presence of sunlight, which result in ozone, the major component of smog.

CO emissions are not dealt with in this report because CO standards are exceeded only a few times per year and CO emissions from on-road vehicles are expected to decline significantly over the next two decades. CO emission reductions will be included in the final TCM report.

Air Ouality Criteria

There are five basic air quality criteria which these measures are designed to meet. As discussed below, with one minor exception, the TCM measures presented meet these five criteria.

1. Air quality plans must include "... reasonably available transportation control measures

The transportation control measures described in this report are reasonably available to the residents, employers and governmental agencies of the region.

2. Transportation control measures must achieve an average vehicle occupancy of 1.5 or more persons per vehicle during weekday commute hours by 1999.

The Transportation Demand Management (TDM) program adopted in November by SANDAG will meet this criterion.

3. There shall be no net increase in vehicle emissions after 1997.

Existing mobile source controls established by the California Air Resources Board will meet this criterion.

4. Vehicle trips shall increase no faster than the rate of population growth.

A 3% reduction in trips by the year 2000 is required to meet this criterion. The TCMs described in this report will reduce year 2000 trips by about 15%, well in excess of this requirement.

5. The California Clean Air Act calls for a 5% yearly reduction in emissions until the state standards are met.

Existing mobile source controls will achieve this criterion for all on-road vehicles for ROG. For NOx, this criterion can be met only by additional controls on heavy trucks. This criterion is met for NOx for passenger vehicles and light and medium duty trucks.

Transportation Control Measure Evaluation

The TCMs are comprised of the following programs: (A) transportation demand management. (B) transportation capacity expansion program, (C) traffic systems management, and (D) indirect source control programs. Each measure is briefly described below and analyzed in more detail in Attachment 3.

A. Transportation Demand Management

The Regional Transportation Demand Management (TDM) Program adopted by SANDAG in November 1990, reduces vehicle emissions by decreasing commute and other vehicle trips and causing a shift to other than single-occupant vehicles. The program has three major components: the commute travel reduction program, the college travel reduction program, and the goods movement-truck operation control program. The TDM program is an element of the Regional Transportation Plan.

B. Transportation Capacity Expansion

The Transportation Capacity Expansion Program provides alternative transportation modes to support the TDM program and assists in the achievement of its trip and emission reduction goals. The program has four components: transit improvements, high occupancy vehicle lane (HOV) facilities, park and ride facility expansion, and bicycle facilities. These programs are elements of the Regional Transportation Plan.

C. Traffic Systems Management

Traffic Systems Management improves traffic flow through the coordination of traffic signals and computerized signal control. These measures increase traffic flow and reduce emissions resulting from congestion.

D. Improved Integration of Air Quality Considerations with General Planning and Land Use Decision-Making

As part of the preparation of the Regional Growth Management Strategy, the Cities and County are working on procedures to improve land use - air quality integration, and analyzing the advantages and disadvantages of changing some land use relationships in general plans for air quality and other purposes. Indirect Source Review is the term used by the Air Resources Board to describe procedures to improve land use - air quality integration. An "indirect source" of air pollution is any facility which generates vehicular traffic that results in air pollution emissions. Examples of indirect sources of air pollution are employment sites, shopping centers and sports facilities.

The Growth Management Technical Committee has a subcommittee preparing recommendations on this issue. Some proposals should be available to the Board before it considers approving the TCM plan.

Regional Land Use Distribution is the term used in the Regional Growth Management Strategy (originally used in Proposition C) to describe the evaluation of possible general plan changes that would improve future land use relationships. The Growth Management Technical Committee is evaluating two types of changes. They are the "balance" of jobs and housing in various subregional areas and increasing land use densities near the access points to the regional transportation system. The evaluation will include a quantification of the air quality benefits.

Future Reports

For the March Board meeting, the transportation tactic evaluation will be refined and an analysis will be provided of the year 2010 air quality implications. There will be a progress report on the work being undertaken regarding air quality/land use relationships. The March report also will include a discussion of TCM financing, implementation and monitoring as well as a report from the various committees which are reviewing this material. The Transportation Control Measures will be presented to the Board in April.

Attachments

Attachment 1 presents a summary of the most recent emission inventory as provided by the California Air Resources Board. It should be noted that transportation related emissions are projected to drop significantly over the planning period while many other source categories show increases. Attachment 2 summarizes the year 2000 estimated emissions impacts for those measures for which information was available. A more complete analysis will be presented at the March meeting. Finally, Attachment 3 contains a one page summary of each measure based on information available to date.

Executive Director

Attachments

Attachment 1 SAN DIEGO EMISSION INVENTORY OZONE PRECURSORS



REACTIVE ORGANIC GASES (ROG)

> OXIDES OF NITROGEN (NOx)



ATTACHMENT 2

YEAR 2000 ESTIMATED EMISSIONS IMPACTS									
MEASURE		PERCENT TRAVEL REDUCED		PERCENT EMISSIONS REDUCED		ADDED ANNUAL COST (\$ millions)		COST EFFECTIVENESS ANNUAL COST/TON PER DAY REDUCED (\$ millions)	
		TRIP	VMT	ROG	NOX	GOVT	OTHER	ROG	NOX
A.I.a.	TDM/Trip Reduction Ordinance	7.06	8.46	1.90	0.61	\$ 7.0	\$159.0	\$ 32.9	\$60.8
A.2.a.	TDM/College Trip Reduction Ordinance	0.64	0.43	0.18	0.20	\$ 0.6	\$ 13.9	\$ 35.3	\$ 25.0
B.1.a.	Transit CNG Conversion	-	-	0.25	0.50	\$ 4.0	-	\$ 7.1	\$ 2.8
B.1.b.	Transit Expansion	0.55	0.49	0.27	-0.10	\$47.8	-	\$175.0	-
B .2.	HOV Line Improvement	0.60	0.72	0.19	0.12	\$13.7	-	\$ 32.5	\$38.0
B .3.	Park & Ride Facilities	-	0.13	0.03	0.06	\$ 1.6	-	\$ 35.2	\$18.7
B.4 .	Bicycle Facilities	0.49	0.14	0.09	0.05	\$ 8.0	-	\$ 40.0	\$53.0
C .	Traffic Systems Management	-	-	0.26	0.21	\$ 2.0	-	\$ 3.4	\$ 3.4
D.1.a.	General Travel/Shopping	5.75	3.87	1.21	1.25	\$ 6.0	\$179.0	\$ 68.0	\$55.0
D.1.c.	Special Event/Airport Travel	0.29	0.23	0.08	0.08	\$ 0.3	\$ 9.2	\$ 50.0	\$43.1
Totals		15.38	14.47	4.46	2.98	\$91.0	\$361.1	-	

Added Annual Costs: Costs to Government; Other Costs include Private Sector and Individual Costs

TRANSPORTATION CONTROL MEASURE CRITERIA





R. J. Sommerville Air Pollution Control Officer

March 21, 1991

Stuart Shaffer Deputy Executive Director San Diego Association of Governments 401 B Street, Suite 800 San Diego, CA 92101

TCM CRITERIA

Enclosed are the revised Transportation Control Measure Criteria adopted by the Air Pollution Control Board on March 12, 1991. A change copy identifying the revisions to the original draft Criteria is also enclosed.

H PAUL SIDHU Deputy Director

HPS:vch

Enclosure

cc: Ken Sulzer, Executive Director

There is presented to the Air Pollution Control Board a letter, Document No. 739592, from the Air Pollution Control District Officer concerning Transportation Control Measure Criteria, and making certain recommendations.

The Air Pollution Control Officer orally reviews background information as outlined in the report with the aid of a slide presentation.

Tom Scheffer, representing the Construction Industry Federation, addresses the Board in support of the Criteria to guide development of Regional Transportation Control Measures by the San Diego Association of Governments, and requests the districts work with the Industry to coordinate an alternate truck traffic control program.

Christopher Neils, representing the Greater San Diego Chamber of Commerce, addresses the Board in support of the Transportation Control Measure Criteria, and states that emphasis placed on the proposed parking fees could become a disincentive on the employer/employee. He urges the Board to keep this concern in mind and suggests educating the public on the Transportation Control Measure Criteria.

Craig Adams, representing C-3 Citizens Coordinate for Century 3, addresses the Board strongly supporting the adoption of the criteria, but questions the criteria concerning complete elimination of carbon monoxide hot spots. He suggests the Criteria include an earlier schedule that leases implementation of the indirect source review procedures prior to the 1994 deadline; and requests the Board keep the transportation control measures in perspective relative to the entire range of pollution sources.

The record shows receipt of a letter from the Sierra Club, San Diego Chapter supporting the Air Pollution Control District efforts to reduce air pollution, Document No. 740004.

The record shows receipt of a letter from the Chairman of the Air Quality Strategy Development Committee, supporting the proposed Criteria in principle, Document No. 740005.

<u>No. 2</u>

ON MOTION of Member Williams, seconded by Member Golding, the Air Pollution Control Board of the San Diego County Air Pollution Control District adopts the following criteria to guide development of Regional Transportation Control Measures by the San Diego Association of Governments:

Nos. 2-2A 3/12/91 mcc Page 1 of 16 Pages WHEREAS, the San Diego Air Basin has been designated a nonattainment area by the California Air Resources Board for the state air quality standards for smog (measured as ground-level ambient ozone) and particulates, and the Western portion of the San Diego Air Basin (west of the mountains) has been designated nonattainment for carbon monoxide and nonattainment-transitional for nitrogen dioxide;

WHEREAS, on-road motor vehicles are the predominant source of reactive organic gases, oxides of nitrogen and carbon monoxide in San Diego County;

WHEREAS, regional traffic in San Diego County, measured as Vehicle Miles Traveled (VMT), has been growing over the last decade at an average annual rate of about seven percent, and vehicle trips have been growing at an annual rate of about five percent; while the annual rate of population growth has averaged three percent;

WHEREAS, for purposes of improving air quality, reducing vehicle trips must be given priority as trip-related start and soak emissions represent from one-third to one-half of reactive organic gas emissions from motor vehicles;

WHEREAS, for purposes of improving air quality, grip reduction programs must address all travel periods since regional travel is divided almost equally between peak and off-peak periods:

WHEREAS, in the past, the primary focus of regional transportation planning has been on mobility, not air quality;

WHEREAS, on a regular basis, land use policies do not promote land development patterns that support transit use and provide a mixture of housing and employment opportunities that minimize trip lengths;

WHEREAS, the primary focus of current regional transportation demand management efforts in San Diego County has been on traffic congestion relief, and not air quality;

WHEREAS, the San Diego Association of Governments has adopted a Model Transportation Demand Management Program which includes establishing a regional Transportation Demand Management Board;

WHEREAS, the Air Pollution Control Board is opposed to establishing a new regional Board or agency to administer and implement the regional transportation demand management program, duplicating the District's responsibilities under the California Clean Air Act;

WHEREAS, sufficient measures to support trip reduction programs and provide an adequate supply of alternative transportation modes are not included in the current regional effort;

Nos. 2-2A 3/12/91 mcc Page 2 of 16 Pages WHEREAS, the 1990 draft Regional Transportation Plan identifies funding shortfalls, and many of the unfunde projects are High Occupancy Vehicle (HOV) lanes and minist improvements

WHEREAS, the California Clean Air Act requires revised air quality plans for smog career monoxide, and nitrogen dioxide be submitted to the Air Resources Board by June 30, 1991 to provide for attainment of the health based air quality standards as by the earliest practicable date.

WHEREAS, the San Diego area has photochemical smog concentrations high enough that the Air Resources Board guidance considers the region to be a Severe nonattainment area, and the California Clean Air Act specifies minimum requirements for transportation control of the severe areas:

WHEREAS, the California Clean Air Act requires that revised air quality plans achieve conreductions from all sources of at least five percent per year until attainment, or include and the control measures of the required five percent reductions cannot be obtained;

WHEREAS, an estimated twenty-two percent emission reduction in reactive organic compounds and thirty-nine percent in oxides of nitrogen emissions from the 1987 level are needed by the year 2000 to satisfy the five percent annual emission reduction requirement:

WHEREAS, a five percent per year emission reduction is likely not achievable: therefore all feasible mansportation control measures reflecting the optimal effectiveness level to provide its much emission reduction as feasible, and implemented as expeditiously as practicable are reduced.

WHEREAS, the integration of the Regional Transportation Plan and other regional subsponder upn and congestion management plans with the air quality plan is required by state and federal law:

WHEREAS, the California Clean Air Act authorizes and requires the Air Pollution Control District to adopt, implement, enforce, and monitor the progress of regional transportation control measures necessary to attain and maintain air quality standards:

WHEREAS, the California Clean Air Act provides an institutional framework for regional participation in developing and implementing transportation control measures, and requires the Air Pollution Control Board to adopt criteria in consultation with the San Diego Association of Governments to guide the development of a regional plan for transportation control measures by the San Diego Association of Governments:

WHEREAS, the San Diego Association of Governments has been consulte : during Criteria development;

WHEREAS, the California Clean Air Act requires the Air Pollution Control District to develop an indirect source control program:

WHEREAS, the California Clean Air Act requires the air quality strategy contain an assessment of the cost-effectiveness of available and proposed control measures, and that measures be ranked in order of cost-effectiveness:

Nos. 2-21 3/12/91 mcc Page 3 of 16 Pages WHEREAS, the California Clear Air Act requires the air quality strategy contain an assessment of the technological feasibility, total emission reduction potential, rate of emission reduction, public acceptability, and enforceability of each control measure;

NOW THEREFORE BE IT RESOLVED that the Board hereby adopts the following criteria for developing a regional plan for transportation control measures to be included in the reviser regional air quality strategy required by the California Clean Air Act.

- 1. The plan shall substantially reduce passenger vehicle trips and trip length as expediaously as practicable. The rate of increase in vehicle trips shall be reduced to or below the rate of population growth.
- 2. The plan shall achieve a regionwide average vehicle ridership of 1.5 or more during weekday commute hours as expeditiously as practicable, but no later than 1999, and no net increase in vehicle emissions after 1997. The vehicle trip reduction goal shall be in terms of average vehicle indership, not drive-alone ratio as the latter reduces the incentive for mansit promotion, thereby dimunishing the opportunity to further reinforce the viability of the region's investment in mass mansit.
- 3. The plan shall include all feasible transportation control measures for peak and off-peak period travel that reflect the optimal effectiveness level to provide as much emission reduction as feasible, and be implemented as expeditiously as practicable.
- 4. The transportation control measures shall be developed in coordination and consultation with all affected agencies and the Air Quality Strategy Development Committee, and significant issues raised in the development shall be identified in the plan. The Air Quality Strategy Development Committee shall be the key committee to address and resolve all issues prior to making recommendations to the Board.
- 5. The plan for Transportation Control Measures shall include a recommended strategy and alternative option: for consideration by the Air Pollution Control Board. Each measure shall be evaluated at three implementation levels. These levels shall represent implementation to the maximum extent feasible using: (1) Existing funding sources. (2) Potentially available funding sources, including parking and other fees implemented by the District for which legislation is not required, and (3) Potentially available funding sources including those that would require legislation, such as fuel taxes and vehicle use fees. Resource needs and funding sources shall be identified for each implementation level.
- 6. For each implementation level, an evaluation shall be performed by analyzing transportation control strategies using TRANPLAN to determine resulting changes in trips. VMT and speeds. The assumptions and justifications for the assumptions shall be documented, and TRANPLAN outputs shall conform to District format specification. Any emission reductions determined by the San Diego Association of Governments shall be submitted to the District with supporting documentation. The District shall submit any revisions to the emission reductions to the San Diego Association of Governments for inclusion in the transportation control measure analysis.
- 7. The cost-effectiveness, technological feasibility, total emission reduction potential for reactive organic compounds, oxides of nitrogen and carbon monoxide, rate of emission

Nos. 2-2A 3/12/91 mcc Page 4 of 16 Pages reduction, public acceptability, and enforceability shall be determined for each control measure at each implementation level. The proposed transportation control measure plan and alternative options shall be evaluated in terms of the same factors, with special attention to synergistic effects and other interactions among measures in the plan.

- 8. The performance criteria and the target levels to demonstrate expeditious progress shall be specified for each control measure. Monitoring and audit procedures to effectively track implementation and progress of each transportation system management measure by the District shall be recommended. Monitoring and audit procedures to effectively track regionwide average vehicle ridership necessary to determine compliance with the California Clean Air Act requirement for 1.5 persons per passenger vehicle during weekday commute hours shall be recommended.
- 9. In light of projected funding limitations, the proposed plan shall include an analysis of benefits and recommendations as appropriate for redirecting discretionary funds from highway capacity expansion projects to other projects that accelerate expansion of alternative transportation modes.
- 10. Revenues from all air quality related fees shall be deposited with the District for allocation to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost-effective measures, and total emission reduction potential. The parking fee program may be structured to allow facilities to retain a portion of the parking charges from their employees to help fund incentive programs provided sufficient funding, as determined by the District, for District transportation related programs is provided to the District.
- 11. Market-based measures, which increase the cost of driving, may be suggested, but may not replace, regulatory measures. Suggested market-based measures shall be designed to be implemented within a District regulatory structure and shall include approaches that do not require legislation. Market-based measures that may require implementing legislation may be suggested as long-term measures.
- 12. The regional plan for transportation control measures shall suggest a regional process for implementing long-term measures, and for developing and implementing future transportation control measures that may become feasible with the emergence of new technologies, enabling legislation, or legal requirements.
- 13. The plan shall include sufficient incentives to induce solo drivers into alternative transportation modes, and provide for a sufficient supply of alternative transportation modes (e.g., transit, HOV lanes, vanpools) to meet the demand induced by the transportation control measures. An assessment of how much transit expansion will be necessary to meet the demand induced by the transportation control measures and of transit operating funding needs to support that expansion shall be included.
- 14. Incorporated herein by reference are all applicable guidance documents, including California Clean Air Act Transportation Requirements Guidance, California Clean Air Act Guidance for the Development of Indirect Source Control Programs, Guidelines to Local Air Districts Considering Transportation Control Measures Directed at Heavy-Duty Truck Operations, and Cost-Effectiveness - District Options for Satisfying the Requirements of the California Clean Air Act. The transportation control measures plan shall conform to, these guidance documents as determined by the Air Pollution Control Board.
- 15. All information necessary for an environmental assessment of the plan, if necessary under the California Environmental Quality Act, shall be provided to the District upon request.

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- 16. If the Air Pollunon Control Board adopts a strategy different from the proposed and analyzed strategies, the San Diego Association of Governments shall analyze the transportation control measures in the adopted strategy using TRANPLAN, provide appropriate outputs in a format specified by the District, and determine the overall cost-effectiveness of the adopted transportation control measures.
- 17. The attached list of transportation control measures, Addendum L constitutes the minimum measures to be included in the plan. Transportation control measures requiring local land use decisions should be developed in coordination with local land use jurisdictions. Other measures proposed in the plan must meet the definition of transportation control measures as defined by the California Clean Air Act and be approved by the Air Pollution Control Officer.
- 18. The plan for transportation control measures shall include suggested contingency measures to be implemented as necessary to offset any emission reduction shortfall if other measures are not implemented or are not as effective as anticipated.
- 19. The plan for regional transportation control measures shall suggest revisions to federal, state, and local laws and regulations that would facilitate or remove barriers to reducing regional travel.
- 20. The regional plan for transportation control measures shall not impede pedestrian and bicycle travel, and shall address safety issues associated with such travel as well as transit and park-and-ride lots.

The plan for transportation control measures shall be submitted to the Air Pollution Control District by May 1, 1991, in order to meet the June 30, 1991, requirement for submittal of a revised regional air quality strategy to the Air Resources Board. If SANDAG anticipates difficulty in meeting this deadline, SANDAG shall notify the District and suggest a reasonable extension date, subject to approval by the Air Pollution Control Officer.

The Air Pollution Control Board reserves the right to approve or modify the recommended plan for transportation control measures as necessary to meet federal or state requirements applicable to air quality.

The plan for transportation control measures shall, upon adoption by the Air Pollution Control Board, be incorporated in the Regional Transportation Plan and other regional transportation and congestion management plans.

A Memorandum of Agreement shall be developed between the San Diego Association of Governments and the District that ensures appropriate District involvement in determining the consistency of the Regional Transportation Plan, the Congestion Management Plan, Regional Growth Management Plan, and other regional plans with the Regional Air Quality Strategy. For purposes of developing deficiency congestion management plans which are required to be adopted by cities and the County, the San Diego Association of Governments shall develop a list of approved improvements, programs, and actions, and include those in the plan for transportation control measures.

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MINIMUM TRANSPORTATION CONTROL MEASURES ADDENDUM I

TRIP REDUCTION PROGRAM

SINGLE PASSENGER VEHICLE TRIP REDUCTION PROGRAM

A single passenger trip reduction program will be implemented and enforced by the District, subject to delegation as authorized by the California Clean Air Act to Cities and the County and not to another regional agency. Delegation to Cities and the County shall be limited to ordinances certified by the District as being at least as stringent as the District regulation. The Single Passenger Vehicle Trip Reduction Program shall include the following elements:

- Trip reductions will be mandated and measured as average vehicle ridership for at least commute, educational, airport, special event and shopping trips, according to the size, type and location of facility. The mandated trip reduction levels shall represent the maximum achievable reductions as expeditiously as practicable.
- Minimum standards for facility rideshare/transit promotion efforts consistent with mandated trip reduction measures shall be specified and include financial incentives and contributions. information dissemination, and telecommuting programs.
- Average vehicle ridership shall be defined as the average daily number of employees/students/customers who would be normally expected to work/attend/shop at a facility divided by the average number who drive to the facility, to account for all alternative transportation modes, including telecommuting, teleshopping, part time ridesharing, and compressed work weeks. Average Vehicle Ridership credits shall be provided employers who establish satellite work centers designed to significantly reduce the length of commuting by employees who would otherwise report to the principal work site. Low emission vehicles, as defined in Health and Safety Code Section 39037.05 may be excluded.
- Facilities shall be required to submit an annual report to the District documenting the average vehicle ridership, any incentives provided to promote alternative transportation modes, and necessary supporting data.
- Facilities shall be required to submit a deficiency correction plan to the District for review and approval when the average vehicle ridership fails to meet mandated requirements. The deficiency correction plan shall analyze why the required reductions were not achieved, and shall specify the design, funding requirements and sources, and expeditious implementation schedule for deficiency correction measures sufficient to achieve the required reductions, as approved by the District. Facilities will be required to fund and implement the Districtapproved deficiency correction plans.
- Multifacility averaging and combined reports and deficiency correction plans within appropriately defined subregional areas will be provided for, as approved by the District.

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PARKING MANAGEMENT

A parking management program implemented and enforced by the District shall be designed to reduce the number of drive-alone trips by making parking more expensive and less convenient. The program shall, at a minimum, be optimized to support the Single Passenger Vehicle Trip Reduction Program and include the following elements:

- Charges for commuter parking where that parking is now free and increased long-term rates for existing fee-based parking. One consideration in setting or increasing parking charges may be health-related costs associated with motor vehicle trips. The parking charges shall be structured to create disincentives for the solo driver, and the program shall be structured so parking charges are paid by drivers and not subsidized by employers. Revenues from parking management fees are to be deposited with the District for allocation by the District to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost effective measures, and measures with high emission reduction potential. The parking fee program may be structured to allow facilities to retain the parking charges from their employees to help defray the cost of required incentive programs and transportation control measures, provided sufficient funding, as determined by the District, is provided for transportation related District programs including transit expansion and other similar programs.
- Free or reduced-cost carpool and vanpool parking;
- Preferential parking spaces for carpools and vanpools in the most convenient locations at the parking facility;
- Limits on the supply of parking for drive-alone commuters;
- Require cities and County control on-street purking where necessary to support the purpose and goals of the parking management program;
- Review of City and County land use and zoning policies regarding parking and recommended changes to those policies and ordinances consistent with the purpose and goals of the parking management program.

TRUCK OPERATION CONTROL REGULATIONS

A regional goods movement truck travel reduction program consistent with Air Resources Board guidance shall be evaluated for feasibility and emission reductions in San Diego County. The program will be implemented and enforced by the District, subject to delegation to the Cities and County consistent with the California Clean Air Act. The truck operation control regulations to be evaluated shall:

- Prohibit idling of trucks for more than five minutes, except in specific situations of necessity.
- Prohibit facilities from operating in a manner that causes trucks to idle for more than five minutes.

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- Require freight consolidation centers for less than truckload shipments into and out of San Diego County.
- Require operations at freight consolidation centers be conducted in a manner to minimize motor vehicle emissions and traffic congestion, such as low emission service vehicles and appropriate off-peak operations.
- Require establishments shipping or receiving goods by truck to shift some or all shipments to off-peak hours.
- Prohibit travel by specified trucks during appropriate peak periods. Criteria for considering which trucks shall be subject to travel restrictions shall include the ability of the class of truck to accelerate, decelerate, merge with, or otherwise operate in a manner that does not interfere with peak period traffic flow. Peak periods during which truck travel shall be restricted may be established separately from other definitions of peak period.
- Require the Cities and County to revise provisions of local plans and ordinances to be consistent with the purpose and goals of the truck operation control regulations.

ALTERNATIVE TRANSPORTATION MODE CAPACITY EXPANSION

EXPANDED TRANSIT

- Air quality related transit improvements shall, through ease of use, convenience, comfort and security, be optimized to attract "choice" riders (those riders who have a choice of modes available) who would otherwise use personal vehicles.
- Air quality related transit services shall be designed to include feeder transit service to linehaul transit routes to the maximum extent feasible to minimize the number of vehicle trips needed to access transit.
- Transit expansion shall be as extensive and implemented as rapidly as feasible to accommodate choice riders induced by other transportation control measures.
- Transit system design shall minimize travel time and maximize convenience for the largest number of potential riders.
- The Trolley shall to the maximum extent feasible be conveniently accessible by walking, bicycle, or feeder transit. Trolley corridors shall be reviewed for potential realignment to go through the areas of greatest ridership potential rather than along the fringes. Where such realignments prove infeasible, development plans along the Trolley corridors shall maximize the number of potential riders who would otherwise be single-occupant-vehicle drivers.
- Transit-only streets shall be implemented as appropriate in congested, high density activity centers.
- Closing of existing regionwide arterial gaps shall be evaluated to enhance transit service.

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PARK AND RIDE FACILITIES

For purposes of air quality improvement, park and ride facilities have a lower priority than providing a convenient feeder transit system. Wherever feasible, convenient feeder transit to line haul transit shall be provided and promoted, rather than providing park and ride lots. However, where park and ride facilities are necessary, the following design criteria shall apply.

- Park and ride locations shall serve all trip origin areas that cannot be feasibly served by feeder transit.
- Park and ride facilities shall be located at or near other trip generating activities or services such as grocery stores, banks, or day care to minimize or eliminate additional motor vehicle trips to these activities or services.
- Park and ride facilities shall be located to intercept trips as close to the origin as possible.
- Park and ride facilities shall be available at regional transit centers in trip origin areas.
- Park and ride lots shall have adequate spaces to meet demand.
- Park and ride facilities shall target longer trips along corridors with Figh Occupancy Vehicle lanes.
- Park and ride facilities shall be equipped with secure bicycle storage to minimize vehicle trips.

HIGH OCCUPANCY VEHICLE FACILITIES

- High Occupancy Vehicle lanes shall be given priority consideration in funding highway capacity expansion on existing highways.
- Adequate provisions shall be made for HOV lanes on new highways.
- A regional system of High Occupancy Vehicle lanes shall be provided, when feasible, in all congested corridors, at least those identified in the Regional Transportation Plan, or where queueing onto local streets creates excessive congestion or safety problems.
- The Regional High Occupancy Vehicle Facilities Plan shall include transit stops for the transfer of passengers between local transit and transit travelling in High Occupancy Vehicle lanes where there is or is the potential for connecting local transit. Where there are space constraints in the medians, it is not necessary to build the transit stops in the facility itself. Alternative designs for transit-only access should allow transit riders the added convenience and time savings associated with HOV use that might be otherwise unavailable without transit stops.

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 High Occupancy Vehicle bypass lanes shall be provided at all metered freeway entrance ramps where economically feasible and consistent with public safety standards.

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BICYCLE AND PEDESTRIAN FACILITIES

- Bicycle and pedestrian facilities represent two distinct forms of nonmotorized transportation. Recognizing that the safety and access of cyclists and pedestrians may be jeopardized by combined facility use, bicycle facilities shall be designed for bicycle use and pedestrian facilities for pedestrian use to the extent necessary to provide safe, accessible facilities for each.
- The priority for pedestrian and bicycle access to facilities shall be at least as high as motor vehicle access.
- Pedestrian and bicycle circulation patterns and paths providing convenient, attractive, secure pedestrian and bicycle travel shall have priority in development design.
- The bicycle element of the Regional Transportation Plan shall be implemented as expeditiously as feasible.
- Bicycling shall be enhanced through improved bicycle lane maps, improved bicycle destination signage, improved intersections accommodating right turn only traffic, and separate bicycle paths at strategic locations.
- Pedestrian and bicycle access shall be designed to provide quick and convenient access to transit nodes.
- Secure bicycle storage at transit stops and on transit vehicles shall be expanded to encourage bicycle-transit trips.

TRANSPORTATION SYSTEM MANAGEMENT

Suggest appropriate monitoring criteria and auditing procedures to be used by the District to effectively track the emission reduction effectiveness of each transportation system management measure.

TRAFFIC CONTROL IMPROVEMENTS

- Any measure to improve the flow of traffic shall not undermine the safety of cyclists or pedestrians.
- Advanced computer-based traffic signal control systems shall be implemented to minimize travel time, stops and delay on the urban highway network.
- First priority shall be given to transit vehicles. On streets with bus frequency of 15 minutes or less, signal timing should favor short cycles compatible with pedestrian traffic.
- Replacing stop signs with optimized signals shall have a high priority.
- Traffic controls along all regional arterials identified in the Regional Transportation Plan shall be optimized to minimize stops and delay and give priority to regional travel.

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- Traffic signals in all major local and regional activity centers shall be optimized to minimize stops and delay.
- Traffic signals at the street end of freeway on and off ramps shall be coordinated and integrated with the surrounding city street signals.

RAMP METERING

• The Ramp Metering program in the Regional Transportation Plan shall be implemented as rapidly as feasible unless research indicates ramp metering causes a net emission increase.

INCIDENT MANAGEMENT

• The Incident Management program in the Regional Transportation Plan shall be implemented as rapidly as feasible.

LAND USE

A model air quality element for comprehensive land use plans shall be developed for consideration by the Cities, the County, the Port District, and other applicable jurisdictions.

JOB-HOUSING BALANCE

- Each major statistical area (as defined by SANDAG and concurred by the District) shall, to the extent feasible, contain affordable housing for the employment spectrum in that area.
- Land use policies and programs shall be established to attract appropriate employers to overly residential areas and to encourage appropriate housing in and near industrial and business areas.

MIXED USE DEVELOPMENT

• Development designed to maximize walking and minimize vehicle use by providing housing, employment, education, shopping, recreation, and any support facilities within convenient proximity shall be maximized.

TRANSIT CORRIDOR DEVELOPMENT

• City, County, and Port District land use plans, zoning ordinances, and development policies shall be designed to foster transit ridership.

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TRANSIT CORRIDOR DEVELOPMENT

- City, County, and Port District land use plans, zoning ordinances, and development policies shall be designed to foster transit ridership.
- High residential densities shall be encouraged within walking distance of major transit routes.
- Industrial and commercial development shall focus at transit nodes.
- Developments shall have convenient access to transit.
- Multiuse development at transit centers shall offer such facilities as day care, grocenes, banking, etc.

INDIRECT SOURCE REVIEW

The transportation control measure plan submittal shall suggest a regional process, including the following features, for developing a District indirect source review program to ensure that developments are designed to facilitate use of alternative transportation modes to the maximum extent feasible.

- The Air Pollution Control Board will adopt an indirect source control regulation requiring evaluation and mitigation of individual land use development projects.
- A condition for delegating the regulation to local land use agencies in the the Cities. County, and Port District will be their adopting an air quality element into the local general plan or an air quality program, that conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality elements be adopted as individual elements of general plans, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.
- Air quality elements for general plans will be developed for implementation as a part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.
- Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.
- If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Quality Strategy, deficiencies will be identified and transmitted to the Regional Growthe Management Board.
- Indirect source review program development and implementation shall be completed by 1994.

Nos. 2-2A 3/12/91

IMPLEMENTATION AND ENFORCEMENT RESPONSIBILITIES FOR TRANSPORTATION CONTROL MEASURES

	Primary	<u>May be</u> Delegated to	Support		
TRANSPORTATION DEM	MAND MANAGEMEN	I			
TDM Ordinance/ Regulation	APCD	Commuter Compu TMA			
Parking Management	APCD	APCD Cities/County Port District			
Truck Regulation	APCD	Cities/County	СНР		
ALTERNATIVE TRANSP	ORTATION MODE C	APACITY EXPANS	HON		
Expanded Transit	Transit Developmen	Transit Development Boards			
Park-and-Ride Facilities	Transit Developmen CALTRANS	Transit Development Boards/ CALTRANS			
HOV Facilities	Cities/County/CALT	Cities/County/CALTRANS			
Bicycle/Pedestrian	Cities/County/CAL7 Port District	IRANS	SANDAG/APCD		
TRANSPORTATION Sys	<u>tem Management</u>	:			
Traffic Control Improv.	Cities/County/CALT Port District	Cities/County/CALTRANS Port District			
	Cities/County/CALTRANS				
One-Way Streets	Cities/County/CALT	TRANS _	SANDAG/APCD		
One-Way Streets Ramp Metering	Cities/County/CAL7 Cities/County/CAL7	TRANS TRANS	SANDAG/APCD SANDAG/APCD		

3/12/91 mcc Page 14 of 16 Pages Agency Responsibilities Transportation Control Measures

	Primary	<u>May be</u> Delegated to	Support
LAND USE			
1. Job-Housing Balance	Cities/County		SANDAG/APCD
2. Mixed Use Development	Cities/County		SANDAG/APCD
3. Transit Corridor Develop.	Cities/County/Port Dis Transit Development 1	strict Boards	SANDAG/APCD

INDIRECT SOURCE REVIEW

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Regulation/Ordinance	APCD	Cities/County	SANDAG
Air Quality Element- General Plans	Cities		SANDAG/APCD

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Nos. 2-2A 3/12/91 mcc Page 15 of 16 Pages PASSED AND ADOPTED by the Air Pollution Control Board of the County of San Diego, State of California, this 12th day of March, 1991, by the following vote:

AYES: Members Bailey, Golding and Williams NOES: Members None ABSENT: Members Bilbray and MacDonald

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<u>No. 2A</u>

ON MOTION of Member Williams seconded by Member Golding, the Air Pollution Control Board directs the Air Pollution Control Officer to transmit the Criteria to the San Diego Association of Governments.

Roll call on the foregoing motion results in the following vote:

AYES: Members Bailey, Golding and Williams NOES: Members None ABSENT: Members Bilbray and MacDonald

STATE OF CALIFORNIA) SS. County of San Diego)

I, THOMAS J. PASTUSZKA, Acting Clerk of the Air Pollution Control Board of the County of San Diego, State of California, hereby certify that I have compared the foregoing copy with the original order adopted by said Board, at a regular meeting thereof held March 12, 1991 (2-2A), by the vote herein stated, which original order is on file in my office; that the same contains a full, true and correct transcript therefrom and of the whole thereof.

Witness my hand and the seal of said Air Pollution Control Board, this 12th day of March, 1991.

THOMAS J. PASTUSZKA Acting Clerk of the Air Pollution Control Board San Diego County Air Pollution Control District

Esther & Kyan By Esther C. Ryan

(SEAL)

PROGRESS REPORT: TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN (RB-8)

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Sen Diego Association of Governments BOARD OF DIRECTORS

March 22, 1991

AGENDA REPORT NO. RB-8

PROGRESS REPORT: TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN

Introduction

At the February meeting, the Board accepted report RB-4, Preliminary Transportation Control Measures for the Air Quality Plan, for distribution. The report has been distributed to SANDAG Committees and others and some comments have been received. This report presents additional analysis of the transportation control measures under consideration, and discusses some of the issues raised during the review of RB-4.

Discussion

The information in this report is organized into three sections. The first presents further analysis of the transportation control measures, the second discusses comments received regarding RB-4, and the third reviews the San Diego region's emissions inventory.

1. Transportation Control Measures (TCMs)

Figure 1 is an updated evaluation of emissions reductions from potential transportation control measures (TCMs). The TCMs are listed in order of average cost effectiveness. In all cases, the measures portray an increase in the implementation levels contained in the Regional Transportation Plan (RTP). When it approves a TCM plan, the Board will decide if some recommendations in the current Regional Transportation Plan should be changed for air quality purposes. For example, the RTP proposes a 26% increase in bus service and a 160% increase in light rail transit (trolley) services by the year 2000. One of the measures analyzed increases bus and trolley services 42% over these projected year 2000 levels. The Board will ultimately need to decide if this is a reasonable, feasible, and defensible thing to do in light of the projected costs and air quality benefits of this service increase.

The "travel reduced" column in Figure 1 shows the percent reduction in trips and vehicle miles of travel, resulting from the air quality measure, from projected year 2000 levels without the proposed control measures. The "emissions reduced" columns show the reductions as a percent of estimated year 2000 emissions from all sources.

FIGURE 1

YEAR 2000 REVISED ESTIMATED EMISSIONS IMPACTS									
MEASURE		TRAVEL REDUCED (%)		EMISSIONS REDUCED (%)		ANNUALIZED COST (\$ millions)		COST EFFECTIVENESS (\$/1b)	
			VMT	ROG	NOX	GOVT	OTHER	ROG	NOX
A .	Traffic Signal Improvements	-	-	0.29	0.22	\$ 2.0	-	\$ 4.20	\$ 4.20
B.	Low Emission Bus Replacement	-	-	0.33	0.55	\$ 4.0	-	\$ 7.30	\$ 3.40
C .	HOV Lane Improvement	0.33	0.40	0.10	0.07	\$ 5.8	-	\$ 35.50	\$39.80
D.	TDM/College Trip Reduction Ordinance	0.64	0.77	0.17	0.19	\$ 0.6	\$ 13.9	\$ 52.20	\$35.40
E.	Bicycle Facilities	0.49	0.14	0.09	0.05	\$ 8.0	-	\$ 54.80	\$72.60
F.	TDM/Trip Reduction Ordinance	6.64	7.96	2.10	0.92	\$ 7.0	\$159.0	\$ 48.30	\$86.80
G .	Park & Ride Facilities	*	0.13	0.006	0.008	\$ 1.16	-	\$132.00	\$69.00
H.	Trolley Expansion	0.17	0.15	0.09	0.06	\$14.9	-	\$226.00	\$340.0
I.	Low Emission Bus & Trolley Expansion	1.07	0.86	0.24	-0.16	\$62.6	-	\$1071.00	-

ROG: Reactive Organic Gases

NOx: Oxides of Nitrogen

Added Annual Costs: Costs to Government; Other Costs include Private Sector and Individual Costs March 22, 1991 Annualized costs are shown for both the government and private sector (shown as "Other"). In the case of the Transportation Demand Management (TDM) program, the "other" costs are the costs to the employer or employee of the necessary incentive or disincentive programs required to bring about the required change in travel behavior. The \$159 million reflects a fairly conservative monthly cost of \$15 per employee. Needless to say, a TDM program of the magnitude being proposed has never before been implemented and cost assumptions are sketchy at best. Finally, it should be noted that annualized costs reflect the life-cycle costs of the capital facilities required, not the cost of implementation. For example, trolley vehicles are assumed to have a life of 25 years. The annualized costs represents 1/25th of the vehicle cost, not the cost of purchasing all the needed vehicles by the year 2000.

The last two columns show the cost per pound of ROG and NOx emissions reduced. This is calculated by dividing the total annualized cost by the number of pounds per year of the emissions reduced. The lower the cost per pound of emissions reduced, the more cost effective the measure. "Traffic signal improvements" is the most cost effective measure; "bus and trolley expansion" is the least cost effective. A cost per pound in excess of \$100 is an indication of low-cost effectiveness.

Following is a discussion of each of the transportation control measures shown on the Figure 1 chart.

A. Traffic Signal Improvements. The first air quality transportation control measure shown is traffic signal improvements. This measure assumes computer optimization of the region's traffic signals by the year 2000. As a result of this action, average arterial speeds are expected to increase by 10% in comparison to average speeds without full optimization. Since many cities have programs in effect which will achieve this objective, the additional annual cost for this program is estimated to be only \$2 million. Emission reductions on the order of two to three tenths of one percent are anticipated. This is a highly cost effective air quality measure (\$4.2/lb. ROG and \$4.2/lb. NOx).

<u>B.</u> Low Emission Bus Program. The measure assumes a replacement of the regional bus fleet with CNG or other equivalent low emission vehicles by the year 2000. A total of 591 buses are assumed to be replaced at an additional cost per vehicle of \$65,000. Operating cost for this bus fleet is assumed to be \$0.05 per mile higher than for standard diesel buses. This measure reduces ROG emissions by one-third of one percent and is very cost-effective (\$7.3/lb. ROG and \$3.4/lb. NOx). Both MTDB and North County Transit have CNG buses on order.

<u>C. HOV Lane Improvements</u>. This measure assumes the construction of 48.8 miles of new High Occupancy Vehicle (HOV) lanes by the year 2000. There are currently no additional HOV lanes programmed for construction in the next ten years. The assumed HOV facilities are on I-5 from I-8 to SR-78, I-15 from SR-56 to SR-78, I-15 from I-8 to SR-163, and I-805 from I-5 to SR-52. This measure will reduce ROG emissions by about one-tenth of one percent and is moderately cost effective (\$35.5/lb. ROG and \$39.8/lb. NOx).

D. TDM/College Trip Reduction Ordinance. The college trip reduction ordinance is similar to the employment trip reduction program (discussed in F. TDM/Trip Reduction Ordinance)

below). The reductions in trips and emissions are less than the employment trip reduction ordinance, because the ordinance would apply to far fewer persons. The cost effectiveness of this program is moderate (\$52.2/lb ROG and \$35.4/lb NOx).

<u>E. Bicycle Facilities</u>. The bicycle measure evaluates the air quality impact of a substantial increase in the construction of regional bicycle facilities by increasing the annual funding to the bicycle program by S8 million per year from the current level of \$2.2 million per year. This tactic reduces emissions by less than one-tenth of one percent and is moderately cost effective as an air quality measure (\$54.8/lb. ROG and \$72.6/lb. NOx).

<u>F. TDM/Trip Reduction Ordinance</u>. The TDM employment trip reduction ordinance provides for an average vehicle ridership of 1.5 as required by the Clean Air Act. Implementation of this measure results in the greatest trip reductions -- 6.64% of the projected year 2000 trips, and the greatest vehicle mileage reduction -- nearly 8%. The program would result in the highest emissions reductions of all the measures, 2.10% of ROG and nearly 1% NOx. The cost effectiveness is moderate in comparison with the other measures (S48.3/lb ROG and S86.80/lb NOx).

<u>G. Park and Ride Facilities</u>. The park and ride facilities measure would increase the number of park and ride spaces in the region from over 7,500 today to nearly 25,000 by 2000. These spaces would be used by patrons of carpools, transit, and commuter rail. This measure would reduce emissions by less than one hundredth of one percent and has a fairly low cost effectiveness (\$132/lb. ROG and \$69/lb. NOx).

<u>H. Trolley Expansion</u>. The trolley expansion measure assumes a 42% expansion of light rail services over anticipated year 2000 levels shown in the Regional Transportation Plan. Existing revenues will permit the expansion of trolley services from the 4136 train-mile/49 peak vehicle system operating in 1990 to a 10,654 train-mile/126 peak vehicle system by the year 2000. This measure assumes the expansion to a 15,136 train-mile/179 peak vehicle system by 2000. This measure would reduce emissions by less than one-tenth of one percent and would have a low air quality cost effectiveness (\$226/lb. ROG and \$340/lb. NOx).

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I. Low Emission Bus and Trolley Expansion. This measure, expansion of the low emission bus fleet and an expansion of the trolley, assumes the expansion of the light rail system contained in Measure H above, as well expanding the bus system by 42% over assumed year 2000 levels. In this analysis all low emissions buses are assumed. Even with low emission buses, this measure reduces pollutants by less than one-tenth of one percent and has a very low air quality cost effectiveness (\$1071/lb. ROG).

2. Comments on RB-4

Following is a discussion on some comments received regarding RB-4.

<u>Alternative Fuels.</u> The Board asked that a measure be added to propose the conversion of auto and truck fleets to alternative fuels. According to the State Air Resources Board, conversion to clean fuels technically is not a transportation control measure. The Air Pollution Control District (APCD) is required to include measures in its plan to achieve the use of a significant number of low-emission motor vehicles by operators of motor vehicle fleets. This measure, under preparation by a consultant to the APCD, is scheduled for completion by May. However, a discussion of fleet conversion to low emission fuels will be included in the SANDAG plan element.

Land Use and Indirect Source Control Measures. The Board expressed concern about local jurisdictions retaining control over local land use. Section 9 of the California Clean Air Act, which authorizes an air district to regulate or mitigate emissions from indirect and areawide sources, states that "Nothing in this section constitutes an infringement on the existing authority of counties and cities to plan or control land use, and nothing in this section provides or transfers new authority over such land use to (an air) district." In a letter to the Air Resources Board, the Board's attorney refers to the existing "concurrent jurisdiction" between local jurisdictions' land use authority and air districts' permitting authority. Therefore, control over land use is not changed by the California Clean Air Act.

Land use and indirect source control measures to achieve air quality goals continue to be discussed by the Regional Growth Management Technical Committee. The Committee's recommendations, which will address assurances for the continued control by local jurisdictions over land use, will be included in the plan. Also, the state legislature will be considering whether an air district's land use authority related to mitigation of emissions from indirect and areawide sources should be limited to responding to environmental documents under CEQA (SB 352, Green, C.).

<u>HOV Lanes.</u> The question was raised whether the I-15 HOV lanes are encouraging car pools. There was a 22% increase in the number of vehicles using the HOV lanes in the second year over the first year, at the same time there was an increase in 7% on the parallel lanes. In addition, the percentage of vehicles using the HOV lanes, as a portion of the total vehicles traveling I-15, has shown a steady increase since the lanes opened.

<u>Relationship of the Transportation Control Measures with Other Plans.</u> The transportation control measures plan will contain a discussion of its relationship with the region's other transportation plans and programs. These other plans and programs include the Congestion Management Program and the Regional Transportation Plan.

3. Emissions Inventory

Figure 2 shows the San Diego regional emissions inventory for the 1987 baseline year and the projected inventory for 2000 and 2010. Reactive Organic Gases (ROG) and Oxides of Nitrogen (NOx) react in the presence of sunlight and comprise the major components of ozone. Since transportation control measures affect principally light duty passenger vehicles, these emissions are separated from the other on-road emissions. Other on-road emissions sources include trucks, buses, and motorcycles. Other mobile sources include off-road vehicles, trains, ships, planes, and mobile equipment. Stationary sources include solvent use (surface coatings, domestic solvents, dry cleansers, etc.) and other stationary sources (fuel combustion, petroleum processes, industrial processes, etc). The charts show that additional emissions controls on cars and the



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T/D = Tons per Day SOURCE. Air Resources Board, December 1980.



T/D + Tons per Day SOURCE: Air Resources Board. December 1980. use of alternative fuels, required by the State, will result in a substantial reduction from this source of ROG and NOx by 2000 and 2010. The addition of transportation control measures to reduce the use of autos will further reduce emissions. Total emissions attributable to stationary sources will increase in 2000 and 2010. The APCD's stationary control measures plan will propose methods to reduce the emissions from these sources.

The Transportation Control Measures plan, which will include the description of the TCMs and analysis, will be presented to the Board at the April meeting.

KENNETH E. SUZZER Executive Director

TRANSPORTATION CONTROL MEASURES PLAN FOR AIR QUALITY (RB-11)

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San Diego Association of Governments BOARD OF DIRECTORS

April 26, 1991

AGENDA REPORT No.: RB-11

TRANSPORTATION CONTROL MEASURES PLAN FOR AIR QUALITY

Introduction

This report presents the Transportation Control Measures Plan to be included in the 1991 San Diego Regional Air Quality Plan.

Transportation control measures are defined in the California Clean Air Act as any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions.

Air quality and traffic congestion are concerns of the region's residents. The measures proposed in this plan are designed to encourage changes in our travel behavior and help clean the region's air. They will be implemented through a partnership of the motoring public, the region's businesses and industries, and the appropriate government agencies responsible for air quality, transportation and land use.

The plan meets the requirements of the California Clean Air Act and the criteria of the Air Pollution Control District. If fully implemented, the plan is expected to reduce peak period congestion by 30%, automobile fuel consumption by 8% and photochemical air emissions by over 2%. Therefore, IT IS MY

RECOMMENDATION

that the San Diego Association of Governments approve Resolution 91-61 adopting the Transportation Control Measures Plan and submit it to the San Diego Air Pollution Control District for review and approval.

IT IS FURTHER RECOMMENDED

that the Board of Directors request the cities and the County to comment on the implementation of the proposed TDM (trip reduction) program prior to the June, 1991 Board of Directors' meeting.

Discussion

There are four major categories of transportation control measures. They are summarized below.

- 1. <u>Transportation Demand Management (Trip Reduction) Program</u> provides for the achievement of specific trip reduction and vehicle occupancy requirements by commute, education, truck, and non-commute travel. These requirements are supported by maximum penalties of law. This program includes the following:
- Commute Travel Reduction Program. This program, involving employers of more than 10 employees, will reduce reactive organic gases (ROG) by 1.88% and oxides of nitrogen (NOx) by 1.98%, at a cost of \$19.50 per pound.
- o College Travel Reduction Program. The program requires a trip reduction ordinance and transit subsidy program for college students which will reduce ROG by 0.14% and NOx by 0.25%, at a cost of \$25.50 per pound.
- o Goods Movement/Truck Operation Program. The program requires increased off-peak travel, improved incident management and prevention, and an enhanced motorist information program. This measure will reduce ROG by 0.45% at a cost of \$0.65 per pound.
- o Non-Commute Travel Reduction Program. The education program proposed in this measure will encourage all drivers to reduce or change their automobile use in order to reduce auto emissions. If this program were to achieve a reduction equivalent to one trip per day it would reduce ROG by 4.08% and NOx by 5.80%. At a program cost of \$5 million per year, the cost effectiveness would be \$0.20 per pound.
- 2. <u>Transportation Capacity Expansion Program</u> supports the TDM Program through the provision of alternatives to single-occupant motor vehicles, especially for commute and education travel. The program includes the following:
- o Transit Improvements and Expansion. This measure requires the conversion of the bus fleet to low emission vehicles and expansion of transit service and will reduce ROG by 0.41% and NOx by 0.01%, at a cost of \$27.70 per pound.
- o Vanpool Program. This program, which would provide 2,500 vanpool vehicles, will reduce ROG by 0.11% and NOx by 0.16%, at a cost of \$28.90 a pound.
- High Occupancy Vehicle (HOV) Lanes. This program, providing over 67 miles of HOV lanes, will reduce ROG by 0.11% and Nox by 0.14%, at a cost of \$37 per pound.
- Park-and-Ride Facilities will provide an additional 4,800 park-and-ride spaces and will reduce ROG by 0.001% and NOx by 0.02%, at a cost of \$36.50 per pound.
- o Bicycle Facilities program includes 50 miles of bikeways and other facilities. The measure will reduce ROG by 0.05% and NOx by 0.05%, at a cost of \$20.50 per pound.
- 3. <u>Traffic Systems Management Program</u>. The only proposed tactic under this program provides for traffic flow improvements through the computerization of traffic signals. This program will reduce ROG by 0.22% and NOx by 0.22%, at a cost of \$3.80 per pound.
- 4. <u>Indirect Source Control (ISC) Program.</u> To respond to the Clean Air Act, the cities and the County in this region will prepare air quality programs or elements for their respective general plans. These additions to local general plans are important because they represent the integration of air quality considerations with development policies and requirements. The general plan programs/elements will identify policies and design requirements for new development that will improve accessibility for pedestrians, transit and bicycles. These policies and design criteria should make it at least as easy to travel by walking or other modes as it is to travel by car. The Growth Management Technical Committee will recommend a common set of development design policies later this year.

The attached Transportation Control Measures Plan describes each measure in detail.

Costs and Implementation

The total government cost for the recommended transportation control measures is \$92 million annually in the year 2000. Of this total, \$52.1 million per year is for capital improvements for traffic signals, bicycle facilities, transit vehicles and facilities, park-and-ride lots and high occupancy vehicle lanes. Potential funding sources for the capital facilities portion of the program include a new development impact fee, state and federal funds and, in the case of the traffic signal measure, TransNet revenues.

TDM costs for the trip reduction, employment, college, and goods movement measures total \$16.9 million per year. Operating costs for the transit and vanpool program and the college and university pass subsidy total \$23 million annually. An additional source of revenues, such as the motor vehicle registration fee, will be needed. Assembly Bill 2766 currently authorizes up to a \$4 increase in the vehicle registration fee to be used for the reduction of air pollution from motor vehicles. A gradual increase, ultimately totaling \$15 per year in the vehicle registration fee, would provide the necessary funding for these programs.

The funding of TDM Programs and operations by increasing motor vehicle registration fees has received strong and continued support by the member agencies, TDM committees and members of the community. Early on, SANDAG agreed that the TDM Program should be funded by user fees and Commuter Computer funding rather than by employer filing fees or local City/County general fund revenues. The assignment of financial responsibility for these programs with the vehicle owner is generally preferred because it goes directly to the source and underlines the contribution of each motorist to air pollution and congestion. It is part of the cost of operating a motor vehicle. More importantly, it does not place a disproportionate share of a program designed to serve all motorists in the region on one user group (the employers/employees), nor does it tax those who do not own a vehicle.

APCD's Regulation XIV proposes a \$50-\$400 annual TDM filing fee and a \$40/employee base fee. No new fee collection mechanism would be required for the SANDAG TDM (Trip Reduction) Program because the collection of motor vehicle registration fees is already in place and the Department of Motor Vehicles is authorized by law to collect and distribute these fees. Although legislation would be required to authorize an increase in the motor vehicle registration fee to an appropriate level, with sufficient regional support, this would be possible.

Implementation of the transit, vanpool, park-and-ride, HOV lane and bicycle programs should be on a demand basis. That is, the increased demand for these services and facilities is assumed to result from the implementation of the TDM program. They should be phased in as necessary to meet the increasing demand. Once an Air Quality Plan is approved by the Air Pollution Control Board, a more detailed implementation program and funding plan can be developed.

Table 1 displays each measure and its air pollution and cost characteristics.

Implementation of the TDM (Trip Reduction) Program

The California Clean Air Act requires air districts in the state's large urban areas to implement trip reduction programs for peak hour travelers. The Congestion Management Act requires the cities in the state's large urban areas to do the same thing.

One of the fundamental principles of SANDAG's TDM Advisory Committee is that these two state mandates would be accommodated with one trip reduction program and ordinance that would be adopted by both the Air Pollution Control Board and the cities.

The TDM Advisory Committee has completed its refinement of the trip reduction program that the Board of Directors adopted on November, 1990. The Program comprehensively meets all air quality requirements, the APCD's criteria and the state's requirements for congestion management.

The Program, if adopted by the APCB and the cities, would be fully enforceable.

The only unresolved issue regarding the proposed regional Transportation Demand Management (or Trip Reduction) Program and Ordinance is the organizational structure needed to implement it.

SANDAG's TDM Advisory Committee recommended that a Program Board be appointed by the local jurisdictions to run the program. The Program Board would be composed of representatives of the business community and public sector employers affected by this effort.

Employers are recommended for the Program Board because the success of this effort depends upon their participation.

It is the TDM Advisory Committee's view that employer participation and full enforceability should achieve both the region's air quality and congestion management objectives. It also should preclude the need for a purely regulatory approach to the problem. The APCD staff objects to the Program Board contending that it would be a new governmental agency and would dilute the statutory authority of the Board of Supervisors (acting as the Air Pollution Control Board) to run a trip reduction program.

As a result of its objections, the APCD staff has prepared its own version of a trip reduction ordinance. It proposes that the Board of Supervisors administer the program with an advisory committee composed of representatives from the cities, county, SANDAG, CALTRANS, transit operators, transportation management associations, businesses and environmental groups.

The Board of Supervisors and SANDAG directed the staffs to meet and work out the differences in the proposed institutional arrangements. The staffs met.

In order to respond to the APCD staff's objections, SANDAG staff proposed a variation on the TDM Advisory Committee's proposal for a Program Board. The staff suggested that the TDM program could be administered by a non profit corporation with board members representing employers, including affected trucking companies and colleges and universities. APCD staff rejected the proposal.

The primary question that should be answered in order to resolve this issue of how the TDM (Trip Reduction) program will be administered is:

Should the cities and the business community share the responsibility with the Board of Supervisors for running the program?

The APCD staff proposes that cities and businesses should be advisory to the Board of Supervisors.

The TDM Advisory Committee and the subsequent SANDAG staff proposal for a non-profit corporation both propose that cities and businesses share in the decision-making for the program.

Staff suggests that the cities be requested to respond to this question by the June, 1991 Board of Directors meeting. This would allow the cities time to consider the issue in light of their state mandate to adopt trip reduction programs for the Congestion Management Plan. There would still be time to transmit a proposal to the Board of Supervisors before the Board is required to adopt the Regional Air Quality Plan by June 30, 1991.

"Delegation" Provision for Transportation Control Measures

Pursuant to the California Clean Air Act of 1988, the air district may delegate any function with respect to implementation of transportation control measures to any local agency if certain conditions are met. (Health and Safety Code Section 40717.) Staff interprets this provision of the Act to apply only when delegation is determined to be necessary to provide the local agency being delegated the responsibility the legal authority to carry it out. If the local agency has existing authority to implement a specific transportation control measure such as a transportation demand management ordinance, delegation is not required or called for in this report or in the Plan.

Section 40716 of the Health and Safety Code is further illustrative of this point. Section 40716 delineates the responsibilities for which the district may adopt and implement regulations. These include the reduction or mitigation of emissions from indirect and areawide sources of air pollution, and other measures which reduce the number or length of vehicle trips. However subsection (b) conditions the a district's authority by providing that,

"Nothing in this section constitutes an infringement on the existing authority of counties and cities to plan or control land use, and nothing in this section provides or transfers new authority over such land use to a district."

Additional Discussion of "Indirect Source Controls"

The California Clean Air Act states that air districts "may adopt and implement regulations to . . . [r]educe or mitigate emissions from indirect and areawide sources of air pollution."

The Air Resources Board staff, in its guidance document on this subject, describes indirect sources of air pollution as "... any facility, buildings, structure or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant for which there is a state ambient air quality standard."

In the Clean Air Act, the Legislature also stated that its grant of authority to air districts on "indirect sources" does not constitute "... and infringement on the existing authority of counties and cities to plan or control land use ... " and does not "... provide or transfer new authority over such land use to a district."

An attorney for the Air Resources Board has referred to the potential issue of divided land use as one of "concurrent jurisdiction" between cities/counties and air districts.

To respond to the Clean Air Act, the cities and county in this region will prepare air quality programs or elements for their respective general plans. These additions to local general plans are important because they represent the integration of air quality considerations with development policies and requirements. The general plan programs/elements will identify policies and design requirements for new development that will improve accessibility for pedestrians, transit and bicycles. These policies and design criteria should make it at least as easy to travel by walking or other modes as it is to travel by car.

The Growth Management Technical Committee will be recommending a common set of development design policies later this year.

The Growth Committee also has been evaluating the concept of jobs-housing balance as a possible element of the Growth Management Strategy. An attachment to the Regional Planning and Growth Management Review Board report (RB-12) provides some of the data resulting from the evaluation.

In summary, the analysis of the jobs-housing balance alternatives in the San Diego Region revealed adequate congestion-relief benefits but minimal impacts on air quality. This is important because the jobs-housing balance analysis is also a test of the value of controlling the location of land use for air quality purposes.

Based on the results of the jobs-housing balance analyses, it is staff's opinion that no air quality benefit would result from extending the Air Pollution Control District's (APCD) involvement in the locational control of development, either as a direct issuer of permits or through "delegation" of some additional function to the cities and the County.

As described above, the air quality programs (or elements) that will be added to general plans will use new land development and transportation design requirements to help reduce air pollution. The amount of pollution reduced will probably be too small to be quantified. Nevertheless, this kind of joint, continuing action by the cities and the County should produce, over time, a cumulative, positive impact on travel behavior.

KENNETH E. SULZER Executive Director

Attachments

TA	BLE	1
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YEAR 2000 TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS OF RECOMMENDED TRANSPORTATION CONTROL TACTICS												
тастю	TR REI	AVEL DUCED (%)	EMISSIONS REDUCED (T/D)				EMISSION REDUCEI (% '87)	IS D	ANNUALIZ (\$ mill	ED COST ions)	COST EFFECTIVENESS (ROG + NOX)	
	VMT	TRIPS	ROG	NOX	СО	ROG	NOX	со	GOVT	OTHER	(\$/lb.)	
1. TDM PROGRAM - NON-COMMUTE TRAVEL* (LEVEL 1)	•		-	•	•	-	-		5.0		-	
2. TDM PROGRAM - GOODS MOVEMENT (LEVEL 3)	-	-	1.27	-0.01	15.73	0.45	0.00	1.10	0.6	-	0.65	
3. TRAFFIC FLOW IMPROVEMENTS (LEVEL 2)	-	-	0.65	0.65	6.42	0.22	0.22	0.45	3.6	•	3.80	
4. TDM PROGRAM - COMMUTE TRAVEL (LEVEL 2)	7.96	6.64	5.26	5.72	68.05	1.88	1.98	4.77	7.0	149.3	19.50	
5. BICYCLE FACILITIES (LEVEL 2)	0.09	0.33	0.13	0.13	1.45	0.05	0.05	0.10	3.9	-	20.50	
6. TDM PROGRAM - COLLEGE TRAYEL (LEVEL 2)	0.65	0.55	0.38	0.71	4.72	0.14	0.25	0.33	8.0	12.3	25 50	
7. TRANSIT IMPROVEMENTS (LEVEL 3)	2.35	2.75	1.14	0.04	15.0	0.41	0.01	1.05	23.9	-	27.70	
8. VANPOOL PROGRAM (LEVEL 3)	0.49	0.41	0.31	0.47	3.86	0.11	0.16	0.27	16.5	-	28.90	
9. PARK AND RIDE PACILITIES (LEVEL 3)	0.06	-	0.03	0.06	0.28	0.01	0.02	0.02	2.4	-	36.10	
10. HIGH OCCUPANCY VEHICLE LANES (LEVEL 3)	0.47	1.22	0.30	0.40	3.90	0.11	0.14	0.27	21.1	-	37.00	

*No emissions estimates are reported because this is proposed as a voluntary program.





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ADOPTING THE TRANSPORTATION CONTROL MEASURES PLAN FOR THE SAN DIEGO AIR QUALITY PLAN AND APPROVING THE SUBMITTAL OF THE PLAN TO THE AIR POLLUTION CONTROL DISTRICT FOR REVIEW AND APPROVAL

WHEREAS, the California Clean Air Act of 1988 (the "Act") requires the development and adoption of transportation control measures for each air district in the state in accordance with Section 40717 of the Health and Safety Code; and

WHEREAS, the Act requires the San Diego Association of Governments, as the agency responsible for the development and adoption of the Transportation Control Measures Plan (Plan), to submit the plan to the Air Pollution Control District (District) for its review and approval; and

WHEREAS, upon receipt of the plan submitted by SANDAG, the District shall review and approve the Plan if it meets the criteria established by the District and has been submitted pursuant to the schedule established by the District; and

WHEREAS, the criteria for the development of the Plan were developed, approved and adopted by the District, and a schedule has been established by the District for submittal of the Plan; and

WHEREAS, the transportation control measures will, when implemented, meet the requirements set forth in Section 40920 of the Health and Safety Code, including achieving an average during weekday commute hours vehicle occupancy of 1.5 persons by the year 1999, and no net increase in vehicle emissions after 1997; and

WHEREAS, for purposes of achieving the above requirement the SANDAG Board of Directors approved a Regional Transportation Demand Management Program (TDM Program) in November 1990, which has subsequently been revised and recommended for approval as amended to the SANDAG Board of Directors by the TDM Program Policy Advisory Committee by their action of April 17, 1991; and

WHEREAS, the Plan addresses all feasible transportation control measures designed to strive to achieve the requirements of Section 40914 of the Health and Safety Code of a 5% per year reduction in districtwide emissions; and WHEREAS, the plan meets the criteria established and adopted by the District, and shall be submitted to the District in accordance with the schedule developed and approved by the District; and

WHEREAS, the plan meets the requirements of the Act; and

WHEREAS, the SANDAG Board of Directors desires to retain and reserve the right to supplement and revise the Plan; NOW THEREFORE

BE IT RESOLVED that the San Diego Association of Governments certifies that the Plan meets the criteria and schedule and the requirements of the Act, adopts the Transportation Control Measures Plan and submits it to the San Diego Air Pollution Control District for review and approval.

BE IT FURTHER RESOLVED that the TDM Program, as revised and approved by the Regional TDM Advisory Committee on April 17, 1991 is hereby authorized for submission to the district as part of the plan, subject to further revision as may be approved by the SANDAG Board of Directors prior to June 30, 1991.

BE IT FURTHER RESOLVED that the SANDAG Board of Directors reserves the right to supplement and revise the Plan prior to final action by the District on the District Plan as required pursuant to Section 40911 of the Health and Safety Code.

PASSED AND ADOPTED this 26th day of April, 1991.

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CHAIRPERSON

TRANSPORTATION CONTROL MEASURES PLAN FOR AIR QUALITY (RB-11 SUPPLEMENT)

San Diego Association of Governments **BOARD OF DIRECTORS**

May 24, 1991



TRANSPORTATION CONTROL MEASURES PLAN FOR AIR QUALITY

Introduction

SANDAG, at its April 1991 meeting, approved the Transportation Control Measures (TCMs) Plan for inclusion in the San Diego Regional Air Quality Plan. The Board also directed staff to analyze three possible amendments to the TCM Plan for consideration at its May 1991 meeting. These potential additions include: 1) policy considerations for transit service; 2) market-based measures; and 3) alternative funding sources to pay for the Plan. The Regional Revenues Advisory Committee will meet on May 23rd to consider funding sources for this plan. Any committee recommendations will be reported at the Board meeting.

This report also responds to other comments made on the Transportation Control Measures Plan at the April 1991 Board meeting including ramp metering and the truck operations program.

Policy considerations for transit service. The current Plan provides for a significant and ample increase in supply of transit service as recommended by the Regional Transportation Plan. It includes a 75% increase in bus service and a 250% increase in trolley service, plus a 17% expansion for peak period transit specifically proposed for air quality purposes. In effect the current Plan is a "supply" oriented approach.

Staff analysis shows that this RTP+TCM approach to transit "supply" combined with demand responsive implementation would have a 30% higher service productivity when compared to a supply oriented approach by itself. As a result, the staff feels the transit expansion measure contained in the approved TCM Plan offers the most cost-effective approach for air quality purposes and would achieve the APCD's criterion calling for transit improvements attractive to "choice" riders who would otherwise use personal vehicles.

Market-Based Measures for the TCM Plan. The implementation by the State of an "emissions" fee" based on motor vehicle emissions and miles traveled is an equitable and effective way of reducing vehicle emissions. Such a fee could provide a market-based incentive of sufficient magnitude to promote the use of less polluting vehicles and substantially reduce motor vehicle caused air pollution. A variation of this program passed the Legislature in 1990 but was vetoed by the Governor. Staff feels an "emissions fee" has the most potential as a near term marketbased air quality transportation control measure and would recommend its inclusion in the TCM Plan.

<u>Funding sources for the TCM Plan</u>. The Board directed the staff to identify potential alternative funding sources that might be "more reliable" than those contained in the approved Plan (state and federal funds, development impact fees) so as to insure adequate funding to pay for and carry out the TCM Plan. The Board was specifically interested in sources which would be equitable and less impacted by economic conditions. Based upon staff analysis, the vehicle registration+emissions fee approach could be used to provide a "secure" or "reliable" funding source for the entire TCM Plan. The fee could be phased in over time to meet the funding needs of the program. It could also be designed with the flexibility to allow for a reduction in the fee levels if, in the future, certain components of the TCM Plan were to be funded with a regional development impact fee, new state and federal revenues, or other revenue sources.

The revenues resulting from the vehicle registration+emissions fee would be returned to the county of origin in the form of funding for the support of cost-effective measures to reduce motor vehicle emissions, programs to mitigate the regressive aspects of the fee and reduce other taxes. Staff analysis shows that the "emissions fee" could provide the alternative funding mechanism desired by the Board to insure sufficient resources to pay for the entire TCM Plan.

Also, a statewide study to evaluate the air quality impacts of freeway ramp metering and support for the approved Goods Movement/Trucking Element of the Regional TDM Program is recommended.

The TCM Plan, in its currently approved form, meets the requirements of the California Clean Air Act and the criteria of the APCD. If fully implemented the plan would reduce peak period congestion by 30%, automobile fuel consumption by 8% and emissions by over 2%. The annualized government cost for the recommended TCMs is estimated at \$92 million until the year 2000. Of this total, \$52.1 million per year is for capital improvements for traffic signals, bicycle facilities, transit vehicles, park-and-ride lots, and high occupancy vehicle lanes.

Based on staff analysis, which is summarized below, it is my

RECOMMENDATION

that the San Diego Association of Governments adopt Resolution 91-65 amending the Transportation Control Measures Plan for Air Quality to include support for a State-initiated motor vehicle "emissions fee" and for a statewide study of air quality impacts of freeway ramp metering.

Discussion

1. Policy Considerations for Transit Service

The transit expansion air quality measure included in RB-11 (April Board meeting) proposes the expansion of transit services during the peak period in response to increased demand resulting from the trip reduction (TDM) program. The transit expansion measure is based on the planned expansion of transit programmed in the Regional Transportation Plan, low emission bus replacement and peak period transit service expansion.

Comments expressed at the April Board meeting suggested a more "supply" oriented transit expansion alternative be considered; that transit service needs to be in place in order for people to be aware of it and use it.

The current Plan provides for a significant increase (\$2 billion by 2000) in supply of transit service as recommended by the Regional Transportation Plan. It includes a 75% increase in bus service and a 250% increase in trolley service, plus a 17% expansion for peak period transit specifically for air quality purposes. In effect, the current Plan is a "supply" oriented approach.

A computer simulation shows that this RTP+TCM approach to supply combined with demand responsive implementation would have a 30% higher service productivity when compared to a supply oriented approach by itself and is the most cost-effective approach for air quality purposes. It also would achieve APCD's criterion calling for transit improvements attractive to "choice" riders who would otherwise use personal vehicles.

If service is expanded during the commute period in response to increased utilization, there is a greater probability that the new riders will be former auto drivers. The higher peak period transit ridership combined with the greater assurance of "choice" riders increases the air quality cost-effectiveness. It should be pointed out that for the bus system this expansion needs to occur with low emission vehicles.

It also was proposed at the April meeting that the air quality plan identify Interstate 15 as the only major travel corridor which is not served by a guideway transit system. It was further recommended that construction of a transit guideway in the corridor be considered as an additional TCM. The Regional Transportation Plan identifies this corridor, from I-8 to Escondido, as part of the long-range transit corridor system.

The Metropolitan Transit Development Board (MTDB) is currently evaluating alignment alternatives in the I-15 corridor. This evaluation will lead to the adoption of a preferred guideway alignment for planning purposes in the corridor. The alternatives being studied are (1) the conversion of the existing HOV lanes in the median of the freeway, (2) an alignment along the side of the freeway right-of-way and (3) an alignment through the City of Poway along Poway and Pomerado Roads.

Although the I-15 corridor is included in both the MTDB Plan and SANDAG's RTP, no funding for this corridor has as yet been identified. Both Plans currently assign this corridor the same relative priority as the Airport, Mission Bay and Balboa Park extensions. Certainly, I-15 is a high priority corridor for transit service expansion.

2. Market-Based Measures

In a market economy, price has a major role in allocating resources. Market based transportation control measures (TCM) achieve emissions reductions by increasing the price of those items or activities which contribute to air pollution. A vehicle license fee based on vehicle emission characteristics and miles traveled is an example of a market based tactic. In this case the cost of driving a polluting automobile is increased relative to the cost of using a low emissions vehicle. The increased price discourages the use of polluting vehicles and minimizes excess travel.

One characteristic of market based TCM's is that the price needs to be quite high to significantly impact travel behavior. The recommended transportation control measures supported by the Board last month are projected to reduce year 2000 travel by about seven percent. To achieve this level of travel reduction alternatively with market based measures would require an estimated \$1.20 per gallon gas tax, \$6.00 per day average employee parking charge or \$0.20 per mile annual tax on travel. On a regionwide basis, these measures would generate between \$1.5 billion and \$5 billion in revenues annually. If such tactics were to be used, there would have to be mechanisms to redistribute the revenues and to prevent the tax from being regressive. Potential methods could include the elimination of other taxes such as sales and gas taxes, the provision of "lifeline rates" and rebates as well as adjustments to the State income tax by providing some form of transportation credit.

Market based measures can be very selective and it is important to clearly define the objective of the program. Careful selection of market based measures is necessary to achieve optimum results. For example, if reducing automobile emissions is the objective, a VMT and emissions tax targeted at high emission vehicles would be expected to be quite effective. It might not have much impact on reducing peak period congestion, however. Similarly, peak period pricing such as graduated tolls on freeways during commute hours could be very effective at reducing congestion yet have relatively little impact on air quality.

Not all market based measures require state and/or federal legislation. Parking pricing, which is included as an option in SANDAG's Trip Reduction program, can be implemented locally. Under the APCD's proposed "Regulation XIV", pay parking would be required if an employer failed to meet the average vehicle ridership target. The Air Pollution Control District TCM "criteria" report suggests that SANDAG may evaluate market based measures but may not include. except as a long term strategy, any transportation control measures which require state or federal legislation for implementation. If the Board wishes to pursue pricing measures it should support the statewide efforts of such organizations as the Bay Area Forum, the Environmental Defense Fund and the Regional Institute of Southern California which are working to change state policy. SANDAG could also support legislation advocating market based measures and support the demonstration of various transportation pricing mechanisms.

Staff feels that a smog fee based on emissions performance and miles of travel has the most potential as a near term market based air quality transportation control measure and would recommend its inclusion in the air quality plan. Such a program could not be implemented locally and would need to be pursued on a statewide basis. Equity considerations can be resolved through the provision of State income tax rebates or transportation credits and use of revenues from the smog fee to tune vehicles which fail the smog test and which are owned by low income persons. A variation of this program passed the Legislature in 1990 but was vetoed by the Governor.

Congestion pricing has significant potential for reducing congestion and, to some extent, improving air quality. However, the Automatic Vehicle Identification technology necessary for convenient billing is still a few years away and many institutional and political issues will need to be resolved before this technique can be applied to our urban freeway systems. This concept will be tested on the Route 91 HOV lane demonstration project in Orange County in the next few years. The outcome of this evaluation will likely influence its future consideration.

An increase in the gas tax of a sufficient magnitude to significantly reduce travel seems unlikely barring some major international incident or crisis. Such an increase would probably not work unless it occurred at the federal level.

3. <u>TCM Plan Alternative Funding Sources</u>

The TCM Plan identified a total annualized government cost of \$92 million by the year 2000 for implementing the recommended TCM's. Of this total cost, \$39.9 million was identified for program and operating costs in the year 2000, with \$52.1 million identified for annualized capital costs. The TCM Plan proposed a regional development impact fee, along with future state and federal funds and TransNet revenues, as potential sources for funding the capital improvements and an increased vehicle registration fee for funding the annual program and operating costs.

The costs presented in the TCM Plan were based on constant 1990 dollars. Any revenue source would have to have the ability of increasing with inflation over time to maintain funding for the program. In addition, the capital costs were annualized to spread the costs over the useful life of the capital item. For example, the costs of acquiring additional light rail vehicles were spread over an assumed 25 year useful life of the vehicles. Unless the revenue source for the TCM program could be used to support debt financing, the capital costs would actually have to be borne between now and the year 2000 if the various TCM's are to be implemented in the timeframes outlined in the TCM Plan. Table 1 shows the estimated operating and capital costs of the TCM program as phased in through the year 2000 in both constant 1990 dollars and future inflated dollars as a benchmark against which to measure the potential of various funding sources to meet the identified needs.

In addition to the regional development impact fees and vehicle registration fees proposed in the TCM Plan, parking fees, a sales tax increase, and a gas tax increase are examined. The funding sources summarized herein are those sources which appear to be the most appropriate for funding the types of improvements recommended in the TCM Plan.

a. Regional Development Impact Fees

The TCM Plan proposes regional development impact fees as a source for a portion of the total capital costs of the TCMs. Because these capital costs are for projects primarily intended to reduce congestion, it is appropriate to charge new development a fee to cover a portion of the costs because new development is a major contributor to projected congestion problems. With development impact fees being restricted to capital costs only, a companion revenue source(s) would be required to fund the program/operating costs of the TCM Plan.

The impact fee approach could be implemented by agreement of all the local jurisdictions and has the advantage of being relatively easy to collect and administer through the procedures already in place for existing fee programs at the local jurisdictions. It also provides a mechanism for charging new development for its share of impacts on the regional transportation system. The primary disadvantage of the approach is that it is subject to economic fluctuations making projections of revenues available in any specific time period difficult. For this reason, it is not a practical revenue source to pledge as security for a debt financing approach.

b. Vehicle Registration Fees

The second revenue source discussed in the TCM Plan is a gradual increase in the vehicle registration fee to cover the program/operating costs of the TCMs. To cover the estimated program/operating costs in the year 2000 of \$39.9 million, an additional \$15 per year on top of the \$4 per year already authorized would need to be phased in over the next several years.

Another option could be to cover the total operating and capital costs of the TCM Plan of \$687 million (see Table 1) through a vehicle registration fee. Such an option would require an additional fee of \$50 per year by the year 2000. Under some of the market-based approaches being investigated, such a vehicle registration fee could be implemented in such a way as to encourage behavioral changes. With the "emissions fee" approach discussed in the Market-Based Measures section, a lower basic fee of \$15-\$20 could be charged for all vehicles, with supplemental charges based on excessive mileage driven during the year and/or excessive pollutants emitted. Such a fee could be coordinated with an annual vehicle inspection and maintenance program if required, as expected, as a result of implementing the Federal Clean Air Act.

The vehicle registration fee approach is directly related to the cause of our congestion and transportation-related air quality problem - the operation of the private automobile. It has the advantage of being easily collected, enforced, and administered as an increment on top of the existing vehicle registration fee. While

it does not require a vote of the people to be enacted, it would require state legislation to authorize the fee increase for this region.

The vehicle registration + emissions fee approach could be used to provide a "secure" funding source for the entire TCM Plan and could be phased in over time to meet the funding needs of the program. It could also be designed with the flexibility to allow for a reduction in the fee levels if, in the future, certain components of the TCM Plan were to be funded with a regional development impact fee, new state and federal revenues, or other revenue sources. Equity considerations regarding such a program would have to be addressed, as discussed above.

c. Parking Fees

Another potential approach, which would have to be determined to be legally viable, would be to charge a fee on all non-residential parking spaces. With an estimated 1.8 million non-residential parking spaces in the region, an annual fee of \$50 per space by the year 2000 would provide the revenues needed to fund the total operating and capital costs of the TCM Plan.

Such a parking fee could be relatively more controversial to implement because it would be a new fee as opposed to an increase to an existing fee program. It may be possible to collect the fee as part of the property tax collection process, but it would require additional start-up costs in determining the number of parking spaces available on a parcel basis. Other implementation approaches could be even more expensive if a totally new collection, enforcement, and administrative process had to be established.

Another variation to the parking fee concept would be to establish a parking surcharge at those locations which currently have paid parking. This approach would require a substantially higher fee per space and would have other problems in terms of implementation. A parking surcharge would not have the same impact on travel behavior as a fee on currently free parking spaces. However, it is likely that a much higher parking fee than that needed to fund the TCM Plan would be required to cause a significant change in travel behavior.

d. Local Sales Tax Increase

The TCM Plan could also be funded by an increase in an existing transportation revenue source - the local sales tax. A 1/4% increase in the local sales tax would generate approximately \$500 million by the year 2000. This amount would cover roughly 75% of the total operating and capital costs of the TCM Plan.

Currently, each county is restricted to a total of 1% in local sales taxes (transactions and use taxes) which can be imposed (Section 7251.1 of the Revenue and Taxation Code). With the 1/2% transportation sales tax and the 1/2% court and jail sales tax, San Diego County has reached this limit. If the court and jail sales tax is not upheld by the California Supreme Court, or if the state law could be revised to modify the cap on total local sales tax increases, a 1/4% air quality sales tax increase could be pursued without additional authorizing legislation. The legislation which authorized the SANDAG Board of Directors, acting as the San Diego County Regional Transportation Commission, to place the 1/2% local transportation sales tax issue (TransNet) on the ballot, provides for the authority to increase the sales tax up to 1% in 1/4% increments. With a majority vote, the existing 1/2% sales tax could be increased to 3/4% with the funds to be available for the purposes which would be outlined in the ballot measure.

With a successful vote, the collection and administration of the program would be relatively straightforward using the same general mechanisms in place for the TransNet program. The political feasibility of this approach may be questionable, particularly because of the Governor's proposal for an additional 1 1/4% sales tax increase for state budget purposes moves forward.

e. Local Gas Tax Increase

Another potential funding option is an increase in the gas tax devoted to the TCM programs. This funding source would be only a partial solution in that the revenues could only be used for gas tax eligible items such as the capital costs for traffic flow improvements, bicycle facilities, park and ride facilities, and HOV lanes. The annual operating costs for the various TCMs and the capital costs for transit vehicles would not be eligible. Based on the \$256 million in capital costs needed through the year 2000 for the gas tax eligible TCMs mentioned above, a gas tax increase of 3 cents per gallon would need to be implemented next year in order to raise sufficient revenues to fund the total operating and capital costs of the TCM program.

Such an approach could be pursued under the local option fuel tax legislation (Part 4 of Division 2 of the Revenue and Taxation Code commencing with Section 9501), which allows for increases in the gas tax in one cent increments on a county-bycounty basis. This option was pursued in San Diego County in 1982 when a ballot measure for a 2 cent per gallon increase was defeated (38% in favor). A two-thirds vote is required to pass such a measure. If a successful vote could be obtained, which is not likely because a local option fuel tax has yet to pass in any county after numerous attempts, the collection and administration of the additional gas tax would be relatively easy as an increment on top of the existing program.

4. Other Comments

a. Ramp Metering

The CALTRANS representative recommended that freeway ramp metering be included as a transportation control measure. Due to unresolved issues regarding the air quality impact of ramp metering it is not recommended for inclusion at this time. The air quality impacts of this measure are expected to be addressed by a statewide study. The Plan should be revised to add a brief discussion of freeway ramp metering and to support a statewide study of its air quality implications.

b. Truck Operations Program (Goods Movement Travel)

Comments received from the Construction Industry Federation representative recommended that medium duty trucks be excluded from the program. The Regional Goods Movement/Trucking Policy Subcommittee, after its review of the results of the Urban Freeway Gridlock Study (AB 1257) and the Guidelines for Heavy-Duty Vehicle Truck Operation Programs, recommended the program include both medium and heavy duty trucks. The Subcommittee's recommendation is based on its evaluation for feasibility and improving air quality and congestion resulting from goods movement travel, rather than from a particular type of vehicle (i.e. heavy-duty trucks). The Subcommittee also agreed that uniform travel market goals appear to better support and maintain a level economic playing field.

The CIF representative also recommended that education and training programs be given top priority, that regulating trucks during the morning peak may provide more positive emission reductions, and that the incident management and motorist information elements of the program are worthy of support. Each of these is included in the Goods Movement/Trucking Element of the Regional TDM Program approved by the Board.

KENNETH E. SULZER Executive Director

Attachment

Table 1 TCM PLAN FUNDING NEEDS ESTIMATE FOR 1992 - 2000 (In Millions of 1990 Dollars)																				
таспс	0p ¹	19 <u>2</u> Cep ¹	15 Op	193 Cap	<u>19</u> Op	94 Cap	0p <u>19</u>	9 <u>5</u> Cap	0p <u>14</u>	996 Cap	<u>19</u> Ор	97 Свр	19 Op	198 Cap	<u>19</u> Ор	99 Cap	<u>20</u> Ор	iuu Cap	<u>Т</u> Ор	utal Cap
1. TDM - Non-Commute Travel (Level 1)	1. 0	-	2.0	-	3.0	-	4.0	-	5.0	-	5.0	-	5.0	-	S .0	-	50	-	35 0	-
2. TDM - Goods Movement/ Trucking Program (Level 3)	.2		.3		.4		.5		.6	-	.6	-	.6	-	.6		.6		4.4	-
3. Traffic Flow Improvement (Level 2)	-	2.0	•	2.0	-	5.0	-	2.0	÷	S .0		2.0	-	5.0		2.0		20	-	27 0
4. TDM Program - Commute Travel (Level 2)	1.5	-	3.0	-	4.5	-	6.0	-	7.0		7.0	-	7.0		7.0	-	70	-	50 0	
5. Bicycle Facilities (Level 2)		3.7		3.7	·	3.7		3.7	-	3.7		3.7		3.7	-	3.7	-	37	-	33 3
6. TDM College Travel (Level 1)	2.0		4.0	-	6.0	-	7.0	•	8.0	-	8.0		8.0	-	8.0		80		59 0	
7. Transit Improvement Pro- gram (Level 3)		1.2	2.0	3.5	3.0	3.5	5.0	16.3	7.0	16.3	9.0	15.9	11.0	16.1	12.0	16.1	12.8	16-1	61.8	105 0
8. Vanpool Program (Level 3)	1.3	2.0	2.6	4.0	3.9	6.0	5.2	8.0	6.5	10.0	6.5	10.0	6.S	10.0	6.5	10.0	6.5	10 0	45 5	70 0
9. Park and Ride (Level 3)			•	3.0	-	3.0	•	3.0	-	3.0	-	3.0		3.0	-	30		3.0		24 0
10. HOV Lance (Level 3)	-		•	7.5	-	20.0	•	36.3	•	33.5	•	15.0		16.3		13.8		29 6		172 0
Subiviala	6.0	8.9	13.9	23.7	20.8	41.2	27.7	69.3	34.1	71.5	36.1	49.6	38.1	54.1	39 1	48.6	39.9	64 4	255 7	431.3
Total Annual Operating & Capital Cost in 1990 Dollars Total Annual Operating & Capital Cost in Future Dol- lars (inflatod at 5% per year)	14	i.9	37	7.6	62	.0	97	.0	10	15.6	85	5.7	97	2.2	87	1.7	10	4.3	6	87.0
	10	5.4	43).6	75	.6	124	1.2	14	11.5	12	0.8	13	6.5	13	59	l 17	0 0	9	64 5

^{1*}Op* includes the operating and program costs estimated for each TCM based on the Transportation Control Measures Plan for Air Quality (Agenda Report RB-11 SANDAG Board of Directors meeting of April 26, 1991). ^{1*}Cap* reflects the estimated capital costs for each TCM based on the same source.

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AMENDING THE TRANSPORTATION CONTROL MEASURE PLAN FOR THE SAN DIEGO AIR QUALITY PLAN AND APPROVING SUBMITTAL OF THE PLAN AMENDMENTS TO THE AIR POLLUTION CONTROL DISTRICT FOR REVIEW AND APPROVAL

WHEREAS, the California Clean Air Act of 1988 (the "Act") requires the development and adoption of transportation control measures for each air district in the state in accordance with Section 40717 of the Health and Safety Code; and

WHEREAS, the Act requires the San Diego Association of Governments, as the agency responsible for the development and adoption of the Transportation Control Measures Plan (Plan), to submit the Plan to the Air Pollution Control District (District) for its review and approval; and

WHEREAS, upon receipt of the plan submitted by SANDAG, the District shall review and approve the Plan if it meets the criteria established by the District and has been submitted pursuant to the schedule established by the District; and

WHEREAS, the Plan, which meets the criteria established by the District, was approved by the SANDAG Board of Directors on April 26, 1991 and submitted to the District in accordance with the schedule developed by the District; and

WHEREAS, the SANDAG Board of Directors resolved to retain and reserve the right to supplement and revise the Plan prior to adoption by the District; and

WHEREAS, the Regional Revenues Advisory Committee at its May 23, 1991 meeting considered the issue of financing the Transportation Control Measures; NOW THEREFORE

BE IT RESOLVED that the San Diego Association of Governments recommends further review of the following fee programs to pay for the implementation of the Transportation Control Measures Plan for Air Quality:

- 1. A registration + emissions fee designed to increase the cost of high emission vehicles.
- 2. A "polluting fuels" fee levied on fuel distributors designed to increase the cost of high emission motor vehicle fuel.

RESOLUTION 91-65

- 3. Increasing the registration fee on more than one car owned per registered owner.
- 4. Revenues resulting from the fees should be returned to the county of origin to be used for programs to mitigate the regressive aspects of these fees and for the support of cost-effective measures to reduce motor vehicle emissions.

BE IT FURTHER RESOLVED that the San Diego Association of Governments recommends the following additions to the Transportation Control Measures for the Air Quality Plan:

- 1. Plans for increased transit service in the I-15 corridor.
- 2. A demonstration project to test the feasibility of pricing the use of the I-15 HOV Lane by single occupant vehicles; funds raised will be allocated for increased transit in the I-15 corridor.
- 3. Support for legislation implementing Market Based Transportation Control Measures.
- 4. Incentives to promote Telecommuting.
- 5. Incentives for the use of "clean" fuels.

BE IT FURTHER RESOLVED that the San Diego Association of Governments supports the conduct of a statewide study to evaluate the air quality impacts of freeway ramp metering.

PASSED AND ADOPTED this 24th day of May, 1991.

TRANSPORTATION CONTROL MEASURES PLAN FOR AIR QUALITY: SANDAG REFERRAL TO THE CITIES AND COUNTY CONCERNING DECISION-MAKING RESPONSIBILITIES FOR THE REGIONAL TRIP REDUCTION PROGRAM (RB-19)

San Diego Association of Governments BOARD OF DIRECTORS

June 28, 1991

AGENDA REPORT No.: RB-19

TRANSPORTATION CONTROL MEASURES PLAN FOR AIR QUALITY: SANDAG REFERRAL TO THE CITIES AND COUNTY CONCERNING DECISION-MAKING RESPONSIBILITIES FOR THE REGIONAL TRIP REDUCTION PROGRAM

Introduction

The Board of Directors, on April 26, 1991, approved the Transportation Control Measures (TCM) Plan for Air Quality, and amended it on May 24, 1991. This Plan has been submitted to the Board of Supervisors, serving as the region's Air Pollution Control Board, for inclusion in the Regional Air Quality Plan required by the Clean Air Act.

The Regional Trip Reduction (TDM) Program is one of the primary measures in the TCM Plan. The Clean Air Act requires air pollution control districts in the state's large urban areas to include a trip reduction program for peak-hour travel in the revised air quality plan. The Congestion Management Act requires the cities in urban areas to adopt trip reduction programs and ordinances.

SANDAG's Trip Reduction Program would accommodate <u>both</u> these state mandates upon adoption by the cities and the Air Pollution Control Board.

A major unresolved issue is the organizational structure needed to implement the Regional TDM (Trip Reduction) Program.

SANDAG, in its adopted TCM Plan, proposed that the cities, County and APCD, in cooperation with CALTRANS and representatives from the cities and County affected by the program, combine their policy-making authorities to cooperatively administer and implement the Regional TDM (Trip Reduction) Program.

The APCD staff has objected to the organizational structure proposed by SANDAG, contending that it would dilute the statutory authority of the Board of Supervisors (acting as the Air Pollution Control Board) to run a trip reduction program.

As a result of its objections, the APCD staff has prepared its own version of a trip reduction ordinance. It proposes that the Board of Supervisors administer and implement the program with the cities, County, and other agencies serving in an advisory capacity to the Board of Supervisors.

the cities. County, and other agencies serving in an advisory capacity to the Board of Supervisors.

In view of the existing authority of the cities for these programs and in consideration of the APCD staff's objections, the Board of Directors requested that the member agencies respond to the primary question -- Should the cities and businesses share the responsibility with the Board of Supervisors for running the TDM (Trip Reduction) Program? The Board requested that the cities respond by the June, 1991 Board meeting.

At the time of this writing, fourteen cities have responded that they strongly support the concept of the cities sharing responsibility with the Board of Supervisors for policy-making and administration of the Trip Reduction Program. No other responses have been received.

Comments received encourage a structure that is representative of all area jurisdictions, and also provides an opportunity for changes to be made, if necessary, as the program is implemented. Therefore, it is my

RECOMMENDATION

that the Board of Directors transmit the following points concerning the responsibility for decision-making and the administration of the Regional Trip Reduction Program to the San Diego County Board of Supervisors, acting as the Air Pollution Control Board, for consideration and inclusion in the Regional Air Quality Plan.

The Board of Supervisors and SANDAG should encourage and support cooperative action toward meeting the requirements of the California Clean Air and Congestion Management Acts by establishing a unified regional trip reduction program based on the following principles:

1. The cities want responsibility for policy-making and administration of the Regional Trip Reduction (TDM) Program and would share the responsibility with the Board of Supervisors, acting as the Air Pollution Control Board.

The most appropriate method of implementing this principle is to agree that the unified regional Trip Reduction Ordinance must be adopted by the County and by at least a majority of the cities representing a majority of the region's incorporated population. Amendments to the ordinance, as needed, would require the same joint action.

2. Business and other members of the community impacted by the Trip Reduction (TDM) Program need to be involved in the administration of the Program.

Employers/employee groups -- those most affected by the program -- should serve on the group (referred to as the "Program Board" in the SANDAG plan) appointed to administer it. The cities and the County should agree on a method for nominating and appointing these private sector representatives to the program administrative board.

- 3. Staff arrangements for the unified program should be developed by the management staff of the cities and the County for approval by the councils and Board of Supervisors.
- 4. The money to pay for the Regional Trip Reduction Program should come from the funding sources identified in the Air Quality Plan. SANDAG's TCM Plan proposes the vehicle registration fee as the most appropriate source of revenue.

The institutional structure for the Regional Trip Reduction Program outlined in SANDAG's Transportation Control Measures Plan is consistent with these principles.

KENNETH E. SULZER Executive Director

REFERRAL FROM THE EXECUTIVE COMMITTEE REGARDING AIR QUALITY-RELATED LEGISLATION AND THE TRIP REDUCTION ELEMENT OF THE **TRANSPORTATION CONTROL MEASURES PLAN** (R-47)

San Diego Association of Governments BOARD OF DIRECTORS

July 26, 1991

AGENDA REPORT No.: R-47

REFERRAL FROM THE EXECUTIVE COMMITTEE REGARDING AIR QUALITY-RELATED LEGISLATION AND THE TRIP REDUCTION ELEMENT OF THE TRANSPORTATION CONTROL MEASURES PLAN

Introduction

This item is a referral to the Board of Directors from the Executive Committee. It originated under the communications section of the agenda at the June Board meeting. The Board requested information on future state legislation regarding air quality and actions needed to reach agreement on the organizational structure for the regional trip reduction program.

The Executive Committee discussed both items, and decided that the Board of Directors should determine at this meeting an appropriate method, and the timing for addressing these issues in further detail. A further discussion of the issues is provided in Attachment 1, the July Executive Committee report.

The Executive Committee also requested that the Board be provided a copy of the existing Memorandum of Understanding between the APCB and SANDAG and a discussion of the District's Preliminary Review Draft of the 1991 San Diego Air Quality Strategy which proposes to reject SANDAG's adopted trip reduction program.

Discussion

1. Memorandum of Understanding Between SANDAG and the District

In July 1990, SANDAG and the District entered into a Memorandum of Understanding for purposes of developing a process to determine how an additional \$4 in vehicle registration fees authorized by new state law (AB 2766, to be collected and allocated by the District for reducing vehicular emissions) would be spent. The agreement is Attachment 2 for your reference.

Currently, it is the Board's position that this money should be used to pay the costs of the employment-based trip reduction program. The Memorandum provides a formal process allowing cities, County, and SANDAG to review the District's proposed use of the money.

2. District Response to SANDAG's Trip Reduction Program

The California Clean Air Act requires SANDAG to develop and adopt transportation control measures (which must include a trip reduction program), and to submit that program to the District for adoption as part of the regional air quality plan. The transportation control measures must meet the criteria adopted by the District. If the transportation control measures adopted by SANDAG meet the criteria, the District must adopt them. If not, the District can develop their own. SANDAG has certified that the transportation control measures meet the District's criteria. See Attachment 3 for a discussion of APCD comments on the TCM Plan and staff responses.

3. <u>Schedule for Further Discussion</u>

The Executive Committee requested that the Board of Directors consider an appropriate date and process for entering into further discussions with the Air Pollution Control Board (APCB) regarding the implementation of the trip reduction program.

The Board of Supervisors, acting as the APCB, has set the following schedule for reviewing the air quality plan:

July 30, 1991	APCB hearing on draft plan
September 17, 1991	APCB hearing on revised draft plan
November, 1991	APCB approval of final plan

Accordingly, if further discussions are to be held, the Board of Directors should schedule them in August, September, and/or October. Meetings can, of course, be scheduled on any date convenient to the discussants' calendars. However, if the entire Board of Directors wants to discuss the issue, the most convenient dates would be the Board meetings of September 27 or October 25, or the Executive Committee meeting dates of September 13 or October 11.

KENNETH E. SULZEI Executive Director

Attachments

July 12, 1991

Item "a" (4)

REFERRAL FROM THE BOARD OF DIRECTORS REGARDING AIR QUALITY-RELATED LEGISLATION AND THE TRIP REDUCTION ELEMENT OF THE TRANSPORTATION CONTROL MEASURES PLAN

Introduction

This item is a referral to the Executive Committee from the Board of Directors. Under the communications section of the June agenda the Board requested information on future state legislation regarding air quality and actions needed to reach agreement on the organizational structure for the regional trip reduction program.

Air Ouality-Related Legislation

For various reasons, any significant legislation to help carry out air quality plans will have to wait until at least the next session of the Legislature. The state's budget situation, local schedules for completing air quality plans, and the growth management/regional decision-making projects sponsored by the Governor and the Legislature all help push additional air quality legislation to the next session.

There are two potential advantages to waiting until the next session to recommend air qualityrelated legislation. First, it offers the region more time to work out any differences locally rather than depending upon the uncertain consequences of state action. Second, it gives the region the opportunity to review air quality funding proposals in light of state budget-balancing decisions.

Organizational Structure for the Trip Reduction Program

SANDAG has approved a trip reduction program and forwarded it to the Air Pollution Control District (APCD) as part of the Transportation Control Measures Plan. The APCD staff has prepared its version of a trip reduction program. The two programs propose significantly different organizational structures for implementation.

SANDAG, in its adopted Transportation Control Measures Plan, proposed that the cities and the County, acting as the APCB, jointly adopt the Trip Reduction Ordinance and any future amendments to it. It was also proposed that a "program board" composed of employers and

employees affected by the ordinance be appointed to oversee its implementation. The APCD would handle enforcement of the ordinance.

The APCD version of the program proposes that the Board of Supervisors, acting as the Air Pollution Control Board, administer and implement the program with the cities, County, and other agencies serving in an advisory capacity to the Board.

Four things have occurred recently that have a bearing on this issue:

- 1. As reported at the last Board meeting, 16 of the cities have stated their preference to participate directly in the decision-making for the trip reduction program.
- 2. The County has set a schedule for reviewing and acting on the air quality plan. It includes a July 30 hearing on the draft plan, a September 17 hearing on a revised draft and approval of the plan in November.
- 3. Supervisor Bilbray, in a letter to Chairman Doyle distributed at the SANDAG meeting of June 28, proposed further discussions on the organizational structure issue.
- 4. The Cities-County Managers' Association has appointed a subcommittee of some of its members to review the air quality plan and trip reduction program implementation.

rapp m KENNETH E. SULZER

Executive Director

ATTACHMENT 2

MEMORANDUM OF UNDERSTANDING BETWEEN THE AIR POLLUTION CONTROL BOARD AND SAN DIEGO ASSOCIATION OF GOVERNMENTS

- 1. The intent of this memorandum of understanding is to establish a process for allocating funds that may become available if Assembly Bill 2766 of the 1990 legislative session becomes law.
- 2. Pursuant to the Act, the Air Pollution Control Board has a mandate to adopt and enforce "rules and regulations to achieve and maintain the state and federal ambient air quality standards..." In framing the Act, the Legislature provided that standards are "necessary to protect public health, particularly of children, older people, and those with respiratory diseases." Furthermore, the Act states that "A district shall adopt, implement, and enforce transportation control measures for the attainment of state or federal ambient air quality standards...."
- 3. Provisions of the Act require the District to consult with SANDAG in preparing the criteria under which the plan for transportation control measures shall be developed. Further, the Act requires SANDAG to "develop and adopt a plan for transportation control measures which meets the criteria established by the District, and shall submit the plan to the District for its review and adoption according to a reasonable schedule developed by the District in consultation with the council of governments." In addition, the District is required to "review and approve the plan if it meets the criteria established by the District is required to schedule.
- 4. Assembly Bill 2766, according to the legislative declaration, is intended to ensure that air pollution control districts "have the necessary funds to carry out their responsibilities for implementing the Act." It also states that "A district may impose the fee [on registered motor vehicles] only if the governing board of the district adopts a resolution providing for both the fee and a corresponding program for the reduction of air pollution from motor vehicles under the California Clean Air Act of 1988." The District is required to develop, adopt and enforce a vehicle pollution reduction program. Transportation control measures are one element of that program.
- 5. This memorandum of understanding applies only to the allocation of funds that may become available pursuant to AB 2766 to support transportation control measures as defined in the Act and as developed, adopted, implemented and enforced within the institutional structure prescribed in Section 40717.

- 6. The Air Pollution Control District will fund SANDAG for its work to prepare transportation control measures pursuant to paragraph (5), and for any additional work specifically requested by the District in order to carry out its responsibilities under the Act. SANDAG's work to prepare transportation control measures shall be funded in accordance with a proposal submitted by SANDAG and approved by the District Board. If work is done by SANDAG prior to the District receiving funds authorized by Assembly Bill 2766, it will be paid for in arrears.
- 7. As provided by Assembly Bill 2766, the District Board may use these funds to carry out vehicle pollution reduction and related planning, monitoring, enforcement, and technical studies necessary to implement the Act, and enter into and implement agreements with cities, SANDAG and other agencies and organizations, for example Transportation Management Associations, which directly provide transportation control measure related carpool, vanpool, or other ridesharing or transit services.
- 8. AB 2766 authorizes the District Board to impose the fee upon adoption of a resolution providing for both the fee and a corresponding program for the reduction of air pollution from motor vehicles under the Act. The Act requires the council of governments to develop and adopt a plan for transportation control measures which meets the criteria established by the District. Upon receipt of the plan submitted by the council of governments, the District shall review and approve the plan if it meets the criteria established by the District and has been submitted pursuant to the schedule established by the District. If the District determines that the plan does not meet the criteria or if the plan is not submitted pursuant to the schedule, the District shall develop and adopt an alternative plan for transportation control measures.
- 9. In accordance with the Act and AB 2766 responsibilities for implementing transportation control measures shall be developed and adopted as follows:
 - (a) SANDAG shall develop and adopt a plan for transportation control measures and shall submit the plan to the District for its review and adoption. The District shall approve the plan if it meets the criteria and schedule established by the District Board.
 - (b) SANDAG may propose recommendations regarding the delegation by the District to eligible local agencies of the appropriate functions related to implementing transportation control measures, including the distribution of funding made available pursuant to AB 2766, with the understanding that pursuant to the Act and AB 2766 the District is solely responsible for delegating such functions and providing such funding.
 - (c) The District Board may delegate to cities and any other local agencies the appropriate functions related to implementing transportation control measures, with the District Board reserving the appropriate implementation and enforcement responsibilities and the right to revoke such delegation in accordance with the Act.

- 10. Fees generated by the District Board (pursuant to AB 2766) shall be allocated by the District Board, among the District, the cities, SANDAG, and other eligible agencies and organizations to implement the programs that each agency is responsible for. The funding allocation and implementation plan shall be developed and adopted as follows:
 - (a) District staff, after considering SANDAG recommendations, will propose an allocation schedule and implementation plan. The District will conduct a workshop among interested and affected parties prior to the District Board taking action to approve the recommendations for distribution.
 - (b) Once distribution is approved by the District Board, the allocation schedule and implementation plan will be submitted to SANDAG for review and comment by SANDAG member agencies and approval by the SANDAG Board of Directors, according to a reasonable schedule agreed to by District and SANDAG staff and recommended to and adopted by the District Board. Upon adoption by the SANDAG Board of Directors, the allocation schedule and implementation plan will be submitted to the District Board for final action at a public hearing.
 - (c) Upon receipt of the allocation schedule and implementation plan submitted by SANDAG, the District will hold a public hearing for review and approval. The allocation schedule and implementation plan may be revised or modified at the hearing as deemed appropriate by the Board; however, substantial weight will be given to the schedule and plan approved by SANDAG. If the allocation schedule and implementation plan is not submitted by SANDAG according to the adopted schedule, the District will adopt an allocation schedule and implementation plan.
 - (d) Any funding allocated by the Board shall be subject to performance audits by the District.

Definition of Terms

"Transportation Management Association" means a full service private and/or public service organization with a strategic plan addressing the institutional structure, programs, services and long term funding. Such associations operate employer transportation coordinator networks, provide commuter services, emergency take home services, form van pools and operate other related programs.

The "Act" means the California Clean Air Act of 1988.

References to statute are to the Health and Safety Code, unless otherwise indicated.

APCD COMMENTS AND STAFF RESPONSES SANDAG'S TRANSPORTATION CONTROL MEASURES PLAN

The APCD's Preliminary Review Draft of the 1991 San Diego Air Quality Strategy was distributed July 8, 1991.

It states that the transportation control measures plan and supporting technical analysis are being evaluated by the District for consistency with the Criteria and the Act's requirements. Elements of the plan consistent with the Criteria will be recommended for adoption as part of the Air Quality Strategy.

Trip Reduction Program

The District states that preliminary analysis of the SANDAG Transportation Control Measures Plan indicates the employer-based trip reduction program is not consistent with the criteria. Accordingly, the District has developed Regulation XIV to implement an employer-based trip reduction program consistent with the criteria and fulfilling the California Clean Air Act's performance requirements.

The District criteria state that a single passenger trip reduction program will be implemented and enforced by the District, subject to delegation as authorized by the California Clean Air Act to Cities and the County and not to another regional agency. Delegation to Cities and the County shall be limited to ordinances certified by the District as being at least as stringent as the District regulation.

SANDAG'S TCM Plan meets these criteria through the proposed adoption of a single trip reduction program agreed upon by the cities, County, and the APCD. By their actions, the cities and County would be adopting an ordinance that is "at least as stringent as the District regulation" -- because it would be the same ordinance.

In addition, the District would assume responsibility for the trip reduction program in any jurisdiction failing to adopt the regional trip reduction program.

As mentioned above, the criteria include the rejection of the involvement of "another regional agency" in the trip reduction program. No "regional agency" is included in the trip reduction program proposed by SANDAG.

Finally, and most important, if the District and the cities can agree on a trip reduction program that meets the requirements of the California Clean Air Act (and SANDAG's program meets these requirements), it will be legally adoptable and enforceable, and the region will be in compliance with state law.

Paving for the TCM Plan

The District's Preliminary Review Draft Air Quality Strategy also states that SANDAG's TCM Plan includes "market based measures which require state legislative action to implement." This is a reference to the motor vehicle fee increases recommended by the Board to help pay for implementing the Plan. The APCD's report states that "because neither the District nor any other state or local agency has the authority to implement these measures, they are inconsistent with the criteria."

The APCD criteria state that market-based measures, which increase the cost of driving (such as higher DMV fees), may be suggested, but may not replace, regulatory measures. Suggested market-based measures shall be designated to be implemented within a District regulatory structure and shall include approaches that do not require legislation. Market-based measures that may require implementing legislation may be suggested as long-term measures.

As required by APCD criteria, SANDAG's TCM Plan evaluates transportation control measures at three different levels of implementation. Level 1 of SANDAG's Plan provides the required actions needed to meet the requirements of the criteria and the California Clean Air Act through the use of existing funds. However, the plan goes beyond these minimum requirements and proposes a combination of Level 2 and Level 3 actions as the most effective (and more costly) plan to meet the requirements of the CCAA.

Because the TCM Plan clearly requires enabling legislation for DMV fee increases to carry out its long-term objectives, Level 1 of the plan was prepared to insure achievement of the CCAA requirements based upon existing and available funding.

It should be pointed out, however, that increased private sector support in terms of subsidies and other incentive programs will likely be necessary to offset the reduction in public expenditures resulting from Level 1 implementation.

The SANDAG plan meets the criteria by providing an initial implementation level (Level 1) based upon existing sources of money and a long-term plan (Levels 2 and 3) based on increased revenues when they are considered feasible.

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REGIONAL TRIP REDUCTION ELEMENT OF THE TRANSPORTATION CONTROL MEASURES PLAN (R-50)

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San Diego Association of Governments BOARD OF DIRECTORS

September 13, 1991

AGENDA REPORT No.: R-50

REGIONAL TRIP REDUCTION ELEMENT OF THE TRANSPORTATION CONTROL MEASURES PLAN

The Board of Directors scheduled this special meeting to discuss with the Board of Supervisors ways of reaching agreement on the Regional Trip Reduction Program.

The Regional Trip Reduction Program is one of the primary measures in the Transportation Control Measures (TCM) Plan.

The TCM Plan, including the Trip Reduction Program, was adopted by SANDAG on April 26, 1991, and amended on May 24, 1991. The TCM Plan was submitted to the Board of Supervisors, serving as the Air Pollution Control Board, for inclusion in the Regional Air Quality Strategy required by the California Clean Air Act.

The Clean Air Act requires air pollution control districts in the state's large urban areas to include a trip reduction program for peak-hour travel in the revised air quality plan. The Congestion Management Act requires the cities in urban areas to also adopt trip reduction programs and ordinances.

SANDAG's Trip Reduction Program would accommodate both these state mandates upon adoption by the cities and the Air Pollution Control Board.

A major unresolved issue is the organizational structure needed to implement the Regional Trip Reduction Program.

SANDAG, in its adopted TCM Plan, proposed that the cities, County and APCD, in cooperation with CALTRANS and representatives from the cities and County affected by the program, combine their policy-making authorities to cooperatively administer and implement the Regional Trip Reduction Program.

APCD's version of the trip reduction program proposes that the Air Pollution Control Board administer and implement the ordinance with the cities and other agencies serving in an advisory capacity.

In June, the cities notified SANDAG that they unanimously support the concept that cities share responsibility with the Air Pollution Control Board for policy-making and administration of the Trip Reduction Program. Therefore, it is my

RECOMMENDATION

that the Board of Directors and Board of Supervisors approve the following principles concerning the responsibility for decision-making and administration of the Regional Trip Reduction Program.

- 1. The Air Pollution Control Board and the cities should establish a unified regional trip reduction program that meets the requirements of the California Clean Air Act and Congestion Management Act.
- 2. The APCB and the cities should share the responsibility for policy-making and administration of the Program.

The most appropriate method of implementing the principle is to agree that the unified regional Trip Reduction Ordinance must be adopted by the APCB and by at least a majority of the cities representing a majority of the region's incorporated population. Amendments to the Program and ordinance, as needed, would require the same joint action.

3. Business and other members of the community impacted by the Trip Reduction (TDM) Program need to be directly involved in the administration of the Program.

Employers/employee groups -- those most affected by the program -- should serve on the group (referred to as the "Program Board" in the SANDAG plan) appointed to administer it. The cities and the County should agree on a method for nominating and appointing these private sector representatives to the program administrative board.

The Trip Reduction Program would require many people to change their home-to-work travel habits. This principle ensures that those most affected by the program get the opportunity to make sure it works. Principle one, above, ensures public agency control of the program's objectives, contents, and enforcement.

- 4. Staff arrangements for the unified program should be developed by the management staff of the cities and the County for approval by the councils and Board of Supervisors.
- 5. The money to pay for the Regional Trip Reduction Program should come from the funding sources identified in the Air Quality Plan. SANDAG's TCM Plan proposes the vehicle registration fee as the most appropriate source of revenue.

KENNETH E. SULZER Executive Director

COMMENTS ON THE TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN (R-63)

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Sen Diego Association of Governments BOARD OF DIRECTORS

October 25, 1991

AGENDA REPORT NO.: R-63

COMMENTS ON THE TRANSPORTATION CONTROL MEASURES FOR THE AIR QUALITY PLAN

On October 1, 1991, the Board of Supervisors, acting as the Air Pollution Control Board (APCB), reviewed the SANDAG Transportation Control Measures (TCM) Plan.

The Air Pollution Control District recommended that portions of the SANDAG TCM Plan be approved for inclusion in the Regional Air Quality Strategy as either an interim plan or for future implementation upon funding. The District recommended that the Regional Trip Reduction Program (or Transportation Demand Management Measure), the cornerstone of the TCM Plan, be found to not meet the Criteria and proposed its Employer-Based Trip Reduction Regulation XIV be included in the Air Quality Strategy.

The APCB accepted the District report, but decided to return the TCM Plan to SANDAG, requesting a response to the District's comments.

This Board of Directors report contains three items. They are:

- 1. Summary descriptions of the key issues of concern about the TCM Plan. All of these issues can be resolved and most of them are on the agenda of the recently appointed air quality subcommittee.
- 2. A brief description of the distinction between the Air Pollution Control Board's adopted "Criteria" for the TCM Plan and the comments on the TCM Plan transmitted to SANDAG by the APCB on October 1.
- 3. An attachment presenting staff responses to all of the APCB's comments (transmitted on October 1).

It is my

RECOMMENDATION

that the Board of Directors authorize transmittal of this report and attachment to the Air Pollution Control Board and District staff.

Key Issues of Concern About the TCM Plan

1. The Air Pollution Control Board and the cities must agree on the level of participation the cities will have in decision-making on the regional trip reduction program. (This issue was raised previously in Board report R-50, September 13, 1991.) In addition to the APCB, should city councils approve the ordinance/regulation and any future amendments thereto? Or should cities only review and advise the Air Pollution Control Board which would be solely responsible for approving the program?

SANDAG's Plan proposes that the cities vote on the ordinance/regulation.

The Air Pollution Control District interprets the California Clean Air Act as giving the APCB sole authority to adopt, implement and enforce the trip reduction program.

Under the Clean Air Act, the APCB has the flexibility to share decision-making on the trip reduction program with the cities. Therefore, as mentioned above, the issue is whether the APCB and the cities want to share in the decision-making on the program. This is the fundamental question being addressed by the air quality subcommittee.

2. Can SANDAG's proposed trip reduction program demonstrate that it can achieve its trip reduction targets? APCD has questioned SANDAG's forecast of trips reduced by the program.

The U.S. Environmental Protection Agency has recently issued guidance for demonstrating prospective target achievement by employer trip reduction programs. According to EPA, the demonstration of achievement can exhibit any one or more of four characteristics (more detail on this issue is given in the attachment to this report): (1) review of employer's plans to achieve targets; (2) a convincing minimum set of trip reduction tactics; (3) prescribed tactics if targets are not met; and (4) financial penalties sufficient to cause employers to achieve the targets.

SANDAG's Plan uses the first two of these four characteristics, with APCD's enforcement authority (#4) for employers who fail to participate.

3. Should the trip reduction program give employers the flexibility to select their own trip reduction tactics to achieve the program's targets? Or should certain tactics be prescribed to employers by the implementing agency?

SANDAG's Plan gives employers flexibility, subject to approval, to select their tactics to achieve the targets.

APCD recommends prescribing certain tactics for employers (i.e., transit/carpool financial subsidy and mandatory parking fees) if targets are not achieved in a specified period of time.

4. Should administrative fees or other money be collected from employers by public agencies?

SANDAG's Plan would collect no money from employers except the possibility of fines levied by APCD on those employers who fail to participate. SANDAG has proposed that the trip reduction program could be financed by the recently approved S4 increase in vehicle registration fees. This issue is on the air quality subcommittee's agenda.

APCD recommends that the employers pay a filing fee to recover APCD program administrative costs.

5. Should there be a committee/board of affected/interested persons appointed to participate in the on-going administration of the program?

If so, who should appoint the group? The APCB? The APCB and the cities?

Should it contain both private and public sector employers and employee groups?

Should the appointed group be given responsibility to oversee implementation of the program? Or should it be merely advisory to the staff and the APCB/cities?

This is another issue to be addressed by the air quality subcommittee. SANDAG's Plan recommends a program board composed primarily of employers/employees that would be appointed by the APCB/cities, and would oversee the implementation of the program.

6. How should staffing for the program be provided? Who should approve staffing arrangements?

This item is also on the subcommittee's agenda. SANDAG's Board report R-50 (September 13, 1991) suggests that management staff of the affected agencies could recommend a staffing arrangement for the program.

As currently written, SANDAG's Plan proposes a program administrator and appropriate staffing from the cities/APCD.

The Air Pollution Control Board's Adopted Criteria for the TCM Plan

The California Clean Air Act authorizes the Air Pollution Control Board to adopt criteria for the Transportation Control Measures Plan prepared by SANDAG. If the TCM Plan is consistent with the criteria, the APCB must adopt the Plan.

When SANDAG approved the TCM Plan, it certified the Plan's consistency with the Air Pollution Control Board's adopted criteria.

Accordingly, it is important to note that most of the comments on SANDAG's Plan made by APCD (see attachment) are not contained within, and are outside the scope of, the APCB's adopted criteria.

The attachment to this report contains responses to all of the comments on the Plan made by the Air Pollution Control District. It was prepared in order to be responsive to concerns and to help work out the remaining details of the program.

KENNETH E. SULZER Executive Director

Attachment

ATTACHMENT

SANDAG STAFF RESPONSE TO APCD COMMENTS ON THE SANDAG TRANSPORTATION CONTROL MEASURES PLAN October 18, 1991

FUNDING

District: The annualized cost of the SANDAG plan is \$249 million, \$92 million of that is unfunded government cost. In short, major portions of the Plan are unfunded. Motor vehicle registration/emission fees and a "polluting fuels" tax are proposed funding sources.

SANDAG: The Criteria state that each measure shall be evaluated at three implementation levels. These shall represent to the maximum extent feasible using: (1) Existing funding sources, (2) Potentially available funding sources, and (3) Potentially available funding sources including those that would require legislation. In accordance with the Criteria, funding for Level 1 of the SANDAG TCM Plan may be supported by existing funding sources.

However, the Criteria also require that "the plan shall include all feasible transportation control measures for peak and off-peak period travel that reflect the optimal effectiveness level to provide as much emission reduction as feasible, and be implemented as expeditiously as practicable". To meet this requirement, SANDAG has prepared a comprehensive transportation control measures plan which includes a combination of measures from each of the three funding levels. Most of these measures are feasible only if additional revenues are made available.

The total government cost of the SANDAG TCM Plan is \$92 million annually in the year 2000. Because virtually all existing revenue sources are currently programmed, SANDAG has developed a TCM Financial Plan to provide an additional funding source to pay for the TCM Plan.

The vehicle registration + emissions fee can be used to provide a secure and reliable funding source for the entire TCM Plan and it can be phased in over time to meet the funding needs of the TCM Plan. It would require an average fee increase of \$5 per year or \$50 per vehicle registration by the year 2000 to cover the \$92 million annualized capital and program costs. SANDAG has directed staff to develop, together with other interested jurisdictions in California, support and legislation for a State-initiated motor vehicle registration + emission fee to fund the TCM Plan.

It is estimated that the private sector cost of implementing the TCM Plan will be about \$1 per trip reduced or \$161.6 million in the year 2000. While the private sector cost may appear high, these programs would most likely be supported through the reallocation of existing and future resources, rather than new resources. It should be emphasized that this money is not a tax paid to government.

District: The Criteria required an evaluation of the feasibility of redirecting discretionary funds available to the region to help fund transportation control measures. The required evaluation was not accomplished. Recommendation: Find that the required evaluation of discretionary funds is not included in the plan as specified in the criteria. R e q u e s t SANDAG to evaluate current revenue sources that allow flexibility in local and regional spending, present options, and make recommendations regarding redistributing funds and programming future state and federal transportation monies to help support transportation control measures, by November 22, 1991, so the response can be considered for final Board consideration in mid December.

SANDAG: An evaluation of the feasibility of redirecting funds available to the region to help fund transportation control measures was conducted and reviewed by the Regional Revenues Advisory Committee. Virtually all other existing revenue sources are currently programmed or committed. This should not be surprising given that the Regional Transportation Plan currently shows a \$5 billion shortfall. SANDAG has recommended that an increase in the vehicle registration + emissions fees provide the primary funding source to pay for the unfunded portion of the TCM Plan. See SANDAG Report RB-11 Supplement. A more detailed discussion follows.

TransNet Revenues:

The TransNet Program revenues are allocated 1/3 to transit, 1/3 to highways, and 1/3 to local street and road projects, with \$1 million annually for bicycle program improvements. It should be noted that the TransNet Program revenues are already being used largely to fund the implementation of TCMs including the allocation of 1/3 of the total program revenues for transit capital and operating support and the \$1 million annual bicycle program funding. In the current Draft 1992-99 TransNet Program of Projects (POP) more than \$385 million of TransNet funds, including bond revenues, are programmed for transit improvements.

The one-third of TransNet revenues allocated to cities and the County may be used for any transportation control measure that meets the definition of a local street and road project. This would include traffic signal improvements, bicycle facilities, highoccupancy vehicle lanes and transportation demand management programs. It should be pointed out that this decision on how to allocate TransNet local street and road revenues is at the discretion of the city or County as long as the intended use is a legal purpose under the TransNet Ordinance. The voter approved Ordinance further provides that priority expenditures for TransNet local street and road revenues include repair and rehabilitation of existing roadways, reduced congestion and improved safety, and needed new construction. The current Draft 1992-1999 TransNet POP developed by the cities and County includes 70 street repair and rehabilitation projects, 89 congestion reduction and improved safety projects, and the construction of 29 needed new facilities. Many of these projects are TCMs or provide direct support for TCMs including numerous traffic signal improvements. It should also be pointed out that many jurisdictions have made long term commitments for these funds which may be difficult to change.

The one-third of the TransNet revenues allocated for highways is currently committed for eight specific voter approved highway projects. The specific highway projects may be revised by a change in the TransNet Ordinance which requires a two-thirds vote of the SANDAG Regional Transportation Commission. The only TCMs eligible for TransNet highway revenues appear to be high-occupancy vehicle lanes. Highoccupancy vehicle lanes are already proposed for TransNet highway funding as part of the SR54 South Bay Parkway, SR125 Sweetwater, and SR125 Fanita TransNet projects.

New or Uncommitted Flexible Congestion Relief Funds:

In this current State Transportation Improvement Program (STIP) development cycle, SANDAG will be making recommendations for the allocation of approximately \$135 million of state/federal Flexible Congestion Relief (FCR) funds for FY98 and FY99. State legislation provides that SANDAG recommend or propose FCR projects for which the funding approval is subsequently made by the California Transportation Commission (CTC) in the STIP. Although SANDAG may request or bid for up to \$135 million of FCR funding, our "fair share" of the State FCR program is about \$94 million. Statute and CTC Guidelines provide that FCR funds can be used for projects that reduce or avoid congestion by increasing the capacity of the transportation system which would presumably include most TCM capital projects. The FCR funds may not be used for non-capital programs or transit operating support. This year SANDAG has received approximately \$435 million in proposed candidate FCR funded projects for the \$135 million of maximum funding. The CTC makes the final approval of which candidate projects are funded based on SANDAG recommendations. Staff will be proposing a recommended 1998-99 FCR program at the November SANDAG Board meeting.

Previously Programmed/Committed Funds:

The APCD has asked whether it is possible to substitute TCM projects for projects included in prior year transportation improvement programs. Proposition 111 (including SB300 and AB471) included by statute a commitment to program and develop all previously approved transportation projects from the 1988 STIP. Since these projects are defined in statute as commitments based on voter approval of Proposition 111, they would be difficult to change at this time. In addition, many of the projects are nearing or have gone to construction with significant project development work and expenditures already having been made. There are two major projects in the current 1990 STIP that could possibly be considered for deletion or deferral if the Board chose to make such a recommendation and the CTC subsequently approved that request. The two projects are Stages 2 & 3 of the SR15 (40th

Street) project in the Mid-City San Diego area. While Stage 1 of the SR 15 freeway project should be under construction within the next several months, construction funding for Stages 2 & 3 is programmed in FY96 and FY97 at a total cost of about \$90.8 million. Staff does not recommend the deletion or deferral of the SR15 project.

District: Recommendation: Request SANDAG to join with the Air Pollution Control Board in an effort to gain a statewide consensus on the necessary legislation to implement market-based measures to increase vehicle registration fees based on emissions, annual travel and congestion for funding transportation control measures.

SANDAG: At its meeting of May 24, 1991, SANDAG adopted Resolution 91-65 including support for a State-initiated motor vehicle + emission fee to pay for the TCM Plan and support for legislation implementing market-based transportation control measures. SANDAG directed staff to work with other interested jurisdictions statewide to develop necessary legislation. SANDAG and SCAG staffs, with similar Board directions, solicited statewide participation through the Transportation/Air Quality Review Group including MPOs, APCDs, ARB, CALTRANS, California Energy Commission, and the transportation commissions. Interest has been expressed from virtually every region. Project participation commitments are due November 1991.

District: Fees that could be charged by the District under existing law are not proposed in the Plan, though specified in the Criteria.

SANDAG: The Regional TDM Advisory Committee, TDM Technical Committee and other TDM subcommittees recommended that program revenues be derived, to the extent possible from regional user fees rather than employer filing fees and local city/County funding. The Committee's position: because every motor vehicle owner contributes to air pollution and traffic congestion, it is appropriate that every motor vehicle owner share in the solution. Additionally, it is important that every motor vehicle owner receive appropriate information, services and benefits of alternative travel.

The TDM program is intended as a partnership between government and business to encourage employees to use other than single-occupant vehicles to travel to and from work. While the employer does not have the authority to change individual travel behavior, the employer controls many of the factors which impact commute travel and employee compensation. More importantly, the employer offers government an efficient way of reaching the majority of motorists in the region without having to contact each one individually.

Employers strongly oppose government paperwork and fees to cover the administrative costs of the reviewing the paperwork. Therefore, the committees believed that charging employers filing fees is not an effective way to begin a partnership. Committee members and participants preferred that employer support be used to offer employee incentives and to encourage employees to use alternative modes rather than to support the review and filing of paperwork. The revenues that may be collected through employer filing fees represent a very small portion of the overall TCM program revenues needed and may be more costly in negative reaction to the program than the revenue produced. In addition, the collection of a filing fee may more than double the overall cost of processing an employer filing.

District: The proposal to fund transportation control measures by means of registration fees requires additional work. The major questions that need to be addressed are enumerated below.

1. To what extent can existing funding be allocated to help fund transportation control measures?

2. Is it necessary to seek additional funds or is there an opportunity for programming future state and federal transportation monies to fund or partially fund transportation control measures?

3. Based on the answers to the two questions above, the amount of additional funding can be estimated. Once that is done, it will be necessary to gain a statewide agreement on the necessary legislation to implement market-based measures proposed to increase vehicle registration fees based on emissions, annual travel and congestion to fund transportation control measures.

4. What is the priority for allocating AB 2766 funds?

SANDAG has suggested these funds be used for implementing their TDM agency and related program rather than using employer fees. If that is done, there will be little or no money left to implement important studies, public information programs and monitoring; the priority uses, among others, suggested by the Air Resources Board Guidance. There is a process for deciding this question that includes public workshops and input from SANDAG. The District will make recommendations once basic decisions have been made regarding transportation control measures.

SANDAG: SANDAG supports legislation to enable an increase in the motor vehicle registration + emissions fees to support the entire cost of the transportation control measures. The vehicle registration + emissions fee approach can be used to provide a reliable funding source for the entire TCM Plan and can be phased in over time to meet the funding needs of the program.

It can also be designed with the flexibility to allow for a reduction in the fee levels if, in the future, certain components of the TCM Plan were to be funded with new state and federal revenues, or other revenue sources. While an increase in future state and federal transportation funding is desirable and anticipated during the next decade, the uncertainty of such increases caused SANDAG to shift away from recommending these as funding sources to pay for the TCM Plan.

SANDAG has recommended that AB 2766 funds and increased funding provided by enabling legislation be used as the primary source of funding to pay for the entire regional TCM Plan. This would include other essential programs and studies approved as part of the regional TCM Plan. A process for updating the TCM Plan work program and budget would assist the region in determining priorities and determining the amount of registration fee increase needed.

District: A "polluting fuel" tax may not be a viable option because gasoline will be reformulated as required by both federal and state laws. The State's program starts in 1992, with full implementation by 1996. The Environmental Protection Agency has recently entered into an agreement with oil companies accelerating the sale of cleaner gasoline by one year to 1995.

SANDAG: The polluting fuel tax recommended by Supervisor Bailey was accepted by SANDAG for further review as a potential mechanism to pay for the implementation of the Transportation Control Measures. SANDAG has recommended the motor vehicle registration + emissions fee as the primary source of funding to pay for the transportation control measures. INSTITUTIONAL STRUCTURE

District: A regional Transportation Demand Management (TDM) Board established by SANDAG member agencies is proposed to administer the proposed regulatory trip reduction programs which include the Commute Travel Reduction Program, College Travel Reduction Program and Goods Movement/Truck Operation Program. This is not consistent with the Criteria which specify that the District shall administer and enforce these programs, but they may be delegated to a city or county as provided in state law. The creation of a regional TDM Board duplicates the Air Pollution Control Board's responsibilities regarding transportation control measures provided in the Criteria and California Clean Air Act. The Proposed institutional structure does not meet the Criteria.

SANDAG: SANDAG's Transportation Demand Management Measure, including the Commute, College, Goods Movement, and Non-Commute Travel Reduction Programs, proposes the cities, County, and APCB share responsibility for TDM Measure policy making and implementation to provide a uniform and cooperative regional program.

SANDAG's program was " developed in coordination and consultation with all affected agencies." Each of these participants, including local jurisdictions, business, labor, and community groups, has its own "criteria" for the program. Inclusion of the interests of each of these participants was necessary to establish a regional consensus on the content of the program.

The Programs would be administered by a program administrator and program board appointed by the cities, the County, and the APCB. The APCD would enforce the Programs. The administrator, program board and APCD would carry out policy adopted by the cities, the County, and APCB.

The Criteria do not provide specific requirements for the institutional structure. The Criteria require that the transportation control measures shall be developed in coordination and consultation with all affected agencies and the Air Quality Strategy Development Committee and significant issues raised in the development shall be identified in the plan. The Criteria further state that the plan for Transportation Control Measures shall include a recommended strategy and alternative options for consideration by the Air Pollution Control Board. The Criteria are fully met by the SANDAG Plan as long as the District adopts the proposed unified regulation.

District: As directed by the Board, the District staff has attempted to work out an institutional structure mutually agreeable to both SANDAG and the District, but those attempts to date have not been successful because of SANDAG's insistence on maintaining the regional TDM Board.

SANDAG: The implementation structure contained in SANDAG's trip reduction program is, in the view of SANDAG's TDM committees, the best way to carry out the

program and is consistent with the APCB's Criteria. Nevertheless, in the interest of reaching agreement on the issue with the Air Pollution Control Board, SANDAG has proposed 5 principles. These principles are presented in SANDAG Board report R-50, dated September 13, 1991. They represent a possible starting point for negotiations on the subject of institutional arrangements. The recently appointed Air Quality subcommittee is using these principles in their discussions.

In summary, the principles propose: one unified regional trip reduction program; participation by cities in the decision-making on the program; employer-employee participation in program implementation; a staffing arrangement acceptable to the affected agencies; and program funding provided by the state approved \$4 increase in vehicle registration fees.

District: The City and County Managers Association has been working on an alternative that is consistent with state law. On September 13, the SANDAG Board established a committee to address this issues between the District and SANDAG.

SANDAG: SANDAG Board report R-50 (September 13, 1991), mentioned above, recommends that staff arrangements for the unified program should be developed by the management staff of the cities and the County for approval by the councils and Board of Supervisors. A subcommittee appointed by the Cities-County Managers Association is available. The recently appointed Air Quality subcommittee has held one meeting and will hold another before the October 25th SANDAG meeting.

District: The requirements of a trip reduction program and issues surrounding the institutional structure are separate. Disagreement by SANDAG with the institutional structure in state law should not be allowed to impede District efforts in adopting and implementing mandated requirements. If a future agreement with SANDAG is reached as a result of discussions between the Board's committee and the committee established by SANDAG, Regulation XIV can then be delegated accordingly.

SANDAG: The SANDAG TCM Plan includes an institutional structure consistent with the Criteria and state law. SANDAG has fully complied with the state and District schedules for TCM Plan adoption according to the state mandated deadline. (District: May 1, 1991; state: June 30, 1991)

District: The proposed structure establishes a very powerful administrator to implement the TDM Program and Ordinance. The Administrator would establish rules and procedures for the conduct of the Administrator's business; determine the intent of the TDM Program and Ordinance; hear appeals from the requirements of the TDM Ordinance, as interpreted and implemented by the Administrator; and grant temporary variances from any provision of the TDM Ordinance. The Administrator does not seem to be accountable to the TDM Board, because the TDM Board is described as being advisory to the Administrator. It is not clear to whom the Administrator is accountable, since the appointing authority is not specified. SANDAG: The Transportation Demand Management Measure would be administered by a program administrator and program board appointed by the cities, the County, and APCB. The administrator, program board and APCD would carry out policy adopted by the cities, the County, and APCB.

In the proposed SANDAG trip reduction program, duties of the administrator include: 1) establish rules and procedures in accordance with applicable law which are necessary or convenient for the conduct of business, 2) grant temporary extensions of time for any provision of the Ordinance if qualifying findings can be made and the qualifying findings show that a good faith effort has been made to meet the requirements, and that the proposed plan will potentially achieve the same rate of progress had the employer fulfilled the requirement on time, and 3) grant variances from the provisions of the Ordinance as will not be contrary to its intent or public health, safety, and general welfare when due to special conditions or exceptional characteristics of the employer's business strict and literal interpretation and enforcement of the provisions of the Ordinance result in unnecessary hardship or be inconsistent with the general purpose of the overall TDM Program. These duties are typical of duties normally assign a program administrator. The administrator and the program board are accountable to the appointing authority, the cities, the County and the APCB.

District: The institutional structure also bifurcates program accountability in two separate agencies. Administration and implementation would rest with the Administrator, while enforcement would be pursued by the District upon referrals by the Administrator. Past District experience in regulating industry indicates it is essential to have administration, implementation and enforcement within the same agency in order to have an effective program. Close coordination on a continuing basis is required between regulated businesses and implementing and enforcement personnel to clarify requirements, address programmatic concerns, and develop consistent internal policies to effectively implement and enforce the program. Close coordination between implementing and enforcement personnel will also be required to determine the adequacy and enforceability of any conditions of TDM Plan approval, as is done now in permitting industries. In a bifurcated structure, such coordination is not possible and can result in program delays and ineffectiveness.

It is important to maintain the integrity of the Clean Air Act and the Air Pollution Control Board's statutory responsibility to protect the public health by meeting clean air standards. Historically, implementing authority regarding transportation control measures was bifurcated and ineffective. This critical flaw was recognized and corrected by the Legislature when writing the California Clean Air Act. The proposed institutional structure represents a step backward by proposing both a bifurcated and convoluted structure displaying all the classical weakness in program implementation, effectiveness and accountability.

SANDAG: The proposed institutional structure includes program administration, implementation and enforcement under the combined cities/County decision-making

authority. An administrator, program board and the APCD to carry out policy adopted by the cities, the County, and APCB. The District would be responsible for enforcement of the Program. Referral by the administrator is not a requirement.

The proposed unified regional trip reduction program is based upon close coordination and cooperation. The assignment of functional responsibilities does not preclude close coordination and cooperation. Organizations typically assign functional responsibilities to ensure increased focus, effectiveness and accountability. For example, The District uses Commuter Computer to contact and survey employers under its emergency episode plan regulation but enforces violations of the regulation itself. The APCB's integrity is not impacted by the proposed TCM Plan.

TRIP REDUCTION DEMONSTRATION

District: The Criteria and the California Clean Air Act require achieving a 1.5 vehicle ridership during the peak commute period by 1999, and a substantial reduction in daily motor vehicle trips, which according to the Air Resources Board guidance results in reducing 500,000 daily trips by the year 2000. The SANDAG Plan establishes trip reduction targets and then claims legal mandates will be achieved based on an assumption that the trip reduction targets will be met. There is no analysis to determine if the program is actually adequate to achieve the trip reduction targets. Given the voluntary nature of the program as addressed in the following section, and absence of any required measures to assure achievement if voluntary employer actions are not successful, it can not be assumed that trip reduction targets will be met. In fact an analysis of similar programs elsewhere indicates the SANDAG program can only be expected to reduce 112,000 trips by the year 20000, not the required 500,000 Regulation XIV is designed to achieve.

SANDAG: SANDAG staff has used the "Software Developed to Quantify the Emissions Reductions of Transportation Control Measures" developed by the State of California in cooperation with the State Air Resources Board to model and quantify the trip reductions, vehicle miles traveled reductions, roadway speed improvements and emissions reductions for the Commute Travel Reduction Program. The APCD staff participated on the statewide steering committee for the development of this software and copies of the model outputs are included in the technical supplement.

The model output shows that the achievement of the SANDAG Commute Travel Reduction Program by itself will produce 585,000 daily employment trips by the year 2000. The SANDAG Program is specifically quantified to meet the vehicle occupancy requirements for commute travel for both the California and federal clean air acts. The necessary trip reductions and alternative mode travel capacity required to achieve the mandated average vehicle occupancies for weekday commute travel is demonstrated in the Plan technical analysis and the Travel/Emissions Reductions Model output. In every case, the SANDAG Plan meets the trip reduction and vehicle ridership requirements of the state and federal clean air acts.

Although the District refers to the SANDAG Plan as being voluntary, it is a mandatory program backed by plan-by-plan review of employer-selected measures to ensure compliance and financial penalties that are large enough to result in a significant incentive for the employer to implement an effective initial compliance plan on its own.

The Commute Travel Reduction Program is driven by the required achievement of an annual average vehicle ridership (AVR) target. Each employer with 11 or more employees must achieve the annual AVR target as measured by an annual employee survey filed by the employer or demonstrate its ability to achieve the next AVR target through submittal of a one page TDM Action Plan subject to approval by the program administrator. The employer has the flexibility to determine which actions it wishes to implement but the actions selected must add up and be determined by the administrator to lead to the achievement of the next AVR target to gain approval. An employer who fails to achieve its annual AVR target and fails to implement and carry out its TDM Action Plan, is in violation of the TDM Ordinance. Maximum penalty of law is \$25,000 per day per violation.

The Environment Protection Agency has recently issued draft guidance for state and local employer trip reduction regulations outlining methodology for demonstrating prospective compliance. This demonstration can take on any one, or a combination of, four forms:

- 1. The State may include in the SIP evidence that agency resources are available for the effective plan-by-plan review of employer-selected measures to insure the high quality of compliance plans, and that plans that are not convincing are rejected.
- 2. The regulations in the SIP may contain a convincing minimum set of measures.
- 3. The regulations in the SIP may provide that the failure by the employer to meet the target average vehicle occupancy will result in implementation of a regulation-specified, multi-measure contingency plan.
- 4. The regulation in the SIP may include financial penalties that are large enough to result in a significant prospective incentive for the employer to design and implement an effective initial compliance plan on its own.

While demonstration of achieving trip reduction targets requires the fulfillment of only one of the four guidelines, the SANDAG's Program meets the requirements of demonstration guidelines 1,2 & 4.

COMMUTE TRAVEL REDUCTION PROGRAM

District: The Commute Travel Reduction Program is intended to reduce employmentrelated commute trips by influencing a shift in travel to modes other than the singleoccupant motor vehicle. Employers of 11 or more employees would be subject to the program. The program starts in 1992 for employers of 50 or more employees, 1993 for employers of 11 or more employees. The stated objective is to achieve the Clean air Act goals at an annualized cost of \$156.3 million. The commute Travel Reduction Program is inconsistent with the Criteria because of the institutional structure, not requiring minimum employer actions including parking management and financial incentives to assure state and federal mandates are achieved, and allowing off-peak credits that artificially inflate vehicle ridership to ease compliance.

SANDAG: The Commute Travel Reduction Program will reduce transportation source emissions by decreasing the number of employment-related commute vehicle trips and by influencing a shift in commute travel to modes other than the single occupant motor vehicle.

The strategies which make up the Commute Travel Reduction Program are designed to help achieve through commute travel reductions, the requirements of the California Clean Air Act, California Congestion Management Program, Federal Clean Air Act and the U.S. Department of Transportation/Environmental Protection Agency Conformity Requirements.

The annualized cost of the Program in the year 2000 includes \$7 million governmental and \$149.3 million private sector costs. It is estimated that the private sector cost of implementing the Program will be about \$1 per trip reduced. The private sector cost of implementing the Program would most likely be supported through the reallocation of existing and future resources, rather than with new resources.

The Commute Travel Reduction Program requires each employer to demonstrate, through an employee survey, the achievement of the annual Average Vehicle Ridership (AVR) target. The achievement of the annual AVR target represents the minimum required employer action for each work site.

The focus of the Commute Travel Reduction Program is on achievement of the annual AVR target. The employer must either achieve the AVR target or demonstrate its ability to achieve the next annual AVR target through submittal of a TDM Plan subject to approval by the program administrator. An employer who fails to achieve its annual AVR target and fails to implement and carry out its TDM Plan, is in violation of the TDM Ordinance.

An employer has the flexibility to determine which actions it wishes to implement but the minimum actions selected must lead to the achievement of the next annual AVR target as determined by the program administrator. Because employer conditions and resources vary widely, the Program does not prescribe or assume the implementation of specific actions, (i.e., 100% bus pass subsidy or \$100/month parking fee paid by the employer), will result in the achievement of the AVR targets.

Credits for off-peak travel enable the Commute Travel Reduction Program calculation for AVR to be based on the 24 hour day thereby increasing overall participation and facilitating both peak and off-peak travel reductions. Because the Program peak period is defined as 5-10 a.m., it is anticipated that few companies will alter present employee reporting times.

The present level of off-peak travel has been accounted for in the determination of the annual AVR target schedule. Annual targets have been set 0.1 AVR higher than required to account for the credit earned by the present level of off-peak travel. If the amount of peak-period travel shifted away from the present trend, either the peak period definition or annual AVR targets could be adjusted to insure accurate achievement of AVR goals.

District: Recommendation: Find the SANDAG proposed Commute Travel Reduction Program does not meet the Criteria. Direct that the District proposed Employer-Based Trip Reduction Regulation XIV should be included in the Revised Regional Air Quality Strategy as an alternative to the SANDAG proposed Commute Travel Reduction Program.

SANDAG: The SANDAG Plan is a regulatory plan as required by the Criteria. Use of the TCM/Air Quality Emission Reductions Model developed for the state by Sierra Research and JHK (same as the APCD consultant) specifically shows that the Commute Travel Reduction Program will reduce 585,000 trips in the San Diego region by the year 2000.

The SANDAG Plan meets the Criteria and has the general support of business and the region's eighteen cities.

District: After initial adoption, the SANDAG program was substantially amended earlier this year to address many of the District's concerns: the program coverage has been expanded from the peak period to 24 hours; and credits that do not reduce trips were eliminated. However, in addition to the previously addressed issues surrounding the institutional structure and not demonstrating mandates will be met, some key concerns remain unresolved.

The Program does not mandate employer actions required by the Criteria. The Criteria specify that minimum standards for facility rideshare/transit promotions efforts shall include financial incentives and parking management. Instead of mandating required employer actions, the Program just provides employers with a Menu of potential actions to choose from. Employers are free to choose and implement actions they prefer. Although trip reduction plans are required for review and approval by the program administrator if specified Average Vehicle Ridership targets are not met, no minimum

actions are prescribed and no guidance is given on how to determine if the proposed actions will be sufficient to attain the targets.

SANDAG: The SANDAG Commute Travel Reduction Program was originally formulated to reduce commute trips during the 24 hour day with some credit provided for off-peak travel. The original draft identified the peak period as 6:30-8:30 a.m. The peak period was later expanded to 5-10 a.m. to reduce the potential of employers using shifting rather than trip reduction to meet early AVR targets. Other changes were also made, to the extent possible, to gain APCD staff acceptance of the plan.

Suggested credits for mileage reduced, contraflow travel and early action by employers were eliminated because of the focus on congestion relief rather than trip reduction.

SANDAG'S Commute Travel Reduction Program is driven by required annual AVR targets. While the program includes parking management and financial incentives for rideshare and transit, the program allows the employer the flexibility to choose from those actions which appear most effective to achieve the employer's next annual AVR target. If parking management or financial subsidies offer the most effective means for achieving the annual AVR target, employers will likely initiate parking management and/or financial incentive programs or be required to include such programs in their TDM Plans.

SANDAG'S Commute Travel Reduction Program mandates the employer achievement of the annual AVR target. The employer must choose and implement the necessary actions to achieve its next annual AVR target. The focus of the SANDAG Plan is on the achievement of the target, rather than on prescribing actions. Because potential effective employer transportation actions vary by company location, employee location and available transportation resources, prescribed actions might have little or no effect toward the achievement of AVR targets. SANDAG's plan calls for the implementation of the most appropriate and effective actions based on each employer's situation.

An employer who fails to achieve its annual AVR target must file a plan showing how it will achieve its next annual AVR target. The plan must be approved by the administrator based upon the determination that the employer's plan would lead to the achievement of the next annual AVR target. If an employer who fails to achieve its annual AVR target and fails to implement and carry out its TDM Plan, is in violation of the TDM Ordinance (maximum penalty by law \$25,000/day per violation.

District: The requirement in the Criteria to provide reductions as expeditiously as practicable in not met because, in addition to not mandating financial incentives and parking management, Average Vehicle Ridership targets could be missed for five consecutive years before a facility would be considered in violation and subject to penalties. Such delays in obtaining trip reductions are unacceptable because the California

Clean Air Act's trip related performance requirements demand incremental progress toward that mandate and continuous compliance once reached. Similar requirements are needed to conform with the federal Clean Air Act mandate for employers of 100 or more employees to meet specified trip reduction targets by 1996.

SANDAG: As stated above, employers are mandated to achieve annual AVR targets. An employer who fails to achieve its annual AVR target and fails to implement and carry out its TDM Plan, is in violation of the TDM Ordinance (first year). The APCD statement is inaccurate. The SANDAG Plan has mandated and increasing annual AVR targets over the next twenty year period to insure incremental progress and continuous compliance once attainment is reached.

The Federal Clean Air Act Requires that average peak period vehicle occupancy for employers of 100 or more be increased by 25% by 1996. The last measured average peak period vehicle occupancy for the San Diego region is 1.18. If we multiply 1.18 times 125%, it equals 1.48. The average AVR target for 1996 is 1.60 less 0.1 AVR for the impact of off-peak travel credits equals 1.5 AVR. This exceeds the FCAA requirement.

District: Credit for satellite work centers specified in the Criteria is not provided. Instead, credits which were not authorized in the Criteria, are provided for driving alone outside the morning peak travel period. Shifting commute trips also reduces potential carpooling matching, and has a negative effect on transit efficiency. Additionally, it would make it easier for multi-shift businesses to comply without actually reducing trips. Also, because off-peak credits artificially inflate the calculated Average Vehicle Ridership, compliance with the federal Clean Air Act would not be demonstrated because actual vehicle ridership will be less.

SANDAG: Credits for satellite work centers have not been included in the initial Commute Travel Reduction Program at this time because of the lack of information on how to quantify the benefits of such actions. However, the Program is designed to accept new credits whenever they become applicable to the program goals.

The calculation of the AVR over a 24 hour day requires employers to encourage all employees to use alternatives transportation modes. The greater the participation the greater the amount of air quality and traffic flow improvement. Credits for off-peak travel enable the Commute Travel Reduction Program calculation for AVR to be based on a 24 hour day thereby increasing overall participation and facilitating both peak and off-peak travel reductions. Because the program peak period is defined as 5-10 a.m., it is anticipated that few companies will alter their present employee reporting times.

The present level of off-peak travel credits has been accounted for in the annual AVR target schedule. Annual targets have been set at 0.1 AVR higher than the required AVR to account for the amount of off-peak travel in the region. If the amount of off-peak travel shifted from the present level, either the definition of the peak period or

the annual AVR targets could be adjusted to insure accurate achievement of the AVR goals.

The Program's first priority is trip reduction; however, if an employee must commute by single occupant-vehicle and the use of a clean fuel vehicle is not available, shifting out of the peak improves overall traffic flow and speeds providing some air quality benefit. Shifting out of the peak is preferred to driving alone during the peak.

Employers are encouraged to provide flexible work hours for employees as a reward or opportunity to those who carpool or rideshare. Shifting for transit riders can also have a positive benefit. Shifting allows transit riders the flexibility arrange their work hours around the transit service schedule. Allowing transit riders the opportunity to shift their work hours spreads the number of transit riders over a broader period and increases the number of passengers served by the available transit service.

The maximum amount of off-peak credits an employer could earn would be 0.4 AVR, provided the employer scheduled 100% of its work force outside the 5-10 a.m. peak period. Because the schedule of annual AVR targets is adjusted to account for the present level of off-peak travel and begins with a 1.40 AVR target in 1991, an employer who scheduled all of its work force out of the peak would have to begin additional actions to meet its 1992 AVR target of 1.45.

District: The program implementation cost is projected at \$7 million annually. It is proposed that this cost be recovered through vehicle registration fees, preferably the \$4 vehicle registration levy authorized by AB 2766 (Statutes of 1990), rather than employer fees. The Air Pollution Control Board has adopted a \$2 vehicle registration levy which will generate about \$3.4 million annually. Increasing the levy to \$4 will generate \$8 million by the year 2000. If the levy is raised and the program is funded by this revenue, not much will be left for other fees the Board is authorized to adopt under the California Clean Air Act. According to the Air Resources Board, AB 2766 monies would be better spent on studies, research and programs leading to regional policies affecting transportation.

SANDAG: The Commute Travel Reduction Program by itself may be funded through a \$4 vehicle registration fee; however, an overall increase of \$50 would be required to fund the entire SANDAG TCM Plan (\$92 million annualized) by the year 2000. Despite the recent increase in the motor vehicle registration fee to balance the state budget, an increase in the motor vehicle registration fee based upon vehicle emissions remains the preferred method to fund the TCM Plan. Several Councils of Governments, APCDs and the ARB are beginning a study that would propose state legislation to increase the motor vehicle registration/emissions fee to pay for the TCMs.

The state has failed to provide funding to adequately mandated transportation control measures. AB 2766 funds, currently limited to \$4 per vehicle registration, should be spent in the manner which is most effective in reducing motor vehicle emissions in the

San Diego region. Such a plan may include studies, research and programs. SANDAG is recommending support of legislation to enable local APCB to increase the motor vehicle registration fee to pay for the entire regional TCM Plan.

District: When Regulation XIV was initially proposed, it was structured much like the SANDAG proposal with the exception that mandates specified in the Criteria were included and those inconsistent with the Criteria, like off-peak credits, were omitted. Because of the high cost associated with submitting plans and plan updates, that feature was deleted in favor of simply specifying necessary requirements if ridership targets were not met. Since then, the major effort has been structuring those requirements to provide maximum flexibility to business while assuming that measures, such as parking management and financial incentives, sufficient to meet state and federal mandates are implemented if voluntary efforts do not succeed. The Regulation provides for fees to recover implementation and enforcement costs that are substantially less than the SANDAG program and has undergone considerable public review; been revised based on public input and Board direction, and is ready for final Board consideration and adoption.

SANDAG: The SANDAG TCM Plan meets the Criteria. The SANDAG TDM Plan requirement was designed by employers who believe government paperwork is a waste of time and money. The TDM Plan simply requires that the employer determine what actions are required to meet its next AVR target and state clearly and specifically list those actions. This should take less than one page including room for the employer signature and administrator approval.

State and federal mandates require the achievement of specific average vehicle occupancies or average passenger occupancies. State and federal mandate do not require prescribed parking management and financial incentive programs. These employer actions can be included in the program without eliminating employer flexibility to choose the most effective and appropriate action for its firm.

The proposed SANDAG Program is funded by motor vehicle registration fees. No filing fees to recover implementation and enforcement costs are required.

COLLEGE TRAVEL REDUCTION PROGRAM

District: The College Travel Reduction measure proposes to reduce motor vehicle trips made to colleges and universities by employees and students. Student related trip reductions would occur by means of transit subsidies. The annualized cost is \$20.3 million.

The College Travel Reduction Program does not meet the Criteria because credits to artificially inflate vehicle ridership are included, and funding and student travel characteristics are not adequately addressed to assure that goals will be met.

SANDAG: The SANDAG College Travel Reduction Program, formulated by the Regional College and University TDM Policy Subcommittee, extends the same AVR goal applied to employees in the Commute Travel Reduction Program to students attending the region's college and universities. The Program generally treats college student trips as if they were work trips.

Student trip reductions would occur through similar options available to employees under the Commute Travel Reduction Program, including carpooling, vanpooling, transit, telelearning, walking, bicycling, schedule consolidation, etc.

The annualized cost in the year 2000 is estimated at \$20.3 million. This includes the cost of the College Student Transit Subsidy Program, a program similar to the current discounted transit fare program for youth age 18 or under.

The College Travel Reduction Program is another example where the SANDAG plan extends beyond the requirements. The California Clean Air Act, federal Clean Air Act and the APCD Criteria do not include requirements for college student and university student travel.

Unlike the Commute Travel Reduction Program the College Travel Reduction Program does not offer credit for off-peak travel although the College Program is also based on the calculation of AVR over a 24 hour period. Incentive credits which are valid for one year only may be earned when campuses change 3-day/week classes to 2-day/week classes and when parking permit sales or parking spaces are reduced. These credits do not inflate vehicle ridership.

The Program has been specifically developed by college and university participants including college administrators and students to meet the characteristics of student travel and to assure that the Program goals are met.

District: Recommendation: The College Travel Reduction Program does not meet the Criteria.

Direct that a student trip reduction program be included in the Revised Regional Air Quality Strategy to address college and high school trip reductions based on a study of student travel characteristics, and Direct the Air Pollution control Officer to develop a program for implementation by the end of Fiscal Year 1992-93.

Direct the Air Pollution Control Officer to explore extending the current youth bus pass to college and university students and return to the Board with recommendations in Fiscal Year 1992-1993.

SANDAG: There are no requirements in the Criteria for college and university student travel. The College Travel Reduction Program is available for immediate implementation. The College Student Transit Subsidy Program included as part of the College Travel Reduction Program specifically provides funding to extend the current discounted youth fare bus pass to registered college and university students throughout the region. The Program also provides support for the programmed expansion of local campus bus service by the transit district or campus administration.

District: In many respects, the College Travel Reduction Program is just a copy of the Commute Travel Reduction Program with the words "employer" and "employees" changed to "college and university" and "student", except the Average Vehicle Ridership targets are less than the targets in the Commute Program and more credits are provided. As a result, comments regarding the Commute Travel Reduction Program apply equally to the College Travel Reduction Program.

The College Travel Reduction Program would provide several vehicle ridership credits not authorized in the Criteria. A credit would be provided for class rescheduling to shift commute trips and address congestion, but not reduce vehicle trips and emissions. An extra credit would be provided for parking management programs which would just double count the effect and thus reduce the amount of actual reductions in vehicle trips and emissions mandated by the Average Vehicle Ridership targets. Additional double counting incentive credits would be provided for implementing other unspecified new or enhanced Transportation Demand Management actions. College and Universities are major employers, also subject to the trip reduction requirements of the federal Clean Air Act. The credits would artificially inflate the college vehicle ridership and not comply with the federal requirements.

SANDAG: The College Program is patterned from the concepts that were developed for the Commute Travel Reduction Program. The College TDM Policy Subcommittee found these same concepts apply to college student travel as well. The AVR targets for the College Program are less than for the Commute Program because the College Program participation is 100%. So if 100% of the campuses participate to achieve a 1.5 AVR, the overall AVR for college student travel is also 1.5. The Commute Travel Program exempts employers of 10 or fewer employees from participation. As a result, 72.% of the work force must achieve a 1.7 AVR in order to achieve an AVR of 1.5 for the entire work force. If classes are rescheduled from 3 days/week to 2 days/week or from 5 days/week to 3 days/week trip reductions may occur.

As an incentive to take early action toward reducing trips, a campus may earn AVR credits when parking is removed or reduced (0.01 AVR for each 1% parking removed). The credits are for one year only. The Program provides that additional incentive credits may be recommended. Such recommendations would be subject to approval and amendment of the Ordinance.

District: The Student Transit/Shuttle Subsidy Program, proposed as a component of the College Travel Reduction Program, establishes an ambitious objective of increasing the percent of college and university students using transit from 3% in 1990 to 13% in 2000 and 23% in 2010. The costs of subsidizing student transit passes and campus shuttle services are projected to be \$2.6 million in 1992, \$7.8 million in 2000, and \$14.3 million in 2010, but transit expansion to accommodate the demand is not addressed. Furthermore, the Plan acknowledges that funding for the proposed subsidies is not currently available, and just suggests some potential revenue generating measures. The Plan says the TDM Board is to fund the subsidies initially, and the funding for the TDM Board is proposed to be from the \$4 vehicle registration levy as discussed under the Commute Travel Reduction Program. The revenues from the registration levy will not be enough to support demand this and the \$7 million cost of the Commute Travel Reduction Program

SANDAG: Unlike other travel markets, college travel occurs throughout the daytime and evening. Students are also more likely to live near the campus. Based on these factors and coupled with the difficulty of parking on most of our campuses, transit is generally more attractive to students than it is to employees. The Student Transit Subsidy Program is designed to assist the expansion of college transit service. This Program is similar to the Transit Improvement Program contained in the TCM Plan designed to increase transit service capacity for commute travel. One half of the recommended funding for the Subsidy Program provides support for additional transit capacity.

Implementation of the recommended TCM Financial Plan would fully fund this Program. The College Travel Reduction Program without the transit subsidy program can be funded through existing funds and implemented along with the Commute Travel Reduction Program. Implementation of the recommended TCM Financial Plan would fully fund this Program.

District: One option not explored to reduce the subsidy cost and transit cost to students would be to extend the \$21 youth (under 18 years of age) bus pass to college and university students. A lower cost would also encourage more participation and reduce motor vehicle trips.

Comments received by the District from colleges indicate that no consideration is given to the special transportation needs of students who may commute to part time jobs between classes. School Districts have indicated that student travel to high schools should also be covered by an education trip reduction regulation.

SANDAG: This is precisely what is proposed. Unfortunately, there is not sufficient funding through TransNet to cover college students along with youth and seniors.

This program was developed by the College TDM Policy Subcommittee consisting entirely of colleges and universities throughout the region. The Subcommittee is fully aware of the special and overall needs of students. It should be noted that many of the programs included in the College Travel Reduction Program will assist these students. Additionally, the AVR goal of this program does not require that every individual rideshare, even in the year 2000. So there is plenty of room for those with special conditions.

The College Travel Reduction Program may be applied to local schools as well as colleges and universities, if desired.

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NON-COMMUTE TRAVEL REDUCTION PROGRAM

District: The non-Commute Travel Reduction measure proposes a public education program so the public will voluntarily reduce one non-commute trip a day or its equivalent, such as linking or combining trips to reduce cold start emissions, at an annualized cost of \$5 million.

Since the Non-Commute Travel Reduction Program is only a public information and education program, it is not consistent with the Criteria which require a regulatory program.

Recommendation: Find the Non-Commute Travel Reduction Program does not meet the Criteria.

Direct that a program to address non-commute travel including airport, special event and shopping trips be included in the Regional Air Quality Strategy to be implemented by the end of Fiscal Year 1995-96.

SANDAG: The Criteria do not specifically outline requirements for a public information/educational program, but they do state that the plan shall include sufficient incentives to induce solo drivers into alternative transportation modes, and that market-based measures, which increase the cost of driving, may be suggested, but may not replace, regulatory measures.

The Non-Commute Travel Reduction Program represents an information, educational, and marketing-based approach. The potential for emissions reductions through educational/marketing approaches far exceeds the potential benefit available through the Commute Trip Reduction Program. However, SANDAG has recommended, in accordance with the Criteria for Market-based measures, that the Non-Commute Program supplement but not replace regulatory measures.

The Non-Commute Travel Program exceeds the APCD Criteria.

The items listed here are generally included under the indirect source control program required by the state in 1994. The Non-Commute Travel Reduction Program represents an early and initial implementation of the indirect source control program while the regional process for the development of indirect source control program progresses.

District: The SANDAG Plan does not mandate trip reductions for airport, special event and shopping, as specified in the Criteria. Furthermore, no currently available funding source is identified to cover the costs of the proposed public information campaign.

SANDAG: Airport, special event, shopping and educational trips fall under Indirect Source Controls. This type of travel will be addressed in the Indirect Source Review process identified in the TCM Plan. Implementation of the Indirect Source Control Program is not required until 1994.

The Non-Commute Travel Reduction Program can be used to focus on airports, special events and shopping trips until other measures are adopted. The Non-Commute Travel Reduction Program represents an early and initial step toward implementation of an indirect source control program.

Implementation of the TCM Financial Plan will fully fund the entire TCM Plan including this program.

GOODS MOVEMENT/TRUCK OPERATION PROGRAM

District: The Goods Movement measure intends to reduce truck related emissions through alternative truck delivery schedules, load consolidation, and scheduling during weekday off-peak hours. An Incident Management and Prevention Program to: reduce the number and severity of truck involved incidents; improve incident response and removal technologies for truck and auto accidents; and enhance the regional motorist information system to reduce congestion and delay is also proposed. The annualized cost is \$0.6 million. The program is to be administered by the TDM Board.

The Criteria required an evaluation of the feasibility and emission reduction of specified truck controls, which is not included in the SANDAG Plan. Accordingly, the Criteria are not met. The Incident Management and Prevention and Motorist Information System meet the Criteria.

Recommendation: Find the Incident Management and Prevention Program and Motorist Information System meet the Criteria and include them in the Regional Air Quality Strategy for future implementation upon funding. Find the remainder of the Goods Movement and Truck Operations Program does not meet the Criteria.

Direct that a Goods Movement and Truck Operation Program be included in the Regional Air Quality Strategy to be implemented by the end of the Fiscal Year 1993-94 based on a feasibility analysis conducted in consultation with the trucking industry.

SANDAG: The Goods Movement/Truck Operation Program was specifically developed by SANDAG's Regional Goods Movement/Trucking Policy Subcommittee following the thorough study and analysis of the statewide study and actions planned in other jurisdictions. The Program would be administered by the Program Administrator and Program Board.

Because many of the recommendations of the statewide group have been determined not to be feasible in other areas of the state or in other jurisdictions, the Goods Movement/Trucking Policy Subcommittee proceeded with the development of a program that could be implemented within current law in the San Diego region to assist toward the attainment of air quality standards. The resulting program provides the most effective way of reducing truck-related emissions under current law and provides a starting point until other programs can be developed.

To the extent legally available this measure meets the Criteria. The feasibility of this Program is demonstrated by its formulation by the trucking industry within existing law and with full knowledge of other studies and proposals statewide. The emissions reductions shown in the Plan are based primarily on estimated speed changes in the region resulting from the implementation of this measure. The Program can be funded by existing resources. District: The Transportation Control Measure Plan does not evaluate the feasibility and emission reductions of the truck operation control regulations specified in the Criteria. The feasibility analyses were required because, at the time the Criteria were being developed, there was a strong concern that all truck operation control regulations suggested by a statewide committee and included in the draft Criteria may not be feasible and appropriate in all areas. Instead, a Goods Movement/Truck Operation Program is proposed that establishes Off-Peak Truck Travel Targets, with reporting and plan requirements similar to the Commute and College Programs, to shift truck operations out of the peak period to reduce congestion. Contrary to the purpose of the program to shift travel out of the morning peak period, no travel reduction targets for the peak period are specified. Only targets for off-peak are specified which are so low they may not result in shifting any travel out of the peak to off-peak period. The targets range from 2.5% of the total truck travel during off-peak in 1991, to 35% in 2010. Normally, more than 50% of the daily truck travel is already during the off-peak period. Therefore, the targets established for the next twenty years are already being met.

The District has discussed this concern with SANDAG staff. According to the staff, the program is intended to shift truck travel out of the peak and the specified targets would reduce that much truck traffic out of the peak. The Technical Supplement can be interpreted in different ways. Therefore, a modification of the Technical Supplement would be needed to clarify the intent expressed by SANDAG staff. However, such a modification could pose problems for some industries. For example, construction trucking operations can not be shifted out of the peak to early morning hours due to restrictions on delivery and operational hours imposed by local agencies and Conditional Use/Major Use Permits to minimize noise. To shift them later during the day means all the deliveries have to be accomplished during a shorter period, requiring more trucks and equipment in some cases. Further, deliveries correspond to construction job schedules which many times are not controlled by the trucking industry.

SANDAG: The Goods Movement/Trucking Policy Subcommittee proceeded with its business fully aware of the strong concern that proposed statewide truck operation control regulations may not be feasible. The Subcommittee has recommended the tactics it viewed as being feasible.

Because trucks are operated by employers, it makes sense to have employers who operate trucks report on their truck operations at the same time they file their employee survey report. In fact, since employees operate the trucks, employer trip reduction programs for employees also affect truck operations.

The Program provides three primary ways to reduce truck travel during the peak: 1) reschedule the operation of the truck only during the off-peak, 2) consolidate truck loads thereby reducing the number of trucks operated in the peak, 3) convert truck operations to clean vehicles or clean fuels.

The Program is designed to reduce heavy and medium duty truck travel during the 6:30-8:30 a.m. peak period through consolidation of loads and through the

rescheduling of truck operations outside the peak period. Because truck operations generally occur throughout the day (8-12 hours daily) the Program requires operators to achieve minimum annual off-peak truck travel targets. The targets begin at 2.5% off-peak truck travel and increase to 35% by the year 2000. The Program would require operators to meet increasing annual targets for the number or percentage of trucks operated outside the peak period or, inversely, the maximum number of trucks that can be operated during the peak period.

APCD information about the off-peak truck travel is not accurate. Truck operations occur throughout the day and throughout the peak and off-peak periods.

Each of the barriers to further truck emission reductions are discussed at length in the Goods Movement Element of the TDM Plan. The construction industry represented on the Subcommittee agreed to the reduction schedule in the plan. Construction material operator do not generally have 100% of there truck out at one time.

Shifting the percentage of truck operations out of the peak will require that increased trucks operations be scheduled prior to or after the peak, loads to be consolidated or the use of alternative vehicles, clean vehicles or clean fuels to conduct truck operations.

Under the proposed regulations, construction employers and employees will also have to alter their commute travel behavior. These changes should be coordinated with necessary changes in trucking operations. Again, it is important to remember that the necessary changes mandates by the proposed regulations require that only a portion of the overall travel behavior change by the year 2000.

District: Freight consolidation, a key requirement of the Criteria for reducing trips and emissions, is only mentioned in the SANDAG Plan as an optional action for credit toward the Off-Peak Truck Travel Targets. Idling limitations specified in the Criteria are not even mentioned.

SANDAG: Freight consolidation is one of three primary actions that trucking operators may choose to implement to achieve the proposed trucking operation targets. It is important the operators have the opportunity and flexibility to choose the most appropriate actions for their company to achieve the program requirements.

The California legislature is currently considering approval of a bill the would limit heavy duty vehicle idling to 10 minutes. SANDAG believes that such a regulation would be more appropriate if implemented on a statewide basis.

District: This program was developed before the Criteria were released by the Board; it appears that no attempt was made to revisit the program to address the Criteria.

SANDAG: This statement is inaccurate. This Program was revised and updated through its inclusion in the Transportation Control Measures Plan by SANDAG. In the opinion of the Goods Movement/Trucking Policy Subcommittee the proposed Truck Operations Control Program has met the Criteria to the extent legally possible at this time. All other known controls and actions being considered in other portions of the state or nationwide were reviewed and considered by the Trucking Subcommittee for implementation in the San Diego region. These programs were considered inappropriate at this time and have generally been rejected nationwide to date.

TRANSIT IMPROVEMENTS AND EXPANSION

District: The Transit Improvement and Expansion measure is intended to attract more trips that would otherwise be made by motor vehicles. A 17% increase is proposed beyond that in the Regional Transportation Plan by the year 2000. Replacing the existing bus fleet with low emission vehicles as a part of the normal fleet replacement program is also proposed. The Annualized cost is \$23.9 million. Added to this by specific SANDAG Board action are plans to increase transit service in the I-15 corridor, and a demonstration program to test the feasibility of pricing the use of the I-15 HOV Lane by single occupant vehicles to raise funds to support increased transit in the I-15 corridor; however, no details of the planned transit expansion and the demonstration project are provided.

SANDAG: SANDAG staff, in response to Board direction, has met with the Urban Mass Transportation Administration (UMTA), CALTRANS and the Federal Highway Administration (FHWA) regarding the implementation of a congestion pricing and transit development demonstration project on the I-15 Expressway. UMTA and FHWA have expressed a high interest in supporting such a demonstration and UMTA has sent its program chief and a congestion pricing technical expert from England to San Diego to meet with SANDAG staff to determine the feasibility of the proposed demonstration project.

SANDAG is preparing and will submit an application to UMTA for financial and technical assistance to conduct a congestion pricing demonstration on the I-15 Expressway. SANDAG has also discussed with MTDB the potential for the development of light-rail equivalent bus service on the I-15 Expressway and corridor.

The purpose of the I-15 Expressway Congestion Pricing Transit Development Demonstration Project would be to sell the excess capacity on the I-15 Expressway to single-occupant vehicles and to use the revenues generated to directly fund light-rail equivalent service on the I-15 Expressway and corridor.

District: It is unclear if the expanded transit system will have enough capacity to meet the demand created by trip reduction programs, and funds for implementation are not available.

Recommendation: Find the Transit Improvement and Expansion Measure meets the Criteria and include the Measure in the Regional Air Quality Strategy for future implementation when funded.

Request SANDAG to provide by November 22, 1991, details of the planned transit expansion and demonstration project in the I-15 corridor, and additional analyses demonstrating that the proposed transit improvements would meet the demand generated by the trip reduction programs being proposed in the region.
SANDAG: The Transit Improvement Program is specifically sized to provide adequate capacity for the demand created by the Commute Travel Reduction Programs. Funding for the Program would require implementation of the TCM Financial Plan.

SANDAG will provide the APCB a copy of the I-15 Expressway demonstration project application as it is submitted for SANDAG action. Demonstration of the sufficient capacity to meet the demand for transit capacity resulting from the trip reduction programs is shown in the TCM Plan Technical Analysis and in this response.

District: It is claimed, but not demonstrated, that the proposed transit improvements would meet the demand generated by the Transportation Demand Management Program for commute and student travel. Between 70,000 and 80,000 commuters are projected to ride transit to and from work by the year 2000. Another 20,000 students are projected to ride transit by that year. That amounts to about 180,000 to 2000,000 transit trips a day by commuters and students to and from work and school. However, the proposed expanded transit system is expected to accommodate an additional 206,000 trips which will also include non-commute, non-student trips including shopping and other trips. When these trips are counted, the transit system may not have sufficient capacity to meet the commuter and student demand.

SANDAG: The Transit Improvement and Expansion Program is designed to provide capacity for demand generated by the Commute Travel Reduction Program. An additional and separate amount of \$7.2 million per year by the year 2000 is programmed for the College Travel Reduction Program to extend the current youth fare transit program to college students in the region, and to help support the expansion of transit services on and adjacent to college campuses.

APCD comments include the college transit demand as using up the Transit Expansion Program capacity. As noted above, support for college transit demand is separate from and included in the College Travel Reduction Program. Removal of the number of college student trips from APCD's calculation of the Transit Expansion Program capacity will free another 10% transit capacity.

Transit Expansion Program demand estimates are based upon input and analysis provided by MTDB and NCTD. If the actual ridership was to vary from the program estimates, on-going monitoring and evaluation would allow appropriate adjustment in capacity, if necessary.

The Vanpool Program also supplements the Transit Expansion Program by adding the capacity of up to 60,000 trips per day to the transit system for commute travel in suburban and low density areas. Potentially, the Vanpool Program can expand the available non-commute, non-student transit capacity from 46,000 to 106,000 trips per day. District: Also, no demonstration is provided in the Plan that funding will be available for the \$23.9 million annual cost of the proposed additional transit service expansion and low emission buses. The mitigation fee proposed in District Regulation XIV can provide funding to augment existing revenues.

SANDAG: Funding for the Transit Expansion Program would be provided through an increase in the motor vehicle registration/emission fees in accordance with the TCM financial plan.

Transit operators are concerned that mitigation fees would not provide a reliable source of funding to support the planned transit expansion, unless a specific amount of employer failure was designed into the Commute Travel Reduction Program. This would be contrary to the purpose of the TCM Plan itself.

VANPOOL PROGRAM

District: A Vanpool Program to purchase 2500 vans, each with a capacity of 7-15. passengers, is proposed to expand vanpools for commuting to work. Transit districts will administer the program by leasing vans to employers. The annualized cost is \$16.5 million which in unfunded.

Recommendation: Find there are no specific criteria addressing this measure and approve the proposed vanpool measure for inclusion in the Regional Air Quality Strategy for future implementation when funded.

SANDAG: The Vanpool Program is intended to provide a similar alternative travel mode capacity as the Transit Improvement and Expansion Program for the demand generated by the Commute Travel Reduction Program. The Vanpool Program offers a type of "mid-sized or suburban" transit service not normally provided by traditional transit operations.

The program is proposed to be administered by the transit districts which will provide the vehicles to participating employers based upon a required minimum number of rideshare participants. It is not suggested that the vehicles would be leased by the employer but that the employer would assist in forming and placing vanpools in support of the Commute Travel Reduction Program. This Program would also provide employers another option where traditional transit is not available.

Implementation of the TCM Financial Plan is recommended to pay for the entire TCM Plan including this Program.

District: There is no specific Criterion addressing vanpools. However vanpool programs are a necessary part of transportation control measures and must be pursued. SANDAG's Plan does not demonstrate that sufficient funding will be available for \$16.5 million annualized cost of the proposed program. The mitigation fee proposed in District Regulation XIV can provide funding to augment existing revenues.

SANDAG: SANDAG has recommended the implementation of the TCM Financial Plan to fund the entire TCM Plan.

Although the District proposed mitigation fees could augment existing and proposed revenues, there is concern that mitigation fees offer an insecure or potentially inconsistent base for the support of transit related services. Furthermore, the mitigation fee approach potentially compromises overall program goals as they may cause a reliance on trip reduction participant failures to fund desirable support programs.

HIGH OCCUPANCY VEHICLE LANES

District: New High Occupancy Vehicle (HOV) lanes are proposed to provide travel time savings and encourage ridesharing. About 67 miles of HOV lanes are proposed at an annualized cost of \$21.1 million.

The Criteria were not met, because the feasibility of providing high occupancy vehicle lanes in several major congested corridors by converting existing lanes is not analyzed. However, these deficiencies can be addresses by additional analysis in the future.

Recommendation: Accept the proposed high occupancy vehicle system plan for inclusion in the Revised Air Quality Strategy as an interim plan, pending completion of additional analyses and future implementation upon funding.

Request SANDAG to analyze potential impacts of reserving existing lanes for high occupancy vehicles on congested freeway segments, in coordination with the District and CALTRANS, and recommend a local policy by the end of Fiscal Year 1991-1992. Also by the end of Fiscal Year 1991-92, request SANDAG to provide an analysis demonstrating that the proposed arterial High Occupancy Vehicle lanes will provide significant time savings and convenience to lure ridesharers off the freeway.

SANDAG: Department of Transportation practice has not generally supported the conversion of existing mixed flow lanes to HOV lanes either in the past or present. To our knowledge no jurisdiction either in the State of California or nationally has converted existing mixed-flow lanes to HOV use. In view of this, SANDAG could either propose that existing mixed-flow lanes be converted to form a network of HOV lanes in the region or propose the construction of the HOV lanes according to current practice. Because the construction of HOV lanes was the most feasible when compared with current practice and because the construction approach did not exclude the possibility of conversion, SANDAG has proposed the construction option as the more feasible approach under current state practice. Significant change will have to take place to make conversion a viable option prior to the year 2000.

SANDAG staff also considered that discussion of the \$400 million cost of constructing this first phase of HOV lanes may lead to a change in public opinion about the desirability of converting existing mixed-flow lanes to HOV lanes. Without substantial movement in public opinion, the construction of HOV lanes is the most feasible method of supplying HOV facilities. The potential savings enjoyed by conversion to HOV lanes is tremendous and would reduce the amount of motor vehicle registration/emission fee increase required to support the later years of the TCM Plan.

District: Several additional congested freeways that lack right of way for adding lanes could be considered in the HOV program if some of the existing lanes are converted to HOV lanes. But, SANDAG asserts that it is current State Policy that high occupancy

vehicle lanes can only be provided through the addition of new lanes; that existing lanes cannot be reserved for the exclusive use of buses and carpools. However, CALTRANS testimony before the Air Resources Board indicates this is not official State policy; that the policy varies across the state, and can be changed based on local community desires.

SANDAG: Additional freeway segments have not been included in the TCM Plan because construction of the segments would not be completed by the year 2000. See comments above regarding conversion of existing lanes.

PARK AND RIDE FACILITIES

District: Park-and-Ride Facilities are proposed to support the use of car/van pooling for a portion of longer trips, thus reducing vehicle miles of travel. 4800 additional park-and-ride spaces are proposed at an annual cost of \$2.38 million.

The Park and Ride Facilities Measure does not indicate that park and ride lots would be collocated with other trip generating activities in order to eliminate extra trips to those activities, as specified in the Criteria. Further, park and ride lots for transit are not addressed. These minor deficiencies can be corrected. Funding is not identified.

SANDAG: The co-location of park-and-ride facilities is desirable. MTDB and CALTRANS are each attempting to add other services to park-and-ride facilities in order to reduce trips and for security purposes. Park-and-Ride facilities for Trolley and Commuter Rail operations are included within the development of those services. Implementation of the TCM Financial Plan is required to pay for the entire TCM Plan including this Program.

District: Recommendation: Approve the Park and Ride Facilities Measure for inclusion in the Air Quality Strategy as interim plan pending completion of additional analyses and future implementation upon funding.

Request SANDAG to coordinate with the District, CALTRANS and other appropriate agencies to prepare and recommend a transit oriented park-and-ride program, determine appropriate locations for park-and-ride facilities consistent with the Criteria, and specify an implementation program by the end of Fiscal 1992-1993.

SANDAG: The program should be implemented immediately. An implementation program will be recommended to begin with the FY93 SANDAG Overall Work Program.

District: The Plan claims that transit-related park-and-ride facilities are not included in the measure because they are included in the transit measure. However the transit measure does not mention park-and-ride facilities.

SANDAG: The development of the trolley and commuter rail systems includes the development of stations, parking and co-located services.

District: There is no demonstration that funding would be available for the \$2.38 million annualized costs. Inadequate information is provided in the Plan to develop an implementation program. A specific schedule is needed of which facilities will be constructed by which jurisdictions in what years.

SANDAG: Implementation of the TCM Financial Plan is required to pay for this Program.

BICYCLE FACILITIES

District: Bicycle Lanes and Facilities are proposed to encourage bicycling instead of the auto for shorter trips. Constructing 50 miles of bikeways per year and other facilities is suggested, at an annual cost of \$3.9 million. A variety of funding sources are mentioned but no specific sources of funds are identified.

The Criteria are met regarding bicycle facilities, but a specific schedule is needed of which facilities will be constructed by which jurisdiction by which years. Pedestrian access improvement measures specified in the Criteria are not addressed in the Plan. These deficiencies can be corrected. Funding is not demonstrated.

SANDAG: Implementation of the TCM Financial Plan is required to pay for the entire TDM Plan including this Program.

A detailed list and schedule of bicycle development projects is contained in the bicycle element of the approved 1991-1997 Regional Transportation Improvement Program. The draft 1993-1999 RTIP will be released by SANDAG for review and comment in the Fall of 1991. Pedestrian access is not addressed in the Bicycle Facilities Program. Pedestrian access will be addressed as part of Indirect Source Control Program.

District: Recommendation: Approve the proposed Bicycle Facilities Measure for inclusion in the Regional Air Quality Strategy as an interim plan pending completion of additional analyses and future implementation upon funding.

Request SANDAG to coordinate with the District and other appropriate jurisdictions to develop pedestrian access improvement measures as specified in the Criteria and specify an implementation program by the end of Fiscal Year 1992-1993.

SANDAG: Approve for immediate implementation. The development of pedestrian access improvement is part of the Indirect Source Control Program. A process is currently in place for the development of indirect source controls.

District: Adequate information is not provided in the Plan to develop an implementation program. A specific implementation is needed, and funding sources need to be addressed.

SANDAG: See 1991-1997 and 1993-1999 Regional Transportation Improvement Program.

TRAFFIC FLOW IMPROVEMENTS

District: A Traffic Flow Improvement Project to coordinate traffic signals, computerize ... signal control and increase traffic flow to reduce emissions caused by vehicle stops and starts is suggested. Constructing 3 additional traffic signal control facilities and connecting 2500 traffic signals is proposed at an annual cost of \$3.64 million.

The Criteria are met regarding computer optimizing traffic signals, but not regarding the required monitoring and audit procedures. Adequate information is not provided to specify an implementation program. These deficiencies can be corrected. The program is not funded.

SANDAG: The TCM Plan states that CALTRANS, the cities, and the County will biannually review and evaluate the implementation of this measure and report the progress to SANDAG. The evaluation will determine if the planned 10% increase in speed on the arterial and other roadways on which the signals operate on the computerized system is being achieved. Monitoring of roadway speed will be conducted as part of the CMP and Regional Growth Management Strategy for the regional arterial system. This information is available to the APCD. An implementation program will be developed upon approval of this tactic.

Implementation of the TCM Financial Plan will provide funding to pay for the entire TCM Plan including this Program.

District: Recommendation: Approve the proposed Traffic Flow Improvements measure for inclusion in the Regional Air Quality Strategy as an interim plan pending completion of additional analyses and future implementation upon funding.

Request SANDAG to coordinate with the District and other appropriate jurisdictions to develop monitoring and audit procedures as specified in the Criteria and specify an implementation program by the end of Fiscal Year 1992-93.

The Traffic Flow Improvements Measure proposes computer optimizing most of the traffic signals in the region by 2000. The Plan does not recommend monitoring and audit procedures for the District to track the effectiveness of transportation system management measures, as specified in the Criteria. Instead, the SANDAG Plan only identifies the agencies that should participate in the monitoring and auditing efforts

Inadequate information is provided in the Plan to develop an implementation program. A specific schedule is needed of which facilities will be constructed and how many signals will be interconnected by which jurisdiction in what years. There is no demonstration that funding would be available for the \$3.654 million annualized costs.

SANDAG: An implementation plan should be developed following approval of this Program. Implementation of the TCM Financial Plan is required to pay for the entire TCM Plan including this Program.

INDIRECT SOURCE CONTROL PROGRAM

District: The proposed Indirect Source Control Program Measure (Level 1) recommends only reviewing environmental documents under the California Environmental Quality Act. That is the current process, and clearly has not successfully mitigated regional transportation and air quality impacts. The Level 2 program, though not recommended, more nearly reflects the Criteria but is still substantially deficient. A regional process to incorporate indirect source review programs adopted by the Board into land use policies and programs reflecting a consensus of the Regional Growth Management Technical Committee, is required by the Criteria, but is not proposed.

Recommendation: Direct that an indirect source review program be included in the Regional Air Quality Strategy to be implemented and delegated to cities and the county according to the process reflected in the Criteria. Implementation is scheduled in late 1992 under a contract issued by the Air Pollution Control Board.

Restricting the Indirect Source Review Program to reviewing new projects under the California Environmental Quality Act is not consistent with the regional process specified in the Criteria. A specific regulatory approach to address air quality impacts of new development is required by the Criteria. The process addressed in the District Criteria is discussed in the SANDAG Plan, but not proposed, despite the fact that the process represents a consensus of the Regional Growth Management Technical Committee.

SANDAG: "Level one" was recommended in the TCM Plan on "indirect source control" because it represents the decisions made to date. At present, the Regional Growth Management Technical Committee is proposing that the cities and the County include air quality programs (or elements) in their general plans. The Committee agreed to this approach as a result of reviewing one of the draft versions of the APCD's Criteria report.

Apparently, the final version of the Criteria report contained something other than what the Committee agreed to recommend.

At any rate, the work program for the Regional Growth Management Strategy will, during 1992, result in the actions listed below. Taken together, these actions should reduce traffic congestion and might help improve air quality. These actions are:

- 1. The land use impact analysis program that is part of the Congestion Management Plan.
- 2. Common design criteria for new and redevelopment that improve accessibility for pedestrians, bicycles and transit.
- 3. Regional land use distribution actions implemented though local general plans that equalize accessibility to jobs and other activities for every subarea of the region.
- 4. Inclusion of air quality programs (or elements) in local general plans.

When the Growth Committee has completed its work on all four of these tasks, the results of this work may be published to help illustrate the approach the region is taking on this issue.

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LAND USE

District: No specific programs are proposed to address these elements. It is suggested that the Regional Growth Management Board will propose land use policies to address many of these elements, after studies are completed.

Additional time and effort are needed to develop new land use policies and reach a regional consensus. SANDAG did not address the Criteria in a comprehensive manner through integrating Indirect Source Review with other related work being accomplished in the region.

Recommendation: Direct that Land Use measures as specified in the Criteria be included for analysis as a part of the Indirect Source Review Program.

The primary studies to develop new land use development policies are being conducted by other agencies, supporting pedestrian oriented urban development forms accessible by transit. The City of San Diego has issued a contract to develop policies. The County has completed a study approaching this issue from a more operative perspective and is now in the preliminary implementation stage. The District also has a contract to develop an indirect source review program to address land use development policies to mitigate air quality impacts which will integrate and build on the current work being accomplished in the region.

SANDAG: Land use programs are included in the process for development of the Indirect Source Control Program. See response to Indirect Source Control Program above.

MARKET-BASED MEASURES

District: The Transportation Control Measure Plan proposes support for legislation implementing market-based measures including a vehicle registration and emission fee, a "polluting fuels" fee, and increased registration fee on more than one car.

District: Revenues from these fees are intended to provide necessary funding to implement the Transportation control Measure Plan.

District: However, for reasons discussed earlier, additional work is required regarding funding.

The Criteria specify that market-based measures that require legislation may be considered as long-term measures. It is inconsistent with the Criteria to rely on such measures as the primary funding source for the Plan subject which includes short term measures.

Recommendation: Direct that the proposed market based measures be included in the Regional Air Quality Strategy for future implementation subject to legislative authorization.

Direct the Air Pollution Control Officer to pursue a statewide agreement on the necessary legislation to implement market-based measures proposed to increase vehicle registration fees based on emissions, annual travel and congestion and recommend appropriate legislative action to the Board.

SANDAG: Implementation of the recommended TCM Plan would require legislation to provide funding to pay for the entire TCM Plan.

The motor vehicle registration + emissions fees are recommended in the TCM Financial Plan as the primary source of funding to pay for the entire TCM Plan. Sufficient funding is available to fund Level 1 of the TCM Plan. Additional funding is required for implementation of Levels 2 and 3 of the TCM Plan.

District: Market-based measures requiring legislative authority should be included in the Revised Air Quality Strategy for further evaluation, and implementation of appropriate measures should be pursued, but not in lieu of measures that can be implemented now to demonstrate annual progress required by the California Clean Air Act. Statewide consensus and analysis of market-based measures is necessary before legislative authority can be considered. There are efforts underway at the state level to evaluate market-based measures. After these evaluations are complete, appropriate legislative authority should be sought.

SANDAG: SANDAG has recommended regulatory controls for immediate implementation according to the Criteria and market-based measures as longer-term

measures requiring legislation. SANDAG has directed its staff to work with interested groups statewide to develop a consensus and appropriate legislation.

District: The SANDAG Plan also proposes incentives to promote Telecommuting and the use of "clean" fuels. However, the nature of these incentives is not discussed. It is not clear whether legislative authority is envisioned to create such incentives.

SANDAG: Legislative authority is envisioned to create these incentives statewide.

MONITORING AND AUDIT PROCEDURES

District: The Plan does not recommend procedures for monitoring regionwide average vehicle ridership, as specified in the Criteria. The Criteria require monitoring and audit procedures to effectively track regionwide average vehicle ridership necessary to determine _ compliance with the California Clean Air Act requirement for 1.5 persons per passenger vehicle during weekday commute hours. These procedures are also required by the State Air Resources Board guidance. No such procedures are addressed in the Plan. Request SANDAG to coordinate with the District and other appropriate jurisdictions to develop monitoring and audit procedures as specified in the Criteria by the end of Fiscal Year 1992-93.

SANDAG: SANDAG, in cooperation with CALTRANS, presently monitors regionwide average vehicle ridership on an annual basis. This process would continue. An implementation plan will be developed upon approval of the TCM Plan.

RESPONSES TO THE AIR POLLUTION CONTROL BOARD'S COMMENTS ON THE TRANSPORTATION CONTROL MEASURES PLAN (R-71)

Sen Diego Association of Governments BOARD OF DIRECTORS

November 22, 1991

AGENDA REPORT NO.: R-71

RESPONSES TO THE AIR POLLUTION CONTROL BOARD'S COMMENTS ON THE TRANSPORTATION CONTROL MEASURES PLAN

Introduction

On October 1, 1991, the Board of Supervisors, acting as the Air Pollution Control Board (APCB), reviewed the SANDAG Transportation Control Measures (TCM) Plan and agreed to return the Plan to SANDAG, requesting a response to the Air Pollution Control District's (APCD) comments.

The Air Quality Subcommittee appointed by the Board has been working on the basic policy issues related primarily to the trip reduction program included with the TCMs. A Progress Report from the Air Quality Subcommittee is included as part of the Chairman's Report on the Board's agenda.

Staff members of APCD and SANDAG worked on the other TCMs. This report contains the recommended areas of agreement between the SANDAG and APCD staffs regarding the TCM Plan.

Accordingly, it is my

RECOMMENDATION

that the staff be authorized to make the changes listed below, review them with the Air Quality Subcommittee, and submit them as potential amendments to the TCM Plan at the December, 1991 Board meeting.

Discussion

Staff has agreed to make the following changes and revisions to the TCM Plan based on discussions with APCD.

COLLEGE TRIP REDUCTION PROGRAM

1. Obtain existing Average Vehicle Ridership (AVR) data for colleges and universities.

- 2. Work with community college representatives to try to resolve any remaining issues and problems.
- 3. Obtain data on student travel behavior from 1985 (regional) travel behavior survey and other sources.
- 4. Work with APCD staff to try to meet federal clean air act requirements for employers with 100 or more employees within the structure of the College and University Traffic Element.

PARK AND RIDE PROGRAM

1. Add a discussion of the work program and schedule for a study of park and ride facilities that CALTRANS will undertake.

TRANSIT EXPANSION

- 1. Provide a more detailed discussion of plans, programs and schedules for transit improvements in the I-15 corridor.
- 2. Provide a more detailed description of the Level 1 implementation of the TCM Plan taking into account the revised schedules for LRT construction.
- 3. Provide a discussion of any funding limitations for year 2000 and year 2010 RTP transit services proposed.
- 4. Provide a cost comparison of operating standard transit coaches versus low cost vans for a typical park and ride express route.

VANPOOL PROGRAM

- 1. Update Level 1 of the TCM Plan to the level of vanpool activity which might be expected under constrained funding conditions.
- 2. Determine whether transit operators can acquire vans through normal UMTA funding procedures. Check with Orange County Transportation Authority and other agencies as necessary.
- 3. Determine constraints of Americans with Disabilities Act programs, if any, on transit operator implementation of vanpool programs.

HOV LANE PLAN

- 1. Evaluate conversion of existing lanes to HOV purposes including identification of facilities and estimated costs.
- 2. Identify facilities and schedule for HOV lanes on TransNet highway facilities.
- 3. Clarify funding priority for added HOV facilities.
- 4. Provide justification for arterial street HOV facilities included in HOV plan.

BICYCLE FACILITIES

- 1. Verify mileage of new facilities or other appropriate indicators of implementation for Level 1 of the TCM Plan, existing funding. Determine and document the historical increase in bicycle facility mileage.
- 2. Describe for the air quality TCM report the priority process for selecting bicycle facilities.
- 3. Describe process for improving pedestrian facilities.
- 4. Describe the process the bicycle facilities committee uses to address issues pertaining to bicycle/pedestrian/vehicle conflicts.
- 5. Document, for the air quality plan, the provision of bicycle facilities along adopted TransNet highway projects. These are identified in the 1990 RTP.

TRAFFIC FLOW IMPROVEMENTS

- 1. Prepare a work program, schedule and funding recommendations for the implementation and monitoring of the traffic flow improvements tactic.
- 2. Update Level 1 of the TCM Plan traffic flow improvements measure.

SPECIAL EVENTS

1. Prepare a work program and schedule for a study to evaluate the feasibility of reducing transportation access emissions for Lindbergh Field, the Stadium, regional shopping centers and other large trip attractions.

GOODS MOVEMENT

- 1. SANDAG and APCD staffs have reached agreement on issues pertaining to the GOODS MOVEMENT/TRUCKING ELEMENT.
- 2. Staff will meet with representatives of the Construction Industry Federation to attempt to resolve their concerns with the goods movement element.

OTHER

- 1. Prepare revised documentation based on Level 1 implementation of all Transportation Control Measures for input into the regional air quality strategy.
- 2. Describe monitoring program including costs and schedule for each of the TCM elements.
- 3. Provide an expanded discussion (from SANDAG Agenda Item R-63) of the use of existing discretionary funding to support TCMs.

KENNETH E. SULZER Executive Director

AUTHORIZING THE EXECUTIVE DIRECTOR TO SUBMIT AN APPLICATION TO THE URBAN MASS TRANSPORTATION ADMINISTRATION (UMTA) FOR A TECHNICAL ASSISTANCE GRANT TO CONDUCT A TRANSIT DEVELOPMENT AND CONGESTION PRICING DEMONSTRATION ON THE I-15 HOV EXPRESSWAY (Ad-25)

Sen Diego Association of Governments BOARD OF DIRECTORS

November 22, 1991

AGENDA REPORT No.: Ad-25

AUTHORIZING THE EXECUTIVE DIRECTOR TO SUBMIT AN APPLICATION TO THE URBAN MASS TRANSPORTATION ADMINISTRATION (UMTA) FOR A TECHNICAL ASSISTANCE GRANT TO CONDUCT A TRANSIT DEVELOPMENT AND CONGESTION PRICING DEMONSTRATION ON THE I-15 HOV EXPRESSWAY

Introduction

SANDAG, at its May 1991 meeting, approved Resolution 91-65 (Agenda Report RB-11 Supplement) amending the Transportation Control Measures Plan for Air Quality to include a demonstration project to raise funds for increased transit in the I-15 corridor by pricing the use of the I-15 HOV Expressway by single-occupant vehicles.

In carrying out the Board's direction, staff has discussed the proposed demonstration with CALTRANS, the Federal Highway Administration (FHWA), and the Urban Mass Transportation Administration (UMTA). In particular, the UMTA has expressed high interest in the project and has recommended SANDAG apply for a Technical Assistance Grant to conduct a national transit development/congestion pricing demonstration on the I-15 HOV Expressway. Therefore, it is my

RECOMMENDATION

that the Board of Directors adopt Resolution 92-15 authorizing the Executive Director to apply for and execute a Technical Assistance Grant from the Urban Mass Transportation Administration to conduct a Transit Development and Congestion Pricing Demonstration on the I-15 Expressway.

Discussion

The I-15 HOV Expressway Transit Development/Congestion Pricing Demonstration would include two phases. Phase One would be designed to demonstrate the implementation of low technology congestion pricing mechanisms such as the use of a pre-paid permit system to authorize the use of excess capacity on the I-15 HOV Expressway by single-occupant vehicles. Phase Two would be designed to demonstrate the implementation of high technology congestion pricing mechanisms such as automated high occupancy vehicle lane access through the application of Intelligent Vehicle Highway Systems (IVHS), Automatic Vehicle Identification (AVI), and Automated Toll Collection (ATC).

Each phase of the demonstration will include the study, monitoring and evaluation of pricing and operating alternatives to determine the optimum strategy for the improvement of freeway congestion, air quality, and revenue generation to support transit development along the corridor, and to promote equity among all travelers. This work will be conducted in cooperation with CALTRANS.

Net revenues generated by the demonstration project will be used to support the development of a light rail equivalent transit system along the I-15 corridor. Staff will coordinate with MTDB and NCTD to develop this improved transit capacity.

The implementation of high technology systems in Phase Two may also offer state-of-the-art transit applications including automated systems which support efficient transit operations and improved customer interface. These systems include Automated Vehicle Location (AVL) which may provide transit riders with real-time transit stop information regarding next bus arrival/ departure, and Automated Demand Responsive Dispatching Systems which allow express passengers to call transit vehicles off a fixed route (e.g., the freeway) to predetermined stops when riders are present.

The two-year \$350,000 grant will be distributed as follows: \$200,000 for Phase One, low technology demonstration; and \$150,000 for Phase Two, high technology demonstration. Additional funding may be required to support desired I-15 HOV Expressway access systems.

KENNETH E. SULZER Executive Director

AUTHORIZING THE EXECUTIVE DIRECTOR TO SUBMIT AN APPLICATION TO THE URBAN MASS TRANSPORTATION ADMINISTRATION FOR A TECHNICAL ASSISTANCE GRANT

WHEREAS, the San Diego Association of Governments is responsible for the development of the region's Transportation Control Measures Plan for Air Quality and the Congestion Management Program; and

WHEREAS, business and community leaders have expressed a strong preference for a market-based approach, rather than a regulatory approach, to improve the region's air quality and traffic flow; and

WHEREAS, the San Diego Association of Governments adopted the Transportation Control Measures Plan for Air Quality to include a demonstration project to raise funds for increased transit in the I-15 corridor by pricing the use of the I-15 HOV Expressway by single-occupant vehicles; and

WHEREAS, the Urban Mass Transportation Administration has expressed high interest in supporting a national transit development/congestion pricing demonstration on the I-15 HOV Expressway as a way of raising revenues for increased I-15 transit service; and

WHEREAS, the San Diego Association of Governments, a Regional Council of Governments, is authorized to file an application for an UMTA Technical Assistance grant; NOW THEREFORE

BE IT RESOLVED by the SANDAG Board of Directors that the Executive Director is authorized to apply for and execute a grant with the Urban Mass Transportation Administration to conduct a transit development/congestion pricing demonstration on the I-15 HOV Expressway; and

BE IT FURTHER RESOLVED that the SANDAG Board of Directors does hereby authorize the Executive Director to enter into a contract with the Urban Mass Transportation Administration in an amount not to exceed \$350,000.

PASSED AND ADOPTED this 22nd day of November, 1991.

TRANSPORTATION CONTROL MEASURES PLAN: PROPOSED AMENDMENTS (R-79)

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San Diego Association of Governments BOARD OF DIRECTORS

December 20, 1991

AGENDA REPORT NO.: R-79

TRANSPORTATION CONTROL MEASURES PLAN: PROPOSED AMENDMENTS

Introduction

On November 22, 1991, the Board authorized staff to make changes in the Transportation Control Measures Plan for Air Quality outlined in SANDAG Agenda Report R-71, to review them with the Air Quality Subcommittee, and to submit them as potential amendments to the Plan at the December, 1991 Board meeting.

The bulk of the changes recommended in this report reflect technical updates to the control measures or modifications based on the Air Quality Subcommittee's direction that transportation control measures program be developed within existing funding resources. Accordingly, it is my

RECOMMENDATION

that the Board of Directors approve the amendments listed below to the Transportation Control Measures Plan for Air Quality.

Discussion

The following potential amandments are based upon areas of agreement between the SANDAG and APCD staffs identified in R-71 (November, 1991). They were presented to the Air Quality Subcommittee on December 11.

- 1. College Program Level 1 of the College TDM and Transit Pass Subsidy Program provided \$0.6 million per year for the College TDM Program and \$7.6 million per year for the College Transit Subsidy Program. The amendment would establish a new Level 1 implementation program containing only the College TDM Program. The combined program would become Level 2.
- 2. Transit Expansion Level 1 implementation of the Transit Expansion tactic called for a 30% increase in bus miles of service by the year 2000 and a 200% increase in train miles of service for the same period. Based upon the revised schedules for light rail

construction, MTDB now estimates that there will be a 130% increase in train miles of service by 2000. The revised Level 1 will result in a very slight increase in ozone causing emissions (0.05%) compared to the existing measure. The amendment would update the train miles of service and modify the emissions impact.

- 3. Vanpool Program The Level 1 vanpool program assumed a subsidized program that would add about 80 vanpools per year and yield 625 additional vanpools by the year 2000. This program had an annual cost of \$4.1 million. An unsubsidized program could be expected to yield an estimated 10 vanpools per year or 80 additional vanpools by 2000. The emissions impact of an unsubsidized program is negligible. The amendment would modify the Level 1 implementation to 10 additional vanpools per year.
- 4. HOV Lane Plan The HOV lane element will be amended to include an expanded discussion of priorities and scheduling. It will also contain an APCD requested evaluation of the cost of converting existing lanes to HOV purposes. CALTRANS has estimated the cost of conversion to be \$600,000 per mile (two directions) versus an average of \$3.75 million per mile for added HOV lanes.
- 5. Bicycle Facilities Level 1 of the TCM Bicycle Facilities tactic will be amended to reflect the recent trend of 25 miles of bikeway construction per year rather than the 30 miles per year currently identified in Level 1.
- 6. Special Events The revised TCM Plan will contain a work program and schedule for a study to evaluate the feasibility of reducing transportation access emissions for Lindbergh Field, the Stadium, regional shopping centers, and other large trip attractions.
- 7. Traffic Flow Improvements Of the region's more than 2,000 signalized intersections, approximately 1,100 have been computer optimized. The revised Level 1 air quality tactic will reflect the expectation that under current trends, 1,800 of the anticipated 2,500 traffic signals will be optimized by the year 2000. It was previously estimated that 1,200 signalized intersections would be optimized under current trends by the end of this decade.
- 8. Other Other informational changes agreed to in Agenda Item R-71 will be incorporated into the TCM Plan.

ETH E. SUL

Executive Director

TRANSPORTATION CONTROL MEASURES PLAN: APPOINTMENT OF LOCAL SCHOOLS TRAVEL ADVISORY COMMITTEE (d)

San Diego Association of Governments BOARD OF DIRECTORS

January 24, 1992

AGENDA REPORT No.:

TRANSPORTATION CONTROL MEASURES PLAN: APPOINTMENT OF LOCAL SCHOOLS TRAVEL ADVISORY COMMITTEE

Introduction

In July 1989, SANDAG approved policy development guidelines for the Regional Trip Reduction Program as recommended by the Regional TDM Advisory Committee. The guidelines were a two step process for a comprehensive Regional Trip Reduction Program that would reduce traffic congestion and improve air quality.

The initial focus of the work program has been on the larger components of peak period travel including employment, college and university, and goods movement travel. The other components of the traffic stream include schools, commercial/retail, major activity centers, events and recreational travel.

SANDAG, at its April 1991 meeting, approved the trip reduction program containing the employment, college and university and goods movement elements as part of the Transportation Control Measures Plan for Air Quality. This action completes the initial step of the work program and begins the next.

One of the key elements of the schools travel work program will be an advisory committee which is intended as a forum among school administrators, teachers, employees, parents, students and members of the community. This committee will advise the Board on the development and implementation of the Local Schools Travel Element of the trip reduction program. With the assistance of the San Diego County Office of Education, staff is identifying key organizations to participate in this project.

It is my

RECOMMENDATION

that the following education officials, associations and organizations be appointed to the Local Schools Travel Advisory Committee:

Business/Community Representatives

Greater San Diego Area Chamber of Commerce (1) San Diego County League of Women Voters (1) Taxpayers Association Representative (1)

Labor Representatives

California School Employees Association (1) California Teachers Association (1)

Local School Board Representatives

California School Boards Association (2)

Parent Representatives

Parents-Teachers Associations (3)

San Diego County Board of Education

Board President (1)

San Diego County Office of Eduction

Superintendent of Schools (1)

School Districts Representatives (2 central, 2 north, 2 east, 2 south, 1 rural)

Bonsall Union (1) Cajon Valley Union (1) Grossmont Union High School District (1) San Diego Unified (1) San Marcos Union High School District (1) Solana Beach (1) South Bay Union (1) Sweetwater Union High School District (1)

Student Representatives

Grossmont Union (1) San Dieguito Union (1)

KENNETH E. SULZER Executive Director

Attachment

San Diego Association of Governments Local Schools Travel Advisory Committee Invited Committee Participants

Ms. Louise Arnold, President League of Women Voters 3620 30th Street San Diego, CA 92104

Dr. Cloyde M. Bernd, Superintendent San Marcos Unified School District 1290 San Marcos Boulevard San Marcos, CA 92069

Dr. William A. Berrier, Superintendent San Dieguito Union High School District 710 Encinitas Boulevard Encinitas, CA 92024

Mr. Ronald Bippert, Risk Manager San Diego Unified School District 4100 Normal Blvd. San Diego, CA 92103

Dr. Martin Block, President San Diego County Board of Education San Diego County Office of Education 6401 Linda Vista Road San Diego, CA 92111-7399

Mrs. Kathy Cates, President Ninth District PTA 4100 Normal Street, Bungalow 7 San Diego, CA 92104

CSBA Representative (2) California Schools Boards Association 820 Ethel Place National City, CA 92050

Dr. Raymond Edman, Superintendent Solana Beach School District 309 North Rios Avenue Solana Beach, CA 92075 Dr. Steven B Frates, President San Diego Taxpayers Association 427 C Street, Suite 308 San Diego, CA 92101

Mr. Frank Graham-Caso, Board Member California Teachers Association 11065 Briarcliff Drive San Diego, CA 92103

Ms. Andrea Korogi, Vice President Greater San Diego Chamber of Commerce 402 West Broadway, Suite 1000 San Diego, CA 92101

Mr. Frank Perez, President California Schools Boards Association 820 Ethel Place National City, CA 92050

Mr. Patrick I. Prezioso, Field Director California School Employees Association 6341 Nancy Ridge Drive San Diego, CA 92121

PTA Representative (2) Ninth District PTA 4100 Normal Street, Bungalow 7 San Diego, CA 92104

PTA Representative (3) Ninth District PTA 4100 Normal Street, Bungalow 7 San Diego, CA 92104

Dr. Terry K. Ryan, Superintendent Bonsall Union School District P.O. Box 3 Bonsall, CA 92003

Dr. Jo Ann Smith, Superintendent Grossmont Union High School District P.O. Box 1043 La Mesa, CA 91944 Student Representative (1) Grossmont Union High School District P.O. Box 1043 La Mesa, CA 91944

Student Representative (2) San Dieguito Union High School District 710 Encinitas Boulevard Encinitas, CA 92024

Dr. Harry C. Weinberg Superintendent of Schools San Diego County Office of Education 6401 Linda Vista Road San Diego, CA 92111-7399

Ex-Officio Participants and Organizations

Mr. Richard C. Corbin Consultant, Business Advisory Services San Diego County Office of Education 6401 Linda Vista Road San Diego, CA 92111

Mr. Paul Sidhu, Deputy Director Air Pollution control District 9150 Chesapeake Drive San Diego, CA 92123

California Department of Transportation Metropolitan Transit Development Board North County Transit District

SANDAG Staff

Mr. John L. Duve, Project Manager Transportation Demand Management & Air Quality San Diego Association of Governments Suite 800, First Interstate Plaza 401 B Street San Diego, CA 92101 (619) 595-5368

REPORT ON AIR QUALITY SUBCOMMITTEE ACTIONS (R-15)

San Diego Association of Governments BOARD OF DIRECTORS

February 28, 1992

AGENDA REPORT No.: R-15

REPORT ON AIR QUALITY SUBCOMMITTEE ACTIONS

In April 1991, SANDAG adopted the Transportation Control Measures Plan for Air Quality certifying that it meets the APCD criteria and the requirements of the California Clean Air Act, and submitted the Plan to the San Diego Air Pollution Control Board (County Board of Supervisors) for review and approval.

In September 1991, SANDAG established an Air Quality Subcommittee to meet with a subcommittee of the Air Pollution Control Board to work out any outstanding issues raised by the County concerning the trip reduction element of the SANDAG-adopted Transportation Control Measures Plan.

The SANDAG/APCB Air Quality Subcommittee has been meeting monthly since September 1991. On January 24, 1992, the Air Quality Subcommittee completed negotiations on the Memorandum of Agreement concerning changes to the Transportation Control Measures Plan (Attachment 1).

Supervisors Bailey and Bilbray, the APCB's representatives on the subcommittee, submitted written comments (Attachment 2) on the agreement. The subcommittee will meet to discuss these comments on February 26. If any additional changes to the agreement are recommended by the subcommittee, they will be submitted to the Board on February 28.

Staff suggests that the subcommittee's final recommended agreement be approved by both SANDAG and the Air Pollution Control Board before SANDAG considers amending the Transportation Control Measures Plan to be consistent with it.

At the last SANDAG Executive Committee meeting, questions were asked regarding the authority of the APCB to regulate parking either directly or indirectly through requiring the imposition of parking fees. Assemblyman Quackenbush has asked the Attorney General to answer a number of questions related to this issue which are outlined in the attached letter (Attachment 3). Also, the previous opinion of the Attorney General referred to in the letter is attached (Attachment 4).

Staff from the Assemblyman's office have indicated that they are looking for a quick response to this request because the Bay Area District may be considering adoption of regulations of this nature in July

July.

KENNETH E. SULZER Executive Director

Attachments

Draft Memorandum of Agreement Concerning the SANDAG/APCB Air Quality Subcommittee's Changes to the Transportation Control Measures Plan February 28, 1992

This memorandum outlines the changes to the SANDAG Transportation Control Measures Plan and Trip Reduction Program agreed upon as a result of the decisions made by the SANDAG/APCB Air Quality subcommittee.

The primary recommendations and proposals agreed to by the Air Quality subcommittee include:

Policy-Making/Implementation

- 1. The APCB should adopt the TCM Plan submitted by SANDAG as amended through the review process.
- 2. The preference of the APCB is to delegate to local or subregional entities by mutual consent, the authority to implement and monitor the trip reduction program.
- 3. The Local and Subregional entities shall have the option to either implement the trip reduction program or decline at which point APCD will retain the authority to implement the program.
- 4. The Local and Subregional entities will monitor performance of the trip reduction program and report the results to the APCB.
- 5. APCB monitors the TCM Plan and provides SANDAG and implementing agencies with comments. (Staff note: Monitoring is the responsibility of SANDAG, CALTRANS, the transit operators and the cities and County as well as APCB.)
- 6. The TCM Plan would be amended as needed using the same process (submittal by SANDAG to APCB).
7. This agreement shall not pre-empt any party or combination of parties from seeking legislative changes.

Funding the Plan

- 8. The public sector implementation costs of the trip reduction program should not exceed available resources. The APCB shall allocate the funds available pursuant to AB 2766 in proportionate shares in accordance with the Memorandum of Agreement. No other funding measures will be considered at this time other than the \$4 increase in vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax, and other state and federal funds made available for this purpose.
- 9. Market-Based financing may be the preferred means of funding other costs of the transportation control measures plan such as mass transit improvements and stable costs of operating beyond those which can be finance through available sources.

The Subcommittee recommends to SANDAG and the APCB to pursue the adoption of market-based legislation to enable the region to "leave the door open" to give preference to market based strategies before others to fulfill the law. Funding from the market based measures would be used (to pay for the other transportation control measures such as the) development of transit, vanpools, HOV systems, improved signalization, the purchase of older cars, repairs to meet (emissions) standards, clean fuel technology, etc.

10. Absent state and federal approvals for a market based approach, it may be more difficult for local jurisdictions to improve air quality. Legislators would be asked to authorize market-based measures. Alternatively, they may resist market-based measures, but provide funding to implement improved transit and transportation control measures.

Employer Requirements

- 11. All businesses, large and small, should participate in the trip reduction program in a phased approach. The requirements for employers with 10 or fewer employees will be addressed by a special work program.
- 12. Affected employers shall submit an annual report demonstrating that whether their trip reduction goals have been met or not.

- 13. If employers do not achieve their trip reduction goals, employers shall submit an annual statement/plan that accepts the mitigation measures outlined by APCD or an alternative plan at least as effective (in achieving the employer's next trip reduction goal) as the APCD mitigation measures and subject to approval by the program administrator of the responsible implementing agency.
- 14. An employer's plan may be developed and implemented in conjunction with a recognized Transportation Management Association (TMA) plan submitted on behalf of all members.
- 15. The requirements of the statement/plan should encourage employers to meet the program goals. Employers should not be penalized if they do not meet the program goal. Penalties may be imposed for nonparticipation or untrue statements. Employers should not otherwise pay a fee. Enforcement would be by way of selective audit.
- 16. If, after a reasonable period of time, a voluntary trip reduction program is not successful, stronger measures may be considered such as the use of mitigation fees to fulfill the mandate of the law.

Other amendments

- 17. The Subcommittee agrees to include the following amendments to the trip reduction program recommended by the Air Pollution Control Officer:
 - a. Employers with 100 or more employees would be brought first under the program (FY '93), followed by employers with 50-99 employees (FY '94), then employers with 25-49 employees (FY '95), employers with 11-24 employees (FY '96), and employers with 1-10 employees (FY '97, with level of participation to be determined by a work program).
 - b. Require basic actions of affected employers including the training of Employee Transportation Coordinators, guaranteed ride home program for non-solo commuters and bike racks/lockers.
 - c. The following shall be exempt from the requirements of the trip reduction program:
 - o Taxi cab drivers who lease their cabs;
 - o Low income households;
 - o Handicapped who must drive a specially equipped vehicle;

- o Employees required to use personal or fleet vehicles;
- o Business trips made directly from home to the field;
- o Real estate agents.
- d. College and university employees should be subject to the Commute Travel Program.
- e. The following heavy duty operations shall be exempt from the provisions of the Goods Movement/Truck Travel Reduction Program:
 - o Heavy duty vehicles engaged in the production of transit mixed concrete, including hauling of portland cement and cement treated base products;
 - Heavy duty vehicles engaged in the production of hot-mix asphaltic concrete, including hauling of asphaltic cement, cut back asphaltic concrete and asphaltic emulsions;
 - o Heavy duty vehicles engaged in the production of sized aggregate including oversized rock' sand' and base materials;
 - o Heavy duty vehicles that must operate during the peak period in order to conform with restrictions or requirements imposed on daily starting and/or ending times' or duration of operations as a result of any government issued permit conditions or regulations or executed labor' private or government contract provisions in force prior to the effective date of the transportation control measures program.
 - o Employees who can demonstrate to the implementing agency that the shifting of deliver schedules from peak to non-peak would cause a shift in commute patterns of employees from non-peak to peak hours.
 - o Trucks engaged exclusively in the transport of perishable products which require daytime delivery, or products which require daylight delivery for bona fide safety reasons.

Each of the recommended changes above have been included in the Revised Transportation Control Measures Plan and Regional Trip Reduction Program dated February 1992.



GEORGE F. BAILEY

SUPERVISOR, SECOND DISTRICT CHAIRMAN SAN DIE 00 COUNTY SOARD OF SUPERVISORS

February 14, 1992

Mayor Jack Doyle, Chairman and Subcommittee Members San Diego Association of Governments 401 B Street, Suite 800 San Diego, CA 92101

SANDAG/APCB AIR QUALITY SUBCOMMITTEE COMMENTS ON DRAFT MOA - 2/28/92

Attached are our comments on the draft MOA, dated February 28, 1992. The MOA does not cover all the subcommittee actions, and some actions are not accurately depicted. These actions need to be reflected in the MOA; off-peak credits and other credits, lower standard for the Lindbergh field, indirect source review, feasibility of the trip reduction program for community colleges, construction sites, and the two-year voluntary program for employers. Also, low income households, and handicapped who must drive a specially equipped vehicle are not exempt from all trip reduction requirements as the MOA states; they are exempt only from the parking charges.

The MOA also needs to indicate where consensus was not reached, although an action may have been preferred by a majority. We were opposed to retaining off-peak and other credits, and had serious reservations about exempting employers from fees to recover administrative cost. We also were concerned about not considering a mitigation fee at this time. The MOA as drafted leaves the impression that consensus has been reached on all the issues. Where there was not consensus, language acceptable to us has been added.

In order to facilitate review of the revisions in a timely manner, please have your staff provide our offices and the District with a change copy of the revised TCM Plan. As it is now, the entire document has to be reviewed and compared to the original document to determine what revisions have been made.

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GEORGE F. BAILEY Chairman Air Pollution Control Board

BRIAN P. BILBRAY Vice Chairman Air Pollution Control Board

COURTY ADMINUTRATION CENTER 1 500 PACIFIC HIGHWAY + ROOM 335 SAW 9200, CALIFORNIA 92101 1019) 831-5522 B. CALOW ON CE - 300 E. MAN STREET, SUITE 450 + B. CALON, CA 53030 + (619) 4414337

Draft Memorandum of Agreement Concerning the SANDAG/APCB Air Quality Subcommittee's Changes to the Transportation Control Measures Plan February 28, 1992

This memorandum outlines the changes to the SANDAG Transportation Control Measures Plan and Trip Reduction Program agreed upon as a result of the decisions made by the SANDAG/APCB Air Quality subcommittee.

The primary recommendations and proposals agreed to by the Air Quality subcommittee include;

Policy-Making/Implementation

- 1. The APCB should adopt the TCM Plan submitted by SANDAG as amended through the review process.
- 2. The preference of the APCB is to delegate to local or subregional entities by mutual consent, the authority to implement and monitor the trip reduction program.
- 3. The Local and Subregional entities shall have the option to either implement the trip reduction program or decline at which point APCD will retain the authority to implement the program.
- 4. The Local and Subregional entities will monitor performance of the trip reduction program and report the results to the APCB.
- 5. APCB monitors the TCM Plan and provides SANDAG and implementing agencies with comments. (Staff note: Monitoring is the responsibility of SANDAG, CALTRANS, the transit operators and the cities and County as well as APCB.)
- 6. The TCM Plan would be amended as needed using the same process (submittal by SANDAG to APCB).
- 7. This agreement shall not pre-empt any party or combination of parties from seeking legislative changes.

Funding the Plan

8. The public sector implementation costs of the trip reduction program should not exceed available resources. The APCB shall allocate the funds available pursuant to AB 2766 in proportionate shares in accordance with the Memorandum of Agreement. No other funding measures will be considered at this time other than the \$4 increase in vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax, and other state and federal funds made available for this purpose.

(There is no consensus on this action. It was preferred by a majority of the subcommittee, but opposed by the Air Pollution Control Board representatives who preferred including an option for implementing entities to supplement existing funding from other revenue sources if additional funding needs arise.)

Comment: Actions not reflecting consensus need to be so noted, even though preferred by a majority of the Subcommittee. If item 8 is modified as indicated below, it would be acceptable to the Air Pollution Control Board representatives. The last line regarding additional funding needs is an amendment agreed to by the Subcommittee at its last meeting.

- 8. The public sector implementation costs of the trip reduction program should not exceed available resources. The APCB shall allocate the funds available pursuant to AB 2766 in proportionate shares based on air quality benefit in accordance with the Memorandum of Agreement. No other funding Funding measures will be considered at this time other than are the \$4 increase in vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax, and other state and federal funds made available for this purpose. If additional funding needs arise, the implementing entities may supplement existing funding with other revenue sources.
- 9. Market-Based financing may be the preferred means of funding other costs of the transportation control measures plan such as mass transit improvements and stable costs of operating beyond those which can be financed through available sources.

The Subcommittee recommends to SANDAG and the APCB to pursue the adoption of market-based legislation to enable the region to "leave the door open" to give preference to market based strategies before others increase reliance on market-based measures to fulfill the law. Funding from the market based measures would be used (to pay for the other transportation control measures such as the) development of transit, vanpools, HOV systems, improved signalization, the purchase of older cars, repairs to meet (emissions) standards, clean fuel technology, etc.

Comment: The deleted language was included in a letter from the Greater San Diego Chamber of Commerce, but not addressed by the subcommittee.

10. Absent state and federal approvals for a market based approach, it may be more difficult for local jurisdictions to improve air quality. Legislators would be asked to authorize market-based measures. Alternatively, they may resist market-based measures, but provide funding to implement improved transit and transportation control measures.

Employer Requirements

- 11. All businesses, large and small, should participate in the trip reduction program in a phased approach. The requirements for employers with 10 or fewer employees will be addressed by a special work program.
- 12. Affected employers shall submit an annual report demonstrating that whether their trip reduction goals have been met or not.
- 13. If employers do not achieve their trip reduction goals, employers shall submit an annual statement/plan that accepts the mitigation measures outlined by APCD or an alternative plan at least as effective (in achieving the employer's next trip reduction

goal) as the APCD minigation measures and subject to approval by the program administrator of the responsible implementing agency.

- 14. An employer's plan may be developed and implemented in conjunction with a recognized Transportation Management Association (TMA) plan submitted on behalf of all members.
- 15. The requirements of the statement/plan should encourage employers to meet the program goals. Employers should not be penalized if they do not meet the program goal. Penalties may be imposed for nonparticipation or false statements. Employers should not otherwise pay a fee. Enforcement would be by way of selective audit.
- 16. If, after a reasonable period of time, a voluntary trip reduction program is not successful, stronger measures may be considered such as the use of mitigation fees to fulfill the mandate of the law.

(There is no consensus on this action. It was preferred by a majority of the subcommittee, but opposed by the Air Pollution Control Board representatives who favored retaining the option of mitigation fees if trip reduction goals were not being acheived after a specified period.)

Comment: Actions not reflecting consensus need to be so noted, even though even though preferred by a majority of the Subcommittee. If item 16 is modified as indicated below, it would be acceptable to the Air Pollution Control Board representatives.

16. If, after a reasonable period of time five years, a volumery the trip reduction program is not successful, stronger measures may be considered initiated by the Air Pollution Control Board and/or delegated implementing agencies, such as the use of mitigation fees, to fulfill the mandate of the law.

Other amendments

- 17. The Subcommittee agrees to include the following amendments to the trip reduction program. recommonded by the Air Pollution Control Officer.
 - a. Employers with 100 or more employees would be brought first under the program (FY 93), followed by employers with 50-99 employees (FY 94), then employers with 25-49 employees (FY 95), and employees with 11-24 employees (FY 96), and employees (FY 95), and employees (FY 97, with level of participation to be determined by a week program). These are minimum requirements. The first two years will be a voluntary program, except for employers with 100 or more employees who will have a one year voluntary program due to an accelerated compliance schedule for these employers under the Federal Clean Air Act.

Comment: The Committee did not address including employers with 1 - 10 employes into the program in FY 97; only that these employers would be subject to a work program as indicated in 11. The fact that the first two years would be voluntary was clearly understood. The one year voluntary period for employers of over 100 employes results from the federal deadline for this group. b. Require Basic actions of affected comployers including the such as training of Employee Transportation Coordinators, guaranteed ride home program for non-solo commuters, and bike racks/lockers, as recommended by the City of San Diego shall be required during the voluntary period.

Comment: This more accurately represents the action of the Subcommittee.

- c. The following shall be exempt from the requirements of the trip reduction program:
 - o Taxi cab drivers who lease their cabs;
 - o-Low income-households;
 - e-Handicupped who must drive a specially equipped vehicle;
 - e -- Employees required to use personal or ficet vehicles;
 - o Business trips made directly from home to the field;
 - o Real estate agents;
 - o Construction sites under a one year duration.

A study will be conducted to address trips by real estate agents and business trips made from home to field.

The following shall be exempt from the requirements for parking charges:

- o Low income households as determined by the District:
- o Handicapped who must drive a specially equipped vehicle:
- Employees required to use personal or fleet vehicles may be exempt on a case by case basis.

Comment: The provisions as indicated above were accepted by the committee. The detail was in a document and may not have been reflected on the tape of the meeting. Taxi cab drivers and real estate agents are not employees and thus, are not subject to the trip reduction program. Business trips made from home are not commute trips. Low income households, handicapped driving specially equipped vehicles and, if specifically exempted, those required to drive personal or fleet vehicles are subject to the program but not parking charges.

d. College and university employees should shall be subject to the Employer Commute Travel Program.

Comment: This is a more accurate statement of the Subcommittee action.

- The following heavy duty operations shall be exempt from the provisions of e. the Goods Movement/Truck Travel Reduction Program:
 - e Heavy duty vehicles engaged in the production of transit-mixed construct. including hauling of portland comoni and comoni treated base products;
 - o-Heavy duty vehicles engaged in the production of hot mix explains concrete, including hauling of asphaltic coment-out back asphaltic concrote and asphalaic emulsions;
 - e-Heavy duty vehicles engaged in the production of sized aggregate including oversized rock, sand, and base meterials;
 - o -- Heavy dury vehicles that must operate during the peak period in order to sopiorm with restrictions or requirements imposed on daily starting and/or ending times, or duration of operations as a result of any government issued permit conditions or regulations or executed labor' private or government contrast provisions in force prior to the effective date of the transportation control motesuros program.
 - e-Employees who can demonstrate to the implementing agency that the chifting of deliver schedules from peak to non-peak would gauge a shift in commute patterns of employees from non-peak to peak bours.
 - Trucks engaged exclusively in the transport of parishable products which require daytime delivery; or products which require daylight delivery for bona fide safety reasons.
 - -Each of the recommended changes above have been included in the Revised Transportation Control Measures Plan and Regional Trip Reduction Program dated February 1992.
- c. A work program will be included in the TCM Plan to address exemptions from the Goods Movement Program proposed by the Construction Industry Federation unless the issue can be resolved prior to submitting the revised Plan to the Air Pollution Control District.

Comment: The Subcommittee action are as added above. The specific changes requested by the CIF were in a letter not addressed by the Subcommittee.

f. Off-peak commute credits, and other credits in the College/University Element proposed by SANDAG shall be retained.

(There is no consensus on this action. It was preferred by a majority of the subcommittee, but opposed by the Air Pollution Control Board representatives who favored eliminating the credits.)

Comment: This was an action taken by the Subcommittee.

g. Lindbergh field shall be subject to the trip reduction standards for urban areas outside the center city zone.

Comment: This was an action taken by the Subcommittee

h. SANDAG will obtain existing travel data for colleges and university students, work with community colleges to resolve concerns with program feasibility, and develop a work element to complete these tasks if they can not be completed by the time the TCM plan is resubmitted to the Air Pollution Control Board. Any work element developed should be included in the TCM Plan.

Comment: This is an action taken by the Subcommittee.

i. Enhanced review of environmental documents will not serve as the indirect source control program.

Comment: This was a Subcommittee action. The logical implication is that Level 2 Implementation' contained in the TCM Plan would be implemented, however, Level 2 is not consistent with the Air Pollution Control Board Criteria specifying a process for developing an indirect source control program. The process was developed in consultation with construction and building business representatives. It was also reviewed and agreed to by the Growth Management Technical Committee. The state requires a process to be included in the Regional Air Quality Plan. Implementation by 1994 is required. Accordingly the Air Pollution Control Board representatives requests the Subcommittee approve the following language (Level 2 Implementation') contained in the TCM Plan revised to be consistent with the Criteria. The underlined language reflects the changes.

The Air Pollution Control District (APCD) has regulations to control emissions from stationary sources, such as power plants. The California Clean Air Act authorizes the APCD to regulate emissions from indirect sources, such as shopping centers.

The Act requires that the air district, in its plan, make provisions for the development of indirect source control programs.

IMPLEMENTATION STRATEGIES

To respond to the Clean Air Act, the Cities and the County in this region will prepare air quality programs or elements for their respective general plans. These additions to local general plans are important because they represent the integration of air quality considerations with development policies and requirements. The general plan program/elements will identify policies and design requirements for new development that will improve accessibility for pedestrians, transit, and bicycles. These policies and design criteria should make it as least as easy to travel by walking or other modes as it is to travel by car.

The Growth Management Technical Committee will be <u>working with the air district to</u> <u>develop and</u> recommending recommend a common set of development design policies later this year.

Air quality programs (or elements) are not currently required in the general plans of cities and counties. For Level 2 implementation the air district should work with the Growth Management Technical Committee, cities, interested parties, affected business' and agencies to prepare policies and design requirements for new development, that including but not limited to, will improve improving accessibility for pedestrians, transit, and bicycles. These policies and requirements, if approved by the Regional Planning and Growth Management Review Board, would be recommended for adoption to every city, the County, and the Port District. Once adopted, they would become part of the air quality programs/elements of local general plans. The process for developing the indirect source program will be:

- : The Air Pollution Control Board will adopt an indirect source control regulation developed in consultation with cities requiring evaluation and mitigation of individual land use development projects.
- A condition for delegating the regulation to local land use agencies in the cities. County, and Port District will be their adopting an air quality element to the local general plan or an air quality program that conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality elements be adopted as individual elements of general plans, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.
- : Air quality elements for general plans will be developed for implementation as a part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.
- Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.
- If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Ouality Strategy, deficiencies will be identified and transmitted to the Regional Growth Management Board.
- Indirect source review program development and implementation shall be completed by 1994.

Assembly

California Legislature

CHARLES W. QUACKENBUSH

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ATTACHMENT 3

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January 15, 1992

Honorable Dan Lungren Attorney General Department of Justice 1515 K Street, Suite 511 Sacramonto, CA 95814

Dear Attorney General Lungren:

Late last year, you provided me with a legal opinion regarding the authority of regional air quality management districts to impose parking fees on commuters. The release of that opinion has sparked a number of other questions that I would like to have addressed by your office.

At question is the authority of the air guality management district to use a "results oriented" process to achieve air quality standards wherein they fine employers who do not reach average vehicle ridership goals. Under current law, do regional air quality management districts have the authority to fine employers for the actions of their employees?

The air quality district has also announced its intention to waive average vehicle ridership goals if companies impose purking fees. Under current law, can a regional air quality management board coerce employers to charge for parking even though the districts lack authority to impose parking fees? Can district require employer based parking fees as part of the average - vehicle ridership goals?

Finally, air quality districts have the authority to levy fines of up to \$25,000 (Health and Safety code section 42400) for wilfully emitting air contaminants. Under this or any other section of law, can a regional air quality management district fine employers who fail to meet average vehicle ridership goals? Is there a limit to the level of the fines?

I appreciate your assistance in shedding light on these important issues that are critical to California business. If any questions should arise, plasse feel free to contact Gregory Butler in my office at (916) 445-8305.

Sincerely,

Chuck Quackenbush



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Presso an Passysted Paper

Dear MIS. Smookler:

We have received a request from Assemblyman Charles Quackenbush for an opmon of the Attorney General concerning average vehicle ridership goals. (See 74 Ops.Cal.Atty.Gen. 196 (1991).)

It is the policy of our office to solicit the views of all interested parties prior to issuing an optition. Your comments regarding the questions presented would be uppleciated. If possible, a response by March 16, 1992, would be most helpful, materials received after such date will nonetheless be considered. Views submitted will be treated by our office as public records under the Public Records Act. Please address your views to: Deputy Attorney General Anthony DaVigo, Post Office Box 944255, Sacramento, CA 94244-2550; telephone (910) 324-5167.

Sincerely.

DANIEL F. LUNGREN Attorney General

RODNEY O. LILYQUIST Acting Chief, Opinion Unit

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Legislative Counsel of California

BION M. GREGORY

Sacramento, California

ATTACHMENT 4

Geraid Rose Adams Maran L. Anderson Pour Artoine Charles C. Albi LINES J ANNOCC JOB J AVBIE Parasere P Bonsie Dans F. Bover-Vine Ener J Buron Germee L Byrd Erms Curer Ban E Dale Allfrey A. DeLand Career J Dewr Frances S Darbin Maureer S Dunn Sharon A Farter ann Falante Manney J. Foster City Fungr Pericia A Gales Ame D. Gress laha T. Hammao Borner 5 Her Carne Jordan Devic & Junior

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Deputy

February 6, 1991

Honorable Charles W. Quackenbush 2111 State Capitol

Air Pollution: Parking: Charges - #287

Dear Mr. Quackenbush:

CUESTICN

May a regional air pollution control district adopt and implement a charge for parking, or for any other transportation control purpose, pursuant to Section 40716 of the Health and Safety Code or any other provision of law?

OPINION

A regional air pollution control district may not adopt and implement a charge for parking, or for any other transportation control purpose, pursuant to Section 40716 of the Health and Safety Code or any other provision of law.

ANALYSIS

Regional air pollution control districts (hereafter regional districts) are formed pursuant to Chapter 5 (commencing with Section 40300) of Part 3 of Division 26 of the Health and Safety Code.¹

Air pollution control districts and air quality management districts (hereafter districts), including regional districts, may adopt and implement regulations to "reduce or mitigate emissions from indirect and areawide sources of air

¹ All section references are to the Health and Safety Code.

Honorable Charles W. Quackenbush - p. 2 - #287

pollution," and to "[e]ncourage or require the use of ridesharing, vanpooling, flexible work hours, or other measures which reduce the number or length of vehicle trips" (paras. (1) and (2), subd. (a), Sec. 40716).

In addition, a district is required to "adopt, implement, and enforce transportation control measures for the attainment of state or federal ambient air quality standards" (subd. (a), Sec. 40717). For those purposes, "transportation measures" means "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions" (subd. (g), Sec. 40717).

Section 40716 does not specify whether the regulations that may be adopted and implemented to reduce or mitigate emissions may include a charge for parking or other transportation control purposes. Section 40717 also does not specify whether such a charge would be an applicable transportation control measure.

A district is a body corporate and politic and a public agency of the state (Sec. 40700). However, districts which are created for a specific purpose have only the powers expressly or impliedly given by statute, and do not have the police powers belonging to cities and other municipal bodies exercising general local governmental functions (see <u>Crawford v. Imperial Irrigation</u> <u>Dist.</u>, 200 Cal. 318, 325-334 (irrigation district); and see <u>In re</u> <u>Werner</u>, 129 Cal. 567, 572-574 (sanitary district)).

A regional district is required to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards and to enforce all applicable provisions of state and federal law (Sec. 40001). The districts are required to do those acts that may be necessary or proper to execute the powers and duties granted to, and imposed upon, the districts by statute (Sec. 40702).

Thus, a regional district is created for the specific purpose of achieving and maintaining the state and federal ambient air quality standards, and has only the powers expressly or impliedly given by statute.

The Legislature has expressly set forth the authority of regional districts to impose fees, for example, permit fees to cover the cost of district programs related to stationary sources (Sec. 42311) and fees for reviewing, monitoring, and enforcing plans (Sec. 41512.5).

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Honorable Charles W. Quackenbush - p. 3 - #287

However, there is no specific grant of authority for a regional district to impose parking charges or any other related type of charge directed specifically at the reduction of automobile emissions as a transportation control measure.²

Thus, in order to find in Section 40716 the authority to impose a parking charge or other charge for transportation control purposes, it would be necessary to go beyond the express terms of the statute and imply that authority as a measure to reduce or mitigate emissions from indirect sources of air pollution. "Parking restrictions to discourage automobile commuting have been recommended by the Environmental Protection Agency to implement the Clean Air Amendments of 1970" (People v. Housman, 163 Cal. App. 3d Supp. 43, 51). However, the measures considered have generally been limited to restrictions of onstreet parking (Id., pp. 50-51).

Thus, there is no basis for a construction of Section 40716 which would imply the authority of a regional district to impose charges for parking. For the same reason, in our opinion, neither Section 40717 nor any other provision applicable to regional districts may be construed to imply that authority.

In conclusion, it is our opinion that a regional district may not adopt and implement a charge for parking, or for any other transportation control purpose, pursuant to Section 40716 or any other provision of law.

Very truly yours,

Bion M. Gregory Legislative Counsel

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Ben E. Dale Deputy Legislative Counsel

BED:kg

² Section 44223 authorizes imposition by a district of a motor vehicle registration fee of up to \$2 which would be used to reduce air pollution from motor vehicles and for related purposes necessary to implement the California Clean Air Act of 1988 (Sec. 44229; Ch. 1705, Stats. 1990).

REPORT ON AIR QUALITY SUBCOMMITTEE ACTIONS (R-15 REVISED)

San Diego Association of Governments BOARD OF DIRECTORS

February 28, 1992

AGENDA REPORT No.: R-15 (Revised)

REPORT ON AIR QUALITY SUBCOMMITTEE ACTIONS

Introduction

In April 1991, SANDAG adopted the Transportation Control Measures Plan for Air Quality certifying that it meets the APCD criteria and the requirements of the California Clean Air Act, and submitted the Plan to the San Diego Air Pollution Control Board (County Board of Supervisors) for review and approval.

In September 1991, SANDAG established an Air Quality Subcommittee to meet with a subcommittee of the Air Pollution Control Board to work out any outstanding issues raised by the County concerning the trip reduction element of the SANDAG-adopted Transportation Control Measures Plan.

The SANDAG/APCB Air Quality Subcommittee has been meeting monthly since September 1991.

On February 26, 1992, the Air Quality Subcommittee met to discuss comments on the Agreement submitted by Supervisors Bailey and Bilbray, the APCB's representatives on the subcommittee. The revised Agreement is attached to this report.

It is my

RECOMMENDATION

that the Board of Directors approve the Agreement (Attachment) and transmit it to the Board of Supervisors acting as the Air Pollution Control Board (APCB).

SANDAG should request the APCB to recommend that SANDAG amend the Transportation Control Measures Plan based on the Agreement.

Discussion

The subcommittee has not reached consensus on funding the Plan (item 8), the use of credits for offpeak travel (item 17f), and on an indirect source control program. The subcommittee has agreed to meet again to work on these issues.

KENNETH E. SULZER

Executive Director

Attachment

DRAFT

MEMORANDUM OF AGREEMENT BETWEEN THE SAN DIEGO ASSOCIATION OF GOVERNMENTS (SANDAG) AND THE SAN DIEGO AIR POLLUTION CONTROL BOARD (APCB) CONCERNING CHANGES TO SANDAG'S TRANSPORTATION CONTROL MEASURES PLAN

(Revised based on Air Quality Subcommittee actions of February 26, 1992)

This memorandum outlines the changes to the SANDAG Transportation Control Measures Plan and Trip Reduction Program agreed upon as a result of the decisions made by the SANDAG/APCB Air Quality subcommittee.

The primary recommendations and proposals agreed to by the Air Quality subcommittee include:

Policy-Making/Implementation

- 1. The APCB should adopt the TCM Plan submitted by SANDAG as amended through the review process.
- 2. The preference of the APCB is to delegate to local or subregional entities by mutual consent, the authority to implement and monitor the trip reduction program.
- 3. The Local and Subregional entities shall have the option to either implement the trip reduction program or decline at which point APCD will retain the authority to implement the (trip reduction) program.
- 4. The Local and Subregional entities will monitor performance of the trip reduction program and report the results to the APCB.
- 5. APCB monitors the TCM Plan and provides SANDAG and implementing agencies with comments. (Staff note: Monitoring is the responsibility of SANDAG, CALTRANS, the transit operators and the cities and County as well as APCB.)
- 6. The TCM Plan would be amended as needed using the same process (submittal by SANDAG to APCB).
- 7. This agreement shall not pre-empt any party or combination of parties from seeking legislative changes.

Funding the Plan

8. The public sector implementation costs of the trip reduction program should not exceed available resources. The APCB shall allocate the funds available pursuant to AB 2766 in proportionate shares in accordance with the Memorandum of Agreement (between SANDAG and the APCB concerning use of AB 2766 funds, dated June 1990). No other funding measures will be considered at this time other than the \$4 increase in vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax, and other state and federal funds made available for this purpose

Note: There is not consensus on this action. It was preferred by a majority of the subcommittee, but opposed by the Air Pollution Control Board representatives who prefer including an option for implementing entities to supplement existing funding from other revenue sources if additional needs arise.

9. Market-Based financing may be the preferred means of funding other costs of the transportation control measures plan such as mass transit improvements and stable costs of operating beyond those which can be financed through available sources.

The Subcommittee recommends to SANDAG and the APCB to pursue the adoption of market-based legislation to enable the region to increase reliance on market-based measures to fulfill the law.

10. Absent state and federal approvals for a market-based approach, it may be more difficult for local jurisdictions to improve air quality. Legislators would be asked to authorize market-based measures. Alternatively, they may resist market-based measures, but provide funding to implement improved transit and transportation control measures.

Employer Requirements

- 11. All businesses, large and small, should participate in the trip reduction program in a phased approach. The requirements for employers with 10 or fewer employees will be addressed by a special work program.
- 12. Affected employers shall submit an annual report demonstrating whether their trip reduction goals have been met or not.
- 13. If employers do not achieve their trip reduction targets, employers shall submit an annual statement/plan that accepts the mitigation measures outlined by the APCD or an alternative statement/plan designed to be at least as effective (in achieving the employer's next annual trip reduction target) as the APCD mitigation measures and subject to approval by the program administrator of the responsible implementing agency.

- 14. An employer's statement/plan may be developed and implemented in conjunction with a recognized Transportation Management Association (TMA) plan submitted on behalf of all members.
- 15. The requirements of the statement/plan should encourage employers to meet the program goals. Employers should not be penalized if they do not meet the annual trip reduction program targets.
- 16. If, after a reasonable period of time, a voluntary trip reduction program is not successful, other measures may be considered to fulfill the mandate of the law.

Other Amendments

- 17. The Subcommittee agrees to include the following amendments to the trip reduction program.
 - a. Employers with 100 or more employees would be brought first under the program (FY '93), followed by employers with 50-99 employees (FY '94), then employers with 25-49 employees (FY '95), and employers with 11-24 employees (FY '96).

The first two years of the (trip reduction) program will be a voluntary program (requiring no reports or plans) except for employers with 100 or more employees who will have a one year voluntary program due to the accelerated compliance schedule for these employers under the federal Clean Air Act. These are minimum requirements.

- b. Deleted
- c. The following shall be exempt from the requirements of the trip reduction program:
 - o Real estate agents;
 - o Taxi cab drivers who lease their cabs;
 - o Business trips made directly from home to the field;
 - o Construction sites under a one year duration.

A study will be conducted to address trips by real estate agents and business trips made from home to the field.

- d. College and university employees shall be subject to the Commute Travel Reduction Program.
- e. A work program will be included in the TCM Plan to address exemptions from the Goods Movement Travel Reduction Program proposed by the Construction Industry Federation.

f. Off-peak commute credits, and other credits in the College Travel Reduction Program shall be retained.

Note: There is not consensus on this action. It was preferred by a majority of the subcommittee, but opposed by the Air Pollution Control Board representatives who favored eliminating the credits.

g. Lindbergh field shall be subject to the trip reduction standards for the urban areas outside the center city planning area.

Indirect Source Controls Programs

The Subcommittee has agreed to meet to discuss the Indirect Source Controls element of the Transportation Control Measures Plan.

LETTER FROM GEORGE BAILEY TO THE AIR POLLUTION CONTROL BOARD REGARDING NEGOTIATIONS WITH SANDAG



GEORGE F. BAILEY

SUPERVISOR SECOND DISTRICT CHAIRMAN SAN DIEGO COUNTY BOARD OF SUPERVISORS

TO: AIR POLLUTION CONTROL BOARD

SUBJECT: NEGOTIATIONS WITH SANDAG

SUMMARY:

Issue

Should the Air Pollution Control Board receive and review the Memorandum of Agreement (MOA) developed by the APCB/SANDAG subcommittee concerning changes to SANDAG's Transportation Control Measures Plan as revised by the SANDAG Board of Directors on February 28,1992?

Recommendation

CHAIRMAN BAILEY AND VICE-CHAIRMAN BILBRAY

- 1. Receive and review the proposed MOA from SANDAG.
- 2. Direct the Board subcommittee to send a letter urging the SANDAG Board of Directors to: consider the additional points made in the proposed MOA reflected in Attachment 1; and, adopt a revised Transportation Control Measures Plan at its March meeting. The additional points in Attachment 1 are underlined and related comments are bold.

BACKGROUND:

State law provides that the Air Pollution Control Board, in consultation with SANDAG, shall develop and adopt criteria under which SANDAG is to develop Transportation Control Measures. The Board adopted the Criteria on March 12, 1991. Upon receipt of the Plan submitted by SANDAG, the Air Pollution Control Board is to review and approve the Plan if it meets the Criteria. If the Criteria is not met, the Board is to develop and adopt an alternative plan.

On October 1, 1991, the Air Pollution Control Board considered the SANDAG Transportation Control Measures Plan along with an extensive analysis for consistency with the Criteria. A substantial portion of the Plan was recommended for adoption into the Revised Air Quality Strategy; however, there were significant inconsistencies and related recommendations.

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Rather than amend the Plan, the Board referred it back to SANDAG for further consideration. Since then, we have been meeting with a subcommittee of the SANDAG Board of Directors on a monthly basis. With some exceptions, the APCB/SANDAG subcommittee agreed upon a framework which was approved by the SANDAG Board of Directors at their February 28 meeting.

The SANDAG Board of Directors wants the Air Pollution Control Board to approve the framework in terms of an MOA before the March 27 SANDAG Board of Directors meeting; however, according to County Counsel, the Air Pollution Control Board can not agree to changing the Plan outside the noticed public hearing process (Attachment 3). Therefore, we recommend the Board urge the SANDAG Board of Directors to include the additional items reflected in Attachment 1 and approve the Plan at its March meeting. The draft letter from the Air Pollution Control Board subcommittee is attached for your review (Attachment 2).

George F. Bailey Chairman Air Pollution Control Board

an P. Bilbrav

Vice Chairman Air Pollution Control Board

<u>Draft</u>

MEMORANDUM OF AGREEMENT BETWEEN THE SAN DIEGO ASSOCIATION OF GOVERNMENTS (SANDAG) AND THE SAN DIEGO AIR POLLUTION CONTROL BOARD (APCB) CONCERNING CHANGES TO SANDAG'S TRANSPORTATION CONTROL MEASURES PLAN

February 28, 1992 (Revised based on SANDAG actions of February 28, 1992)

This memorandum outlines the changes to the SANDAG Transportation Control Measures Plan and Trip Reduction Program agreed upon as a result of the decisions made by the SANDAG/APCB Air Quality subcommittee and actions of the SANDAG Board of Directors.

The primary recommendations and proposals agreed to by the Air Quality subcommittee include:

Policy-Making/Implementation

- 1. The APCB should adopt the TCM Plan submitted by SANDAG as amended through the review process.
- 2. The preference of the APCB is to delegate to local or subregional entities by mutual consent, the authority to implement and monitor the trip reduction program.
- 3. The Local and Subregional entities shall have the option to either implement the trip reduction program or decline at which point APCD will retain the authority to implement the (trip reduction) program.
- 4. The Local and Subregional entities will monitor performance of the trip reduction program and report the results to the APCB.
- 5. APCB monitors the TCM Plan and provides SANDAG and implementing agencies with comments. (Staff note: Monitoring is the responsibility of SANDAG, CALTRANS, the transit operators and the cities and County as well as APCB.)
- 6. The TCM Plan would be amended as needed using the same process (submittal by SANDAG to APCB).
- 7. This agreement shall not pre-empt any party or combination of parties from seeking legislative changes.

Funding the Plan

8. The public sector implementation costs of the trip reduction program should not exceed available resources. The APCB shall allocate the funds available pursuant to AB 2766 in proportionate shares in accordance with the Memorandum of Agreement (between SANDAG and the APCB concerning use of AB 2766 funds, dated June 1990). No other funding measures will be considered at this time other than the S4 increase in vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax, and other state and federal funds made available for this purpose.

Note: There is not consensus on this action. It was preferred by a majority of the subcommittee, but opposed by the Air Pollution Control Board representatives who preferred including an option for implementing entities to supplement existing funding from other revenue sources if additional funding needs arise, and the provision regarding proportionate shares.

Comment: The change simply points out that there was an additional concern.

9. Market-Based financing may be the preferred means of funding other costs of the transportation control measures plan such as mass transit improvements and stable costs of operating beyond those which can be financed through available sources.

The Subcommittee recommends to SANDAG and the APCB to pursue the adoption of market-based legislation to enable the region to increase reliance on market-based measures to fulfill the law.

10. Absent state and federal approvals for a market based approach, it may be more difficult for local jurisdictions to improve air quality. Legislators would be asked to authorize market-based measures. Alternatively, they may resist market-based measures, but provide funding to implement improved transit and transportation control measures.

Employer Requirements

- 11. All businesses, large and small, should participate in the trip reduction program in a phased approach. The requirements for employers with 10 or fewer employees will be addressed by a special work program.
- 12. Affected employers shall submit an annual report demonstrating whether their trip reduction goals have been met or not.
- 13. If employers do not achieve their trip reduction targets, employers shall submit an annual statement/plan that accepts the mitigation measures outlined by the APCD or an alternative plan designed to be at least as effective (in achieving the employer's next trip reduction target) as the APCD mitigation measures and subject to approval by the program administrator of the responsible implementing agency.

- 14. An employer's statement/plan may be developed and implemented in conjunction with a recognized Transportation Management Association (TMA) plan submitted on behalf of all members.
- 15. The requirements of the statement/plan should encourage employers to meet the program goals. Employers should not be penalized if they do not meet the annual trip reduction program targets.
- 16. If, after a reasonable period of time, a voluntary trip reduction program is not successful, other measures may be considered to fulfill the mandate of the law.

Other amendments

- 17. The Subcommittee agrees to include the following amendments to the trip reduction program.
 - a. Employers with 100 or more employees would be brought first under the program (FY '93), followed by employers with 50-99 employees (FY '94), then employers with 25-49 employees (FY '95), and employers with 11-24 employees (FY '96).

The first two years of the (trip reduction) program will be a voluntary program (requiring TCM reports, no plans) except for employers with 100 or more employees who will have a one year voluntary program due to an accelerated compliance schedule for these employers under the Federal Clean Air Act. These are minimum requirements.

- b. Deleted.
- c. The following shall be exempt from the requirements of the trip reduction program:
 - o Business trips made directly from home to the field;
 - o Construction sites under a one year duration.
 - o Handicapped who must drive a specially equipped vehicle;
 - o Real estate agents;
 - o Taxi cab drivers who lease their cabs;

A study will be conducted to address trips by real estate agents, business trips made from home to the field and employer credits for the reduction of vehicle miles traveled. Exempt employees will not be included in the determination of employer size of trip reduction program calculations.

- d. College and university employees shall be subject to the Commute Travel Reduction Program.
- e. A work program will be included in the TCM Plan to address exemptions from the Goods Movement Travel Reduction Program proposed by the Construction Industry Federation. These proposed exemptions include:

- o Heavy duty vehicles engaged in the production of transit mixed concrete, including hauling of portland cement and cement treated base products;
- Heavy duty vehicles engaged in the production of hot-mixed concrete, including hauling of asphaltic cement, cut back asphaltic concrete and asphaltic emulsions;
- Heavy duty vehicles engaged in the production of sized aggregate including oversized rock, sand, and base materials;
- Heavy duty vehicles that must operate during the peak period in order to conform with restrictions or requirements imposed on daily starting and/or ending times, or duration of operations as a result of any government issued permit conditions or regulations or executed labor, private or government contract provisions in force prior to the effective date of the transportation control measures program.
- o Employees who can demonstrate to the implementing agency that the shifting of delivery schedules from peak to non-peak would cause a shift in commute patterns of employees from non-peak to peak hours.
- o Trucks engaged exclusively in the transport of perishable products which require daytime delivery, or products which require daylight delivery for bona fide safety reasons.
- f. Off-peak commute credits, and other credits in the College/Travel Reduction Program, shall be retained.

Note: There is not consensus on this action. It was preferred by a majority of the subcommittee, but opposed by the Air Pollution Control Board representatives who favored eliminating the credits <u>because no trip</u>, vehicle miles travelled or emission reductions are achieved. Compliance with federal requirements will not be demonstrated.

Comment: This change simply states the basis for eliminating credits.

- g. Lindbergh field shall be subject to the trip reduction standards for the urban areas outside the center city planning area.
- h. SANDAG will obtain existing travel data for colleges and university students. work with community colleges to resolve concerns with program feasibility, and develop a work element to complete these tasks if they can not be completed by the time the TCM plan is resubmitted to the Air Pollution Control Board. Any work element developed should be included in the TCM Plan.

Comment: This is an action taken by the subcommittee at the January meeting. It was not addressed at the February meeting because of time constraints.

i. Enhanced review of environmental documents will not serve as the indirect source control program.

Comment: This is an action taken by the subcommittee at the January meeting. It was not addressed at the February meeting because of time constraints.

DRAFT

March 17, 1992

The Honorable Jack Doyle, Chairman San Diego Association of Governments 401 B Street San Diego, CA 92101

Dear Chairman Doyle:

At the February 28, 1992, SANDAG Board of Directors meeting, your Board approved and sent to the Air Pollution Control Board the draft Memorandum of Agreement developed by the SANDAG/APCB subcommittee for SANDAG's Transportation Control Measures Plan. Today, the APCB received this draft MOA and reviewed the contents. The APCB's comments on the MOA are enclosed.

Although consensus has been reached on the overwhelming majority of items considered by the subcommittee, two key areas remain with no clear consensus: off-peak credits and the allocation of AB 2766 revenues. In addition, a meeting of the SANDAG/APCB subcommittee in April will address the indirect source issue. Notwithstanding these points, the APCB urges SANDAG to expeditiously adopt a modified TCM Plan, and forward it to the APCB for consideration. Due to the press of time, we respectfully suggest that your Board take this action at the March monthly meeting.

San Diego County has been in the forefront in utilizing a regional approach to addressing the California Clean Air Act and its mandates, forging an alliance that should serve as a model for other matters in the future. We should not delay approval of a revised TCM Plan by meeting again on these two items on which there is no apparent consensus. The APCB will hold a noticed public hearing before final adoption of the Plan, giving all interested parties a chance to present testimony on these issues and the entire Air Quality Plan.

Thank you once again for your cooperation on this matter. We look forward to your consideration of our comments, the swift approval by your Board of a revised TCM Plan, and the meeting on the indirect source issue. If we can offer any further information, please do not hesitate to contact us.

Sincerely,

George F. Bailey Chairman Air Pollution Control Board Brian P. Bilbray Vice Chairman Air Pollution Control Board

cc: Members, Air Pollution Control Board Members, SANDAG Board of Directors R. J. Sommerville, Air Pollution Control Officer Kenneth E. Sulzer, Executive Director, SANDAG

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COUNTY OF SAN DIEGO

INTER-DEPARTMENTAL CORRESPONDENCE

March 5, 1992

TO: Richard J. Sommerville Air Pollution Control Officer

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FROM: County Counsel

RE: Draft Memorandum of Agreement (MOA) Between the San Diego Association of Governments (SANDAG) and the San Diego Air Pollution Control Board (APCB) Concerning Changes to SANDAG's Transportation Control Measures Plan

Pursuant to your request we have reviewed the subject draft MOA, and we offer the following comments:

1. The MOA was originally drafted to reflect the recommendations of the Air Quality Subcommittee to SANDAG and the APCB. The draft is appropriate for that purpose, and the recommendations of the Subcommittee can certainly be given consideration in adoption of a transportation control measures plan.

2. The San Diego procedure for the enactment of a plan for transportation control measures is set forth in subdivision (d) of section 40717 of the Health and Safety Code. Said section provides that the San Diego Air Pollution Control District (APCD) is ultimately responsible for adopting the plan for transportation control measures. The adoption of the plan is a legislative act and the legislative discretion of the APCB cannot be delegated by contract to SANDAG or other governmental entities. The APCB may, however, consider the views of SANDAG and the Subcommittee in adopting the transportation control measures plan, but it should not contract to adopt any specific type of plan.

3. We call your attention to Health and Safety Code section 40700 et seq. which contains the procedure for adoption of APCD rules and regulations. Health and Safety Code section 40703 specifically provides that an air pollution district board shall not adopt, amend, or repeal any rules or regulations without first holding a noticed public hearing. The district cannot agree to the content of a proposed trip reduction regulation without following the public hearing process for adoption of such a regulation which is set forth in Health and

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Mr. Sommerville

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Safety Code section 40703. The APCB is without legal authority to commit to a particular regulation prior to the hearing and the receipt of public input.

4. We note that the draft MOA indicates areas of disagreement as well as agreement on the part of Subcommittee members, and it is not clear from the draft whether the APCB is being asked to agree to all recommendations of the Subcommittee or only those recommendations on which there was a consensus.

5. We also note that there is no consideration supporting the draft MOA, and it would likely not be binding on the proposed parties.

LLOYD M. HARMON, JR. County Counsel

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ARNE HANSEN, Deputy

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* TRENDBOULND

INITIAL IMPLEMENTATION - TABLE 1A

TABLE 1

INITIAL IMPLEMENATATION - YEAR 2000 DOLLARS TOTAL EMISSIONS REDUCTIONS AND COST EFFECTIVENESS OF RECOMMENDED TRANSPORTATION CONTROL TACTICS WITH EXISTING FUNDS											
тастіс	TR Rei	AVEL DUCED (%)	EMISSIONS REDUCED (T/D)			EMISSIONS REDUCED (% '87)			ANNUALIZED COST (\$ millions)		COST EFFECTIVENESS (ROG + NOX)
	VMT	TRIPS	ROG	NOX	со	ROG	NOX	CO	GOVT	OTHER	(\$/Ib.)
1. TDM PR(HGRAM - NON-COMMUTE TRAVEL® (LEVEL 1)			-	•		-		-	1.0		-
2. TOM PR(NGRAM - GOODS MOVEMENT (LEVEL 3)	-	-	1.26	-0 02	15.84	0.45	0 00	1.10	0.6		0 65
3. TRAFFIC FLOW IMPROVEMENTS (LEVEL 2)			0.58	0.58	12.80	0.22	0.22	0.45	•• 3.28	-	3 90
4. TOM PR(NGRAM - COMMUTE TRAVEL (LEVEL 2)	7.96	6.64	5.26	5.72	68.05	1.88	1.98	4.77	70	149 3	19.50
5. BICYCLE FACILITIES (LEVEL I)	0.05	0.17	0.07	0.07	0.71	0.02	0.05	0 06		-	-
6. TDM PR(NGRAM - COLLEGE TRAVEL (LEVEL I)	0.65	0.55	0.38	0.71	4.72	0.14	0.25	0.33	06	12 1	16 21
7. TRANSIT IMPROVEMENTS (LEVEL I)	1.90	2.05	0.51	-0 89	10.65	0.18	-0.30	0.75			
8. VANP(H)L PR(H;RAM (LEVEL I)	0.02	0.01	0.01	0.02	0.12	0.00	0.01	0.01			
9. PARK AND RIDE FACILITIES (LEVEL 1)	0.02	-	0.01	0 02	0.14	0.00	0 01	0 01			
IO. HIGH OCCUPANCY VEHICLE LANES (LEVEL I)	0.05	0.26	0.03	0.05	0.42	0 01	0.02	0 0 3		-	

• No emissions estimates are reported because this is proposed as a voluntary program.

** May be funded by federal, state and local funds.

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COLLEGE PROGRAM

1. Obtain existing AVR data for colleges and universities.

Commuter Computer has no AVR data on college and university students

<u>SDSU</u> reports it had a 1.16 Student AVO measured by a perimeter survey conducted in 1989. This figure represents only the auto occupancy of student vehicles entering the campus and does not include transit (2%), bicycle (5%), walking and other modes. It is estimated that the student AVR would be at least 1.3 by adding the other modes into the AVO calculation. The campus administration states that the student travel modes generally parallel that of the staff and faculty. The last SDSU employee survey conducted by the City of San Diego (1991) show SDSU with a 72.8% Drive Alone Ratio or a 1.3 AVR.

<u>UCSD</u> Bob Umstead, UCSD, states UCSD's student AVR is much higher than that of the faculty/staff. [waiting for data from Robb Monette 534-3432]

2. Work with community college representatives to try to resolve any remaining issues and problems.

APCD has agreed to provide the name(s) of APCD contact from the community college to SANDAG so that staff can discuss with the appointed Community College representatives of the College and University TDM Policy Advisory Committee and the Regional TDM Advisory Committee the Community College's position on the Regional College and University Travel Element. The two Community College representatives attending the College and University TDM Policy Advisory Committee and the Regional TDM Advisory Committee representative supported the SANDAG College and University Travel Element. The APCD has recieved communications from another official who has expressed concerns.

The Chair and Vice Chair of the SANDAG College and University have recommended that, if there are any concerns, they be directed to the College and University TDM Policy Committee for review and consideration.

3. Obtain data on student travel behavior from 1985 travel behavior survey and other sources.

See Attachment 1.

4. Work with APCD staff to try to meet federal clean air act requirements for employers with 100 or more employees within the structure of the College and University Traffic Element.

APCD has agreed to provide suggested wording to address APCD staff concerns.

The Chair and Vice Chair of the College and University TDM Policy Committee have requested that any proposed changes be brought before the Committee for review and consideration.
	WORK TRIPS from 1985 Travel Behavior Survey						
			LEAVE	TIMES			
ARRIVE TIMES	3:00 - 3:59 PM	4:00 - 4:59 PM	5:00 - 5:59 PM	6:00 - 6:59 PM	ALL OTHERS TIMES	TOTAL	
6:00 - 6:59 AM	6.8	4.0	2.0	0.8	2.2	15.8	
7:00 - 7:59 AM	3.4	98	7.2	2.1	4.3	26 8	
8:00 - 8:59 AM	1.1	3.4	6.8	2.5	4.5	18.3	
ALL OTHER TIMES	3.5	4.4	4.2	3.5	23.5	39.1	
TOTAL	14.8	21.6	20.2	8.9	34.5	100 0	

	SCHOOL TRIPS from 1985 Travel Bebavior Survey							
			LEAVE	TIMES				
ARRIVE TIMES	12:00 - 12:59 PM	12:00 - 1:00 - 2:00 - 9:00 - OTHER 12:59 PM 1:59 PM 2:59 PM 9:59 PM TIMES TOTAL						
7:00 - 7: 59 AM	2.8	0.8	3.3	-	13.2	20.1		
8:00 - 8:59 AM	6.4	4.1	1.3	0.6	4.5	16.9		
9:00 - 9:59 AM	1.6	-	2.7		8.1	12.4		
5:00 - 5:59 PM	-	-		2.4	4.9	7.3		
6:00 - 6:59 PM		-		6.1	3.2	9.3		
ALL OTHER TIMES	3.6	3.6	2.6	2.9	21.3	34.0		
TOTAL	14.4	8.5	9.9	12.0	55.2	100.0		

TRIP TYPE

EXPANDED ROUND TRIPS

Work Trips	660,860	2448
College Trips	59,020	219

<u>CASES</u>

CHANGES FROM WINTER TO SPRING DAILY PEOPLE ENTERING - BY MODE



DAILY PEOPLE ENTERING - BY ENTRANCE



215

Numbers refer to not changes to public from Winter 1991 to Spring 1991. Spring 1991

201

DAILY PEOPLE ENTERING (BY MODE)



CARPODL 20%



Spring 1991

DAILY PEOPLE ENTERING (BY ENTRANCE)









ANALYSIS OF USING VANS IN PLACE OF EXISTING BUS SERVICE

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12/3/91

ANALYSIS OF USING VANS IN PLACE OF EXISTING BUS SERVICE

	Existing Bus Service							
	Total	Revenue	Peak Load	Vehicles		Freque	ncy	Cost per
Route	Miles	Miles	Factor	Base	Peak	Base	Peak	Route
11	903,676	789,158	0.99	14	20	15	15	\$1,453,426
40	101,958	50,462	0.68	-	3	-	30	\$158,571
41	268,626	251,638	0.78	4	4	30	30	\$338,849
Total	1,274,260	1,091,258		18	27			\$1,950,847

Reduced Capacity Van Service*

	Total	Revenue	Peak Load	Vehicles**	•	Freque	ency	
Route	Miles	Miles	Factor	Base	Peak	Base	Peak	
			(bus)					
11	3,578,557	3,125,066	0.99	55	79	3.79	3.79	\$3,428,248
40	277,326	137,257	0.68	0	8	0.00	11.03	\$236,519
41	838,113	785,111	0.78	12	12	9.62	9.62	\$639,202
Total	4,693,996	4,047,433		68	100			\$4,303,970

Vehicle costs amortized over a 12 year periodVans last 3 years, buses 12 years. Bus cost is \$250,000, vans \$20,000Bus capital costs/year\$562,500Van Capital costs/year\$666,667

Assuming van operators would be paid 25% less than bus operators Bus operators \$25,000 per year Van operators \$18,750 per year Base vehicles need two drivers and peak only vehicles need one driver Bus operator costs/year \$1,125,000 Van operator costs/year \$3,150,000

Fuel costs:

Assuming bus mpg is 3 and van mpg is 10 -per SDTC Bus deisel costs are \$0.62/gal, and van gasoline costs are \$1.05/gal -per SDTC Bus fuel costs/year \$263,347 Van fuel costs/year \$492,870 Annualized bus costs: \$1,950,847 Annualized van costs: \$4,309,536 2.2 : 1

 Van capacity assumed to be 12 passengers, buses assumed to be 48 passengers
 Vehicle requirement reduced by peak load factor.
 Analysis does not include maintenance costs, which are assumed to be equal (bus maintenance is approximately four times that of a van)
 Costs for maintenance and storage facilities have not been estimated.

12/3/91

ANALYSIS OF USING VANS IN PLACE OF EXISTING BUS SERVICE

	Existing Bus Service								
	Total	Revenue	Peak Load	Vehicles		Freque	ency	Costs per	
Route	Miles	Miles	Factor	Base	Peak	Base	Peak	Route	
11	903,676	789,158	0.99	14	20	15	15	\$1,453,426	
40	101,958	50,462	0.68	-	3	-	30	\$158,571	
41	268,626	251,638	0.78	4	4	30	30	\$338,849	
Total	1,274,260	1,091,258		18	27			\$1,950.847	

Comparable Van Service (equal capacity)*

	Totai	Revenue	Peak Load	Vehicles		Freque	впсу	Costs per
Route	Miles	Miles	Factor	Base	Peak	Base	Peak	Route
11	3,614,704	3,156,632		56	80	3.75	3.75	\$3,462.877
40	407,832	201,848		-	12	-	7.5	\$347,822
41	1,074,504	1,006,552		16	16	7.5	7.5	\$819,490
Total	5,097,040	4,365,032		72	108			\$4,630,189

Vehicle costs amortized over a 12 year periodVans last 3 years, buses 12 years. Bus cost is \$250,000, vans \$20,000.Bus capital costs/year\$562,500Van Capital costs/year\$720,000

Assuming van operators would be paid 25% less than bus operators Bus operators \$25,000 per year Van operators \$18,750 per year Base vehicles need two drivers and peak only vehicles need one driver Bus operator costs/year \$1,125,000 Van operator costs/year \$3,375,000

Fuel costs:

Assuming bus mpg is 3 and van mpg is 10 - per SDTC Bus deisel costs are \$0.62/gal, and van gasoline costs are \$1.05/gal -per SDTC Bus fuel costs/year \$263,347 Van fuel costs/year \$535,200 COST Annualized bus costs: \$1.950,847 BATIO

Annualized bus costs:	\$1,950,847	RATIO
Annualized van costs:	\$4,630,200	2.4 : 1

* Van capacity assumed to be 12 passengers, buses assumed to be 48 passengers

Analysis does not include maintenance costs, which are assumed to be equal (bus maintenance is approximately four times that of a van) Costs for maintenance and storage facilities have not been estimated.

REGIONAL TRAFFIC SIGNAL OPTIMIZATION AND COORDINATION -WORK SCOPE

REGIONAL TRAFFIC SIGNAL OPTIMIZATION AND COORDINATION - WORK SCOPE

Select a qualified traffic engineering/planning consultant to perform the following tasks:

1. Conduct an inventory of all traffic signal locations in the San Diego region.

The inventory shall include type of operation and controller equipment, identification of any coordinated systems and/or centralized computer control facilities, dates of recent installations, identification of proposed signal locations and systems, and historical records of optimization/coordination efforts (via FETSIM, etc.)

- 2. Review the entire regional system to determine which locations are candidates for improved signal optimization and/or coordination.
- 3. Recommend a course of action for optimizing/coordinating all the region's signalized intersections by the year 2000. This program must identify optimization needs (optimal signal timing to reflect traffic demands), coordination opportunities (type of interconnect program and number of locations to be included with each system, hardware requirements (upgraded controllers, new centralized computers, new loop detectors, new or modified signal heads and standards, etc.), personnel requirements and the cost for each of the program elements.
- 4. Evaluate the impacts of converting existing signal operations to permissive/protected left turn (PPTL) phasing wherever warranted, as well as new signals where PPLT phasing may be warranted.
- 5. Evaluate strategy encouraging separate or free right turn lanes (150'-200'radii) at any signalized intersection where there are, or will be a counter dual-left turn movement.
- 6. List and quantify all the benefits of the recommended program in terms of energy savings, travel time savings, average speed increases on each specific route and impacts on air quality.
- 7. Identify any and all available funding sources.
- 8. Coordinate work efforts with the San Diego Regional Traffic Engineers' Council (SANTEC) and any SANDAG committees/staff as appropriate.
- 9. Prepare Implementation Program Report (including specific work schedule by year through the year 2000 for regional traffic signal optimization and coordination (June 1993).

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PARK AND RIDE STUDY -WORK SCOPE

Consultant Soudy SCOPE Recommendations

OBJECTIVE: DETERMINE P&R PLAN AND DEVELOPMENT PROGRAM

--:

ADVISORY COMMITTEE:

Carl West - CALTRANS Icel Havens - CALTRANS Manuel Demetre - CALTRANS Gene Pound - CALTRANS Jeanenc "Chili" Cilch - CALTRANS Phil Broughton - City of Escondido Morris Dye - APCD George Franck - SANDAG Paul Price - NCTD Dave Schumacher - MTDB Larry Van Wey - City of San Diego Larry Wate - CTS, County Public Works Dept.

Under the direction of the advisory committee, prepare a region-wide long range P&R plan that can be adopted into the RTP and a 10 years specific development program to be coordinated with the region's current transportation planned programs:

RTP / RTP / STIP / SHORT-RANGE TRANSIT PLAN / CMP / REGIONAL GROWTH MANAGEMENT STRATEGY / REGIONAL AIR QUALITY REGULATION / DIST. 11 SYSTEM MANAGEMENT PLAN / ATSD / DIST. 11 ROUTE CONCEPT REPORT / DIST. 11 HOV PL-

TO INCLUDE (BUT NOT LIMITED TO):

- I. Develop a long range P&CR plan up to the year 2015 by corridor/sub-area (Objective: Adopt the plan as the "P&CR Element into the RTT"
 - A. Determine P&R space requirements to accommodate current demand and forecast future demand for attainment of 1.5 AVR.
 - B. Coordinate with the District's Route Concept Reports
 - C. Coordinate with existing and planned HOV facilities
 - D. Transit/Rail coordination
 - 1. Existing and planned routes
 - 2. Existing and planned transit, trolley and multimodel facilities (Coordinate with the County's proposed Transit Center. study).
 - E. P&R plan is to be consistent with the Transportation Control Measures (TCM) criteria established for the region's air quality plan
- II. Develop P&R Policy Statement
 - A. Strengthen P&R "Gold Book Ruling" (Section 2-18.4 [10][a] of the Project Development Procedures Manual)
 - B. Analysis and recommendations for legislation and policies effecting P&R.
 - 1. On site pay phones
 - 2. Dual use
 - 3. On site Childcare facilities
- III. Develop 10 year P&R development program
 - A. Develop P&R guidelines, development flow chart and implementation time schedule.
 - B. Recommend improvements for existing Park & Ride facilities
 - 1. Expansion
 - 2. Design revisions for P&R patron (motorist, cyclist & pedestrian) and Transit/Rail accessibility and efficiency.
 - 3. Safety/Security improvements

- C. Identify and evaluate R/W acquisition options:
 - 1. P&R included in contridor preservation / Advance Transportation System Development (ATSD)

-2:

- 2. Purchase
- 3. Lease agreements
- 4. Developer fees and dedications (ex: City of S.D. FBA program)
- 5. Public/Private joint use/co-op projects
- 6. City/County encroachment permits
- 7. Excess land (P&R as street purpose)
- D. Identify and evaluate Funding Sources:
 - 1. P&R included with Highway projects
 - 2. P&R included with Transit support projects
 - 3. RTIP/STIP
 - 4. Minor A (up to \$300,000)
 - 5. Minor B (up to \$30,000)
 - 6. Developer fees (ex: mitgation)
 - 7. Local agency funding sources
- E. Select P&R sites by corridor/sub-area and provide required data for Project Reports:
 - 1. Prioricy listing and prioricy justification (Evaluate the prioricy index number (PIN#) ranking procedure).
 - a. Supports Transit
 - b. Supports HOV lanes, mettered ramps
 - Congesuon patterns
 - d. Projected commute distances
 - e. Accessibility
 - f. Safety/Security
 - g. improves air quality by facilitating trip reduction
 - 2. Cost benefit analysis
 - 3. Facility sizing and initial size plans
 - 4. Develop environmental feasibility check-list.
 - 5. Determine community support and/or opposition.
 - 6. P&R size amenities recommendations.
 - a. Lighting
 - b. Landscaping
 - c. Bus bays and bus shelters
 - d. Bike lockers
 - e. Pay phones and Call Boxes
 - 7. Identify compatible joint enterprises. (Churches, lodges, daycare, etc.).
 - 8. Provide security recommendations.
 - a. Evaluate current and planned P&CR security efforts (ic: Guard towers, profit/non-profit vendors, surveillance camera systems, roving and on-site security guards, resident "Host" program, etc.)
 - b. Provide suggestions for alternative security enhancing systems and feasibility.

TECHNICAL ANALYSIS

TRANSPORTATION CONTROL MEASURES TECHNICAL ANALYSIS

INTRODUCTION

This technical document presents the calculations used to determine the emission reductions and the cost-effectiveness of the transportation control measures (TCM's) presented in the TCM Plan for Air Quality.

The calculations are presented for each of the TCM measures in the order in which they appear in Table 1. The analysis year is the year 2000. The San Diego Air Pollution Control District presumes that the San Diego region will not be able to attain achievement of the State's clean air standards by 1997. Therefore, calculations are presented to show the emission reductions for the year 2000.

The Transportation Control Measures Plan for Air Quality presents measures to reduce motor vehicle emissions by reducing trips, miles traveled, and congestion. In general, the measures in the Plan are actions in addition to those funded programs and facilities included in the <u>1990</u> Regional Transportation Plan (RTP).

METHODOLOGY

The calculations for each of the transportation control measures were based on information provided by:

- 1. State of California Air Resources Board which provided the emissions data;
- 2. Transportation emissions and cost-effectiveness models developed for the 1991 TCM Air Quality Plans by Sierra Research, Inc. (Sierra Research Model or SRM); and
- 3. Local transportation and travel behavior data available at SANDAG.

As motor vehicles become cleaner, emissions reductions from the changing use of motor vehicles will decline over time. The transportation control measures will be more effective in the early years of implementation than later.

The emission reductions from all transportation control measures cannot be considered additive. That is, if several TCM's are used in combination, the emissions reductions from each cannot be summed. A methodology has not been developed to determine the actual emissions reductions of two or more TCM's. Some TCM's such as ridesharing and transit may be competing for the same passengers. On the other hand, other combinations of TCM's, such as increased fees on motor vehicles combined with expanded transit, may result in an even greater emissions reductions. Table 1. RB-11, presents a summary of the total emissions reductions and cost-effectiveness of the recommended transportation control measures.

The cost-effectiveness calculations are based on 1990 dollars. Table 1, RB-11 Supplement. TCM Plan Funding Needs, shows costs in both 1990 dollars and in year 2000 dollars presuming an annual 5% inflation rate.

TOTAL EMISSIONS REDUCTIONS AND	COST	EFFECTIV	YEAR VENESS	2000 OF REC	OMMEN	ided t	RANSPO	RTATIO	N CONTR	DE TACTI	(`S
TACTIC		TRAVEL REDIACED (%)		EMISSIONS REDUCED (T/D)		EMISSIONS REDUKTED (% 187)		ANNUALIZED COST (\$ millions)		COST EFFECTIVENESS (ROG + NOX)	
	VMT	TRIPS	R(H);	NOX	CO	RCMJ	NOX	CO	GOVT	OTHER	(\$/Ib.)
I. TOM PROGRAM - NON-COMMUTE TRAVEL® (LEVEL I)					-				50		
2. TOM PROGRAM - GOODS MOVEMENT (LEVEL 3)			1 26	0 02	15.84	0 45	0 00	1 10	0.6		0.65
3. TRAFFIC FLOW IMPROVEMENTS (LEVEL 2)	•		0 58	0.58	12 10	0 22	0 22	0 45	36		4 10
4, TDM PR(HGRAM - C()MMUTE TRAVEL (LEVEL 2)	7 96	6 64	5 26	<u>5</u> .n	68 05	88	1 98	4 77	70	149 1	19.50
5. BICYCLE FACILITIES (LEVEL 2)	0 09	0.33	013	0.13	1.45	0 05	0 05	0 10	39		20 50
6. TDM PR(NGRAM - COLLEGE TRAVEL (LEVEL I)	0 65	0 55	0 18	0.71	4.72	0.14	0.25	0 33	80	12 3	25 50
7. TRANSIT IMPROVEMENTS (LEVEL 3)	2 35	2.75	1 14	0 04	15 0	0 41	0 01	1.05	23 9		27 70
8. VANPIN)L PRIN;RAM (LEVEL 3)	0 49	0 41	0 31	0 47	3 86	0.11	0 16	0 27	16.5		28.90
9. PARK AND RIDE FACILITIES (LEVEL 3)	0.06	· · · · · · · · · · · · · · · · · · ·	0 01	0 06	0 28	0.01	0 02	0 02	2 4		36.50
10. HIGH (MCCUPANCY VEHICLE LANES (LEVEL 3)	0 47	1 22	0 27	0 42	3 52	0 10	0 14	0 27	21.1		41.90

TABLE I

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*No emissions estimates are reported because this is proposed as a voluntary program

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1. TDM PROGRAM - NON-COMMUTE TRAVEL

This measure_proposes the use of educational and marketing promotions to reduce emissions. While these actions offer potential significant reductions in emissions, it would be inappropriate to estimate or quantify the results of these actions due to their voluntary nature.

2. TDM PROGRAM - GOODS MOVEMENT

a. <u>Level 1</u> - Level 1 results in speed increases from shifting truck operations out of the commute period and improving truck loading operations.

From SRM for "Delivery Timing" and "Loading Facility Improvements":

Emissions Reduction:

ROG = $(0.04\% + 0.28\%) \times 65 = 0.21 \text{ T/D}$ NOx = $(0.00\% + 0.00\%) \times 101 = 0.00 \text{ T/D}$ CO = $(0.06\% + 0.35\%) \times 698 = 2.86 \text{ T/D}$

Costs for Level 1 are estimated at \$400,000/yr. (program and administration).

$$CE = \frac{\$0.4 \ M/yr.}{0.21 \ T/D} \times 1.37 = \$2.60/lb.$$

b. Level 2 - Adds incident management and prevention program to Level 1 activities.

From SRM:

Emissions Reductions:

ROG = $(0.04\% + 0.28\% = 0.81\%) \times 65 = 0.74 \text{ T/D}$ NOx = $(0-0.01) \times 101 = -0.01 \text{ T/D}$ ROG + NOx = 0.73 T/DCO = $(0.06\% + 0.35\% + 0.93\%) \times 698 = 9.35 \text{ T/D}$

Cost is estimated at \$0.5 M per year.

$$CE = \frac{\$0.5 \ M/yr.}{0.73 \ T/D} \ x \ 1.37 = \$0.94/lb.$$

c. Level 3 - Level 3 adds a motorist information program to Level 2 activities.

From SRM:

Emissions Reduction:

ROG =
$$(0.04\% + 0.28\% + 0.81\% + 0.81\%) \times 65 = 1.26 \text{ T/D}$$

NOx = $(-0.01\% - 0.01\%) \times 101 = -0.02 \text{ T/D}$
ROG + NOx = 1.24 T/D
CO = $(0.06\% + 0.35\% + 0.93\% + 0.93\%) \times 698 = 15.84 \text{ T/D}$

.

Cost is estimated at \$0.6 M per year.

$$CE = \frac{\$0.6 \ M/yr.}{1.24 \ T/D} \times 1.37 = \$0.66/lb.$$

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- 3. TRAFFIC FLOW IMPROVEMENTS Increase average arterial speeds by computer optimizing traffic signals.
 - a. <u>Level 1</u> Increase arterial speeds by 5% (from 25 mph to 26.25 mph) by computer optimizing 50% of the region's traffic signals by the year 2000. No new funding would be required.

Emissions Reduction:

From SRM: (assume 44.2% of VMT on arterials)

ROG = $0.81\% \times 65 = 0.52$ T/D ROG NOx = $-0.01\% \times 101 = -0.01$ T/D NOx CO = $0.92\% \times 698 = 6.4$ T/D CO

From EMFAC 7 a 5% increase arterial speeds from 25 mph to 26.25 mph would reduce ROG emissions by 0.0075 gms./mi. and reduce NOx by 0.0075 gms./mi.

NOx/ROG = 0.0075 gms./mi. x $\frac{78,742,000}{2.26}$ mi. (arterial VMT) x $\frac{1}{906,000}$ = 0.288 T/D ROG / NOx using EMFAC 7

0.288 T/D/ ROG, 0.288 T/D NOx, 6.4 T/D CO (SRM)

Annual Cost:

No cost increase for Level 1 assumed

b. <u>Level 2</u> - Increase arterial speed by 10% (from 25 mph to 27.5 mph) by computer optimizing all traffic signals.

Emission Reduction:

From SRM: (assume 44.2% VMT on arterials)

ROG = $1.63\% \times 65 = 1.06$ T/D NOx = $-0.02\% \times 101 = -0.02$ T/D CO = $1.81\% \times 698 = 12.8$ T/D

From EMFAC 7. ROG and NOx = 2 x Level 1 or 0.58 T/D CO = 12.8 T/D (SRM) Annual Cost:

From TCM Plan Cost = \$3.28 M/yr. $CE = \frac{$3.28 \text{ M/yr}}{1.16 \text{ T/D}} \times 1.37 = $3.87/lb$. using EMFAC 7

$$CE = \frac{3.28 \ M/yr}{1.06 - 0.02 \ T/D} \times 1.37 =$$
\$4.32/lb. using SRM

Used EMFAC 7 because emissions for SRM uses average regional speed rather than average arterial speed. This results in unreasonably low NOx impact.

- 4. TDM PROGRAM COMMUTE TRAVEL
 - a. <u>Level 1</u> Achieve a 1.5 average vehicle occupancy for vehicles entering the work site between 6:30 a.m. and 8:30 a.m. by the year 2000 for employers with more than 10 employees.

From SRM: (Output OOML1, 2/26/91)

Trips reduced:289.383 trips/day (3.28%) VMT reduced:3.096.395 VMT/day (3.93%)

Emissions Reduction:

	ROG =	2.60 T/D
	NOx =	2.83 T/D
ROG	+ NOx =	5.43 T/D
	CO =	33.62 T/D

Annual Cost:

Program Cost Average = \$7.0 M/yr. Other Costs (Company = \$1/trip reduced x programs, etc.) 289,383 trips x 255 days/yr. = \$73.8 M/yr. Total = \$7 M + \$73.8 M = \$80.8 M/yr.

$$CE = \frac{\$80.8 \ M/yr.}{5.42 \ T/D} \ x \ 1.37 = \$20.42/lb.$$

b. <u>Level 2</u> - Achieve a 1.5 average vehicle occupancy for a 24-hour period by the year 2000 for employers with more than 10 employees.

From SRM: (Output OOML3, 3/26/91)

Trips reduced: 585,715 trip/day (6.64%) VMT reduced: 6,287,150 VMT/day (7.96%)

Emissions Reduction:

ROG =	5.26 T/D
NOx =	<u>5.72 T/D</u>
ROG + NOx =	10.98 T/D
CO =	68.05 T/D

•

Annual Cost:

Program Cost = \$7.0 M/yr.

Other Cost @ \$1 per trip reduced = $585,715 \times $1 \times 255 = $149.3 \text{ M} \text{ yr}$.

$$CE = \frac{\$7.0 \ M/yr. + \$149.3 \ M/yr.}{10.98 \ T/D \ ROG + NOx} \ x \ 1.37 = \$19.50/lb.$$

c. <u>Level 3</u> - Achieve a 1.6 average vehicle occupancy for a 24-hour period by the year 2000 for employers with more than 10 employees.

From SRM: (Extrapolated from output OOML3, 3/26/91)

Trips reduced: 662,181 trips/day (7.51%) VMT reduced: 7,085,336 VMT/day (9.00%)

Emissions Reduction:

ROG = 5.95 T/D NOx = 6.47 T/D ROG + NOx = 12.42 T/D CO = 76.93 T/D

Annual Cost:

Program Cost = \$7.0 M/yr. Other Cost @ \$1 per trip reduced = 662,181 x \$1 x 255 = \$168.9 M yr.

 $CE = \frac{\$7 \ M/yr. + \$168.9 \ M/yr.}{12.42 \ T/D} \times 1.37 = \$19.42/lb.$

5. BICYCLE FACILITIES

a. <u>Level 1</u> – Annually construct approximately 25 miles of bikeways per year and other actions identified in TC¹ Plan. This is the level identified in the RTP.

From SRM: Emissions reduction shown are for Level 3. Reducing emissions impact in proportion to miles of facilities required yields the following air quality impacts.

 $\begin{array}{rcl} \text{ROG} &=& 25/75 \ \text{x} \ 0.30\% \ \text{x} \ 65 &=& 0.07 \ \text{T/D} \\ \text{NOx} &=& 25/75 \ \text{x} \ 0.20\% \ \text{x} \ 101 &=& 0.07 \ \text{T/D} \\ \text{CO} &=& 25/75 \ \text{x} \ 0.31\% \ \text{x} \ 698 &=& 0.71 \ \text{T/D} \end{array}$

No additional costs required.

b. <u>Level 2</u> - Annually construct 50 miles of bikeways per year and other actions identified in the TCM Plan.

From SRM using the same method as Level 1:

 $ROG = 50/75 \times 0.30\% \times 65 = 0.13 \text{ T/D}$ $NOx = 50/75 \times 0.20\% \times 101 = 0.13 \text{ T/D}$ ROG + NOx = 0.26 T/D $CO = 50/75 \times 0.31\% \times 698 = 1.45 \text{ T/D}$

Annual additional cost of Level 2 estimated to be \$3.9 M/yr. (see TCM Plan).

$$CE = \frac{\$3.9 \ M/yr.}{0.26 \ T/D} \ge 1.37 = \$20.55/lb.$$

c. <u>Level 3</u> – Annually construct 75 miles of bikeways per year and other actions identified in TCM Plan.

From SRM:

 $ROG = 0.30\% \times 65 = 0.20 \text{ T/D}$ NOx = 0.20% x 101 = 0.20 T/D ROG + NOx = 0.40 T/D CO = 0.31% x 698 = 2.16 T/D

$$CE = \frac{\$5.5 \ M/yr}{0.40 \ T/D} \times 1.37 = \$18.84/lb.$$

- 6. TDM PROGRAM COLLEGE TRAVEL
 - a. <u>Level 1</u> Assume College TDM Program designed to achieve 1.5 AVR by 1900 as described in TCM Plan.

From SRM: (Output OOML1, 3/26/91)

Trips reduced: 48.167 trips/day (0.55%) VMT reduced: 515.383 VMT day (0.65%)

Emissions Reduction:

ROG = 0.38 T/DNOx = 0.71 T/DROG + NOx = 1.09 T/DCO = 4.72 T/D

Annual Cost:

Government \$0.6 M/yr. program = \$0.6 M

College 48,167 trips/day x \$1/trip x 255 days/yr. = \$12.3 M/yr.

$$CE = \frac{\$0.6 \ M/yr. + \$12.3 \ M/yr.}{1.09 \ T/D} \times 1.37 = \$16.21/lb.$$

b. <u>Level 2</u> - Assume College TDM Program designed to achieve 1.5 AVR by 1999 as described in TCM Plan. Program includes subsidies designed to increase student transit usage by 1% per year.

From SRM: (Output OOML1, 3/26/91)

Trips reduced: 48,167 trips/day (0.55%) VMT reduced: 515,383 VMT/day (0.65%)

Emissions Reduction:

ROG = 0.38 T/D NOx = 0.71 T/D ROG + NOx = 1.09 T/D CO = 4.72 T/D

Annual Cost:

Government \$0.6 M yr. program + \$7.4 M yr. transit and fare subsidy = \$8.0 M

College 48.167 trips/day x S1/trip x 255 days/yr = S12.3 M yr.

$$CE = \frac{\$8.0 \ M/vr. + \$12.3 \ M/vr.}{1.09 \ T/D} \times 1.37 = \$25.51/lb.$$

c. <u>Level 3</u> - College TDM Program to achieve 1.6 AVR by 1999 and a 2% per year growth in student transit ridership as described in TDM Plan.

From SRM: (Extrapolated from Level 1 above)

Trips Reduced: 60,200 trips/day (0.69%) VMT Reduced: 644,229 VMT/day (0.81%)

Emissions Reduction:

ROG = 0.48 T/D NOx = 0.89 T/D ROG + NOx = 1.37 T/D CO = 5.90 T/D

Annual Cost:

Government \$0.6 M/yr. program + \$13.6 M/yr. transit and fare subsidy = \$14.2 M/yr.

College $60,200 \times $1 \times 255 = $15.4 \text{ M/yr}.$

 $CE = \frac{\$14.2 \ M/yr. + \$15.4 \ M/yr.}{1.37 \ T/D} \times 1.37 = \$29.60/lb.$

7. TRANSIT IMPROVEMENTS

a. <u>Level 1:</u> Year 2000 RTP, assume 50% diesel bus fleet and 50% low emission buses (LEM). LRT system assumed to extend to Balboa Avenue on the North Line and the Stadium on the Mission Valley Line.

Auto Emissions Reduced

- Bus: 102.174 miles x 3 passengers per mile x .6 trips per boarding x .65 auto trips reduced per trip = 119.544 auto trips reduced.
- Trolley: 9,614 miles x 14 pasengers per mile x .6 x .65 = 52,492 auto trips reduced
- Total: 172,031 auto trips reduced ÷ 8,400,000 total 2000 auto trips = 2.05%

•	ROG Reduced:	47.6 tons/day	v ROG x .0205	= 0.97 T/D ROG
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- NOx Reduced: 55.6 tons/day NOx x .0205 = 1.14 T/D NOx
- CO Reduced: 576 tons/day CO x .0205 = 11.80 T/D CO

Transit Emissions Generated

• ROG:

Diesel Bus $\frac{(102,174 \text{ x } 1.10(\text{deadhead}))}{906,000} \div 2 \text{ x } 6.24 \text{gms/mi.}^{(1)} = .387 \text{ T/D ROG}$

LEM Bus
$$\frac{(102,174 \times 1.10)}{906,000} + 2 \times 1.2 \text{ gms/mi.} = .074 \text{ T/D ROG}$$

Bus Total = 0.46 tons/day ROG

• NOx:

۰.

Diesel Bus
$$\frac{(102,174 \times 1.10)}{906,000}$$
 + 2 x 22 gms/mi.⁽¹⁾ = 1.36 T/D NOx

LEM Bus $(102,174 \times 1.10) \div 2 \times 9 \text{ gms/mi.}^{\circ} = .56 \text{ T'D NOx}$

Bus Total = 1.92 tons/day NOx

- NOx Trolley $(9.614 \text{ mi. x } 10 \text{ gms/mi.}^{(6)}) \div 906.000 = 0.11 \text{ T D NOx}$
- CO Diesel Bus 1.54 tons day x .5 = .77
 LEM Bus .75 tons day x .5 = .38
 1.15 T/D CO

Ne: Emission Reductions

ROG: 0.97 - .46= 0.51 T/D ROG ReducedNOx: 1.14 - 1.92 (bus) - 0.11 (trolley)= 0.89 T/D NOx IncreaseCO: 11.80 - 1.15= 10.65 T/D CO Reduced

b. Level 2: Year 2000 RTP Bus Fleet - 100% LEMs

Auto Emissions Reduced

Same as Level 1 - no change in bus miles or riders

Transit Emissions Generated

ROG:

LEM Bus:
$$\frac{102,174 \times 1.10}{906,000} \times 1.2 gms/mi. = 0.15 T/D ROG$$

NOx:

LEM Bus:
$$\frac{102,174 \times 1.10}{906,000} \times 9 \text{ gms/mi.} = 1.12 \text{ T/D NOx}$$

Trolley: 0.11 T/D NOx (same as Level 1)

Total = 1.23 T/D NOx

CO: Bus = 0.75 T/D CO

Net Emission Reductions

 ROG:
 0.97 - .15
 = 0.82 T/D ROG Reduced

 NOx:
 1.14 - 1.12 (bus) - 0.11 (trolley)
 = 0.09 T/D NOx Increase

 CO:
 11.80 - .75
 = 11.05 T/D CO Reduced

Cost Effectiveness

с.

Operating Cost:	$(102.174 \text{ x } 1.10) \div 2 \text{ x } \$.05^{(3)} \text{ x } 310 \text{ days/yr.} = \871.000 yr
Capital Cost:	316 LEM Bus @ \$65,000 additional cost = \$20,540,000 Annualized over 12 years @ 6.8% = \$2,56 million yr
Total Annual Cost:	\$3.43 million/yr.
Cost Effectiveness:	\$3.43 M/yr. ÷ 0.73 T/D ROG + NOx x 1.3 ⁻⁴ = \$6.44 per pound reduced
Level 3: Level 2 plus Expansion of Service with LEMs with Service Focused on Productive Peak Hour Services Increasing Pass/Mi. to 3.5	
<u>Auto Emissions Reduced</u>	
• Level 1: 187.444 auto trips reduced	
• Bus Expansion:	17,086 additional bus miles x 3.5 pass/mi. x .6 trips/boarding x .75 auto trips reduced = <u>26.910 auto trips reduced</u>
• Trolley Expansion	n: 2,074 additional trolley miles x 14.0 pass/mi. x .6 x .75 = <u>13.066 auto trips reduced</u>
• Total:	212,012 auto trips reduced \div 8,400,000 total auto trips = 2.52%
 ROG Reduced: NOx Reduced: CO Reduced:	47.6 T/D ROG x .0252 = 1.20 T/D ROG 55.6 T/D NOx x .0252 = 1.40 T/D NOX 576 T/D CO x .0252 = 14.52 T/D CO
Transit Emissions Generated	
 ROG: Level 2 Bus = 0.15 T/D ROG Exp. Bus - 17,086 x 1.10 ÷ 906,000 x 1.2 = 0.025 T/D ROG 	
• NOx: Level 2 Bus = 1.12 T/D NOx Level 2 Trolley = 0.11 T/D NOx Exp. Bus = $17.086 \times 1.10 \div 906.000 \times 9 = 0.187 \text{ T/D NOx}$ Exp. Trolley = $2.074 \times 10 \div 906.000 = 0.02 \text{ T/D NOx}$	
• CO: Level 2 B Exp. Bus	us = 0.75 T/D CO = .75 ÷ 102,174 x 17,086 = .125 T'D CO

Net Emissions Reduction

ROG:1.20 - .15 - .025=1.03 T/D ROG ReducedNOx:1.40 - 1.12 - 0.11 - .187 - 0.02=.04 T/D NOx IncreasedCO:14.52 - .75 - .125=13.65 T/D CO Reduced

Cost-Effectiveness

- Operating Cost
 - Level 2: <u>\$871.000/year</u>
 Bus Exp.: 17,086 mi. x \$3.10/mi. x 310 days yr. x .55 (45% Fare = <u>\$9.03 M/Yr.</u> Box Recovery)
 Trolley Exp.: 2.074 mi. x \$8.14/mi. x 325 days/yr. x .40 (60% Fare

Box Recovery

- Total Operating Cost: = <u>\$11.22 M/Yr.</u>

• Capital Cost

 - Level 2:
 \$20.54M

 - Bus Exp.:
 106 LEM Buses @ \$280,000 = \$29,68M

= <u>\$2.19 M/Yr</u>.

- Trolley Exp.: 25 LRT @ \$1.4M = \$35.0M
- Misc. Capital: <u>\$10M</u> (maintenance yards/storage)
- Total Capital: <u>\$95.2M</u>

Annualized Capital Costs

- Trolley + Misc. Cap @ 7.4% for 25 yrs. = <u>\$4.00 M/Yr</u>.
 Buses @ 6.8% for 12 yrs. = <u>\$6.26 M/Yr</u>.
- Total Annual Cost: \$21.48 M/Yr.
- Cost Effectiveness:⁽⁵⁾

Annual Cost \$21.48M x 1.37 = \$29.7 per pound reduced 0.99 T/D ROG - NOx

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7. TRANSIT IMPROVEMENTS (NOTES)

- 1. Bus emissions based on EMFAC 7, 1/9/91 at average speed of 16 mph.
- 2. Low emissions bus emissions from Mark Carlock. Air Resources Board. 2.5 91 Estimate based on CNG vehicle.
- 3. Additional operating costs of LEM buses assumed to be 5¢ per mile.
- 4. Annual cost in \$ millions divided by tons/day reduced times 1.37 equals dollars per pound of emissions reduced.
- 5. Cost effectiveness of Level 3 transit expansion excluding the impact of LEM vehicle replacement is \$60/lb. for trolley and \$177/lb. for bus.
- 6. <u>Trolley Related Emissions</u>

Energy consumption (MTDB) = 2.0 million KWHR/mo. = 24 million KWHR/yr.

Total energy consumed in San Diego region = 14,061 million KWHR Yr.

 $24 \div 14,061 = 0.17\%$ of electrical energy in region used by trolley

NOx = $0.17\% \times 26.5 \text{ T/D}$ (power gen. emissions) = 0.045 T/D 1990

> 0.045 T/D x 906,000 gms/T = 40,770 gms/day

 $40,770 \text{ gm/day} \div 4,136 \text{ train mi/day}$ = 9.9 gms/train mi.

ROG = $0.17\% \times 0.22 \text{ T/D} = 0.00037 \text{ T/D} = 372 \text{ gm/day}$ = 0.08 gms/train mi.

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8. VANPOOL PROGRAM

a. Level 1 - Assume 80 vanpools in operation by the year 2000.

Trips Reduced = 80 vans x 12 pass. van x 2 trips day - 1.250 driver trips x 0.65 access factor = 435 daily trips reduced VMT Reduced = 435 trips x 10.7 mi./trip = 4,659 VMT day

From SRM

ROG = 0.01 T/D NOx = 0.02 T/D ROG + NOx = 0.03 T/D CO = 0.12 T/D

Annual Cost - Level 1 is assumed to be self-supporting or funded with existing resources.

b. Level 2 - Assume 1,250 vans by 2000.

Trips Reduced = $1.250 \times 12 \times 2 - 2.500 \times 0.65 = 17.875$ trips/day VMT Reduced = $17.875 \times 10.7 = 191.262$ VMT/day

From SRM:

ROG = 0.16 T/D NOx = 0.24 T/D ROG + NOx = 0.40 T/D CO = 1.93 T/D

Annual Cost = 1,250 vans x 950 x 12 = \$14.25 M/yr. Fares = 1,250 x 12 x 2 x \$1 x 250 x 0.8 = \$6 M/yr.

c. Level 3 -Assume 2,500 vans by 2000.

$$CE = \frac{\$14.3 \ M/yr. - \$6 \ M/yr.}{0.4 \ T/D \ (ROG-NOx)} \times 1.37 = \$28.43/lb.$$

Trips Reduced = $2.500 \times 12 \times 2 - 5.000 \times 0.65 = 35.750$ trips day VMT Reduced = $35.750 \times 10.7 = 382.525$ VMT/day

From SRM:

ROG = 0.31 T/DNOx = 0.47 T/DROG + NOx = 0.78 T/DCO = 3.86 T/D

Annual Cost = $2,500 \times \$950 \times 12 = \28.5 M/yr . Fares = $2,500 \times 12 \times 2 \times \$1 \times 250 \times .8 = \12.0 M/yr .

 $CE = \frac{\$28.5 \ M/yr. - \$12.0 \ M/yr.}{0.78 \ T/D \ (ROG+NOx)} x \ 1.37 = \$28.94/lb.$

- 9. PARK AND RIDE FACILITIES For this analysis, park and ride is considered to be for carpooling and vanpooling purposes. Transit Park and Ride is assumed in Transit Expansion (7.).
 - a. <u>Level 1</u> There are 3.230 existing park and ride spaces of which 1.500 are used and 1.730 are vacant. Assume 95% utilization of all 3.230 spaces.

From Sierra Research Model (SRM):

 $\begin{array}{rcl} \text{ROG} &=& 0.01\,\% \ (65) &=& 0.0065 & \text{T/D ROG} \\ \text{NOx} &=& 0.02\,\% \ (101) &=& \underbrace{0.020}_{0.0265} & \text{T/D NOx} \\ & & 0.0265 & \text{T/D ROG} + \text{NOx} \\ \text{CO} &=& 0.02\,\% \ (698) &=& 0.14 & \text{T/D CO} \end{array}$

No additional costs required. All assumed facilities are in place and maintained.

b. <u>Level 2</u> - Add 2,400 spaces to Level 1 at 95% utilization or 2,280 spaces. Level 2 equals 4,130 total spaces.

 $\begin{array}{rcl} \text{ROG} = & 0.02\% \ (65) &= & 0.013 & \text{T/D ROG} \\ \text{NOx} = & 0.04\% \ (101) &= & \underbrace{0.04}_{0.053} & \text{T/D NOx} \\ & & 0.053 & \text{T/D ROG} + & \text{NOx} \\ \text{CO} &= & 0.03\% \ (698) &= & 0.21 & \text{T/D CO} \end{array}$

Capital Cost = \$2000/space, 20 years at 7.3% R-O-W Cost = \$3000/space, 8% interest only Maintenance Cost = \$62.5/space yearly

Capital Cost = $$2000 \times 2400 @ 20$ years @ 7.3% = \$0.46 M/yr. R-O-W Cost = $$3000 \times 2400 @ 8\%/yr$. = \$0.58 M/yr. Operational Cost = $$62.5 \times 2400 = 0.15 M/yr.

Total Cost = \$0.46 + 0.58 + 0.15 = \$1.19 M/yr.

 $CE = \frac{\$1.19 \ M/yr.}{0.053 \ T/D} x \ 1.37 = \$30.76/lb.$

c. Level 3 - Add an additional 2,400 spaces to Level 2 measure.

From SRM:

Cost = 2 x Level 2 Cost = \$2.38 M/yr.

$$CE = \frac{\$2.38 \ M/yr.}{0.09 \ T/D} \times 1.37 = \$36.2/lb.$$
- HIGH OCCUPANCY VEHICLE LANES Analysis assumes SRM default value of 11mode shift from drive alone per HOV lane per hour. This is representative of recent Southern California experience.
 - a. Level 1 Utilize full capacity of 8-mile I-15 HOV lane. (50% of 2 times 8 miles

From SRM: ROG = 0.05% (65) = 0.0325 T/D ROG NOx = 0.05% (101) = 0.0505 T/D NOx 0.0830 T/D ROG + NOxCO = 0.06% (698) = 0.4190 T/D CO

No additional cost required.

b. <u>Level 2</u> - Add additional HOV lanes as described in TCM Plan to 36.9 lane miles total.

From SRM: (Extrapolated from SRM output 1)

ROG = 0.23% (65) = 0.15 T/D ROG NOx = 0.23% (101) = 0.23 T/D NOx 0.38 T/D ROG + NOx CO = 0.28% (698) = 1.95 T/D

Level 2 Cost = \$112.3 M/yr. Annual Cost = \$9.5 M/yr. (30 yrs. @ 7.5%)

$$CE = \frac{\$9.5 \ M/yr}{0.38 \ T/D} \times 1.37 = \$34.25/lb.$$

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c. <u>Level 3</u> – Add additional HOV lanes as described in TCM Plan to 67.4 lane miles total.

From SRM: (Extrapolated from SRM output 1)

 $\begin{array}{rcl} \text{ROG} &=& 0.42\,\% \ (65) &=& 0.27 \ \text{T/D} \ \text{ROG} \\ \text{NOx} &=& 0.42\,\% \ (101) &=& \underline{0.42} \ \text{T/D} \ \text{NOx} \\ && 0.69 \ \text{T/D} \ \text{ROG} \ + \ \text{NOx} \\ \text{CO} &=& 0.51\,\% \ (698) \ =& 3.52 \ \text{T/D} \ \text{CO} \end{array}$

Level 3 Cost = \$248.9 M/yr. Annual Cost = \$21.1 M/yr. (30 yrs. @ 7.5%)

$$CE = \frac{521.1 \ M/yr}{0.69 \ T/D} \times 1.37 = $41.89/lb.$$

TCM EMISSION REDUCTIONS SUMMARY

Year: 2000 Basin: SAN DIEGO I/M. Yes Run Date: 3/26/91 7.22 pm TCM File: 00ML1326 325 Cost File: 00RL1326.PRN

Base On-Road Emissions (tons/day) ROG CO NOx PM 64.84 697.88 101.49 22.06

	After-TCM Emissions (tons/day)		TCM	Emissio	n Redu	ctions (%)			
Number	ROG	СО	NOx	PM	ROG	СО	NOx	PM	TCM Name
					-	—		—	
1	00.00	000.00	000.00	00.00	0.00	0.00	0.00	0.00	Jobs/Housing Balance
2	00.00	000.00	000.00	00.00	0.00	0.00	0.00	0.00	Densification
3	00.00	000.00	000.00	00.00	0.00	0.00	0.00	0.00	Mixed Use/Personal Tryl Red
4	00.00	000.00	000.00	00.00	0.00	0.00	0.00	0.00	Growth Controls
5	00.00	000.00	000.00	00.00	0.00	0.00	0.00	0.00	Pedestrian Improvements
6	64.31	691.44	101.50	22.05	0.81	0.92	01	0.00	Traffic Signal Improvements
7	00.00	000.00	000.00	00.00	0.00	0.00	0.00	0.00	Capacity Increases
8	64.55	694.27	101.05	21.96	0.45	0.52	0.43	0.42	Service Increases
9	64.74	696.50	101.37	22.03	0.15	0.20	0.11	0.13	Transit Pass Subsidy
10	64.83	697.77	101.47	22.05	0.01	0.02	0.02	0.02	Park-and-Ride Lots
11	64.80	697.44	101.44	22.05	0.05	0.05	0.05	0.05	High Occupancy Vehicle Lanes
12	64.64	695.75	101.28	22.02	0.30	0.31	0.20	0.15	Bicycle Improvements
13	62.22	663.83	098.64	21.31	4.03	4.88	2.80	3.39	Trip Reduction Ordinances
14	64.26	690.32	100.89	21.91	0.89	1.08	0.59	0.67	Ridesharing
15	64.84	697.89	101.49	22.06	0.00	0.00	0.00	0.00	Parking Management
16	64.75	696.63	101.38	22.03	.14	.18	.10	.12	Telecommuting
17	64.83	697.71	101.49	22.06	.01	.02	.00	.00	Flexible Work Hours
18	64.83	697.71	101.49	22.06	.01	.02	.00	.00	Staggered Work Hours
19	64.79	697.19	101.43	22.04	.08	.10	.05	.06	Compressed Work Week
20	00.00	000.00	000.00	00.00	.00	.00	.00	.00	Gas Tax/Cost Increase
21	00.00	000.00	000.00	00.00	.00	.00	.00	.00	VMT Tax
22	64.84	697.89	101.49	22.06	.00	.00	.00	.00	Motorist Information
23	64.84	697.89	101.49	22.06	.00	.00	.00	.00	Incident Management
24	64.81	697.50	101.49	22.06	.04	.06	.00	.00	Delivery Timing
25	64.65	695.45	101.49	22.06	.28	.35	.00	.00	Loading Facility Improvements
26	64.80	697.42	101.43	22.04	.05	.07	.06	.06	College Transit Subsidy
27	64.46	693.16	100.78	21.90	.58	.68	.69	.70	College TDM Program
28	00.00	000.00	000.00	00.00	.00	.00	.00	.00	Shapping Trip Red.
29 (00.00	000.00	000.00	00.00	.00	.00	.00	.00	Event Trip Red
30	00.00	00.00	000.00	00.00	.00	.00	.00	.00	Airport Trip Red

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TCM Results 2000MODEL LEVEL1 3-26-91

		l I Peak		Trip Redu Olf-Pea	Total		
	M TCM Description	 Number .	Percent	Number	Percent	Number	Percent
				-		· - ·	
1	Jobs/Housing Balance	1 0	0.00%	0	0.00%	0	0.00%
2	Densilication	0	0 00%	0	0.00%	0	0.00%
3	One Trip Per Day/Mixed Use	33,750	0 91%	78,750	1.54%	112,500	1 28%
4	Commute Transit/Vanpool Prog.	1,750	0.05%	0	0.00%	1,750	0.02%
5	Pedestrian Improvements	0	0.00%	0	0.00%	0	0.00%
6	Traffic Signal Improvements	0	0.00%	0	0.00%	0	0.00%
7	Capacity Increases	1 0	0.00%	0	0.00%	0	0.00%
8	Service Increases	20,540	0.55%	24,425	0.48%	44,965	0.51%
9	Transit Pass Subsidy	6,053	0.16%	5,157	0.10%	11,210	0.13%
10	Park-and-Ride Lots	0	0.00%	0	0.00%	0	0.00%
11	High Occupancy Vehicle Lanes	9,600	0.26%	0	0.00%	9,600	0.11%
12	Bicycle Improvements	17,608	0.48%	25,892	0.51%	43,501	0.49%
13	Trip Reduction Ordinances	178,839	4.83%	110,544	2.16%	289,383	3.28%
5 14	Ridesharing .	38,563	1.04%	32,850	0.64%	71,414	0.81%
1 5	Parking Management	0	0.00%	0	0.00%	0	0.00%
16	Telecommuting	5,531	0.15%	4,711	0.09%	10,242	0.12%
17	Flexible Work Hours	6,738	0.18%	(6,738)	-0.13%	0	0.00%
18	Staggered Work Hours	6,738	0.18%	(6,738)	-0.13%	0	0.00%
19	Compressed Work Week	3,654	0.10%	1,723	0.03%	5,377	0.06%
20	Gas Tax/Cost Increase	1 0	0.00%	0	0.00%	0	0.00%
21	VMT Tax	0	0.00%	0	0.00%	0	0.00%
22	Motorist Information	0	0.00%	0	0.00%	0	0.00%
23	Incident Management	0	0.00%	0	0.00%	0	0.00%
24	Delivery Timing	12,045	0.33%	(12,045)	-0.24%	0	0.00%
25	Loading Facility Improvements	0	0.00%	0	0.00%	0	0.00%
26	College Transit Sub	2,138	0.06%	1,822	0.04%	3,960	0.04%
27	College TDM Program	26,010	0.70%	22,157	0.43%	48,167	0.55%
28	Shopping Trip Red.	0	0.00%	0	0.00%	. 0	0 00%
29	Event Trip Red.	1 0	0 00%	0	0.00%	0	0 00%
30	Airport Trip Red	1 0	0 00%	0	0 00%	0	0 00%

TCM Results

2000MODEL LEVEL1 3-26-91

ZUUUMODEL LEVELT J-20-91			ion				
		Peak		Off-Peak		Total	
TC	M	Numbor	Porcent	Alumber			
	TCM Description				Percent	Number	Percent
		1,018,784	2.80%	867,853	2.05%	1,886,636	2 40%
		0	0.00%	0	0.00%	0	0 00%
2		202,500	0.56%	472,500	1.1196	675,000	0 86%
3		18,725	0.05%	0	0.00%	18,725	0 02%
4	Commune mansuranipor riog.	0	0.00%	0	0.00%	0	0 00%
5	Peoestian improvements	0	0.00%	0	0.00%	0	0.00%
0		0	0.00%	0	0.00%	0	0.00%
/		153,168	0.42%	168,362	0.40%	321,530	0.41%
8	Service Increases	64,771	0.18%	55,175	0.13%	119,946	0.15%
9	Transit Pass Subsidy	7,757	0.02%	6,977	0.02%	14,734	0.02%
10	Park-and-Hide Lois	71,587	0.20%	0	0.00%	71,587	0.09%
11	High Occupancy vehicle Lanes	46,750	0.13%	67,191	0.16%	113,941	0.14%
12	Bicycle Improvements	1,913,572	5.26%	1,182,823	2.79%	3.096.395	3.93%
ក្ក 13	Trip Reduction Ordinances	330,103	0.91%	281,199	0.66%	611.303	0.78%
- 14	Ridesharing	0	0.00%	. 0	0.00%	0	0.00%
15	Parking Management	59,177	0.16%	50,410	0.12%	109.587	0 14%
16	Telecommuting	72,096	0.20%	(72.096)	-0.17%	0	0.00%
17	Flexible Work Hours	72.096	0.20%	(72.096)	-0.17%	0	0.00%
18	Staggered Work Hours	39.098	0.11%	18.435	0.04%	57.533	0.07%
19	Compressed Work Week	0	0.00%	0	0.00%	000,10	0.00%
20	Gas Tax/Cost Increase	Ō	0.00%	0	0.00%	0	0.00%
21	VMT Tax	Ū	0.00%	0	0.00%	ů N	0.00%
22	Motorist Information	0	0.00%	0	0.00%	Ő	0.00%
23	Incident Management	240,892	0 66%	(240 892)	-0.57%	Ő	0.00%
24	Delivery Timing	0	0.00%	(240,032)	0.00%	Ő	0.00%
25	Loading Facility Improvements	22 AA 1	0.06%	19 491	0.05%	42 372	0.0076
26	i College Transit Sub	278 307	0.77%	237.076	0.05%	515 383	0.0376
27	College TDM Program	L, 0, 507 N	0 0.04	237,070 A	0.30 %	515,503 A	0,000
28	Shopping Trip Rod.	0	0.00%	0	0.0070	U	
29	Event Trip Red.	0	0.0070	0	0.0070	0	
30) Airport Trip Rød.	U	0 00 70	U	0.0070	U	0.00%

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TCM Results

2000MODEL LEVEL1 3-26-91

TCM		l I Speed Inco	Reduction in		
	TCM Description	Peak	Oll-Peak	Trips	
1	Jobs/Housing Balance	2.10%	0.77%	0	
2	Densilication	0.00%	0.00%	0	
3	One Trip Per Day/Mixed Use	0.42%	0.42%	25,425	
4	Commute Transit/Vanpool Prog.	0.04%	0 00%	543	
5	Pedestrian Improvements	0.00%	0.00%	0	
6	Traffic Signal Improvements	2.50%	2.50%	0	
7	Capacity Increases	0.00%	0.00%	0	
8	Service Increases	0.32%	0.15%	11,008	
9	Transit Pass Subsidy	0.13%	0.05%	11,210	
10	Park-and-Ride Lots	0.02%	0.01%	0	
11	High Occupancy Vehicle Lanes	0.29%	0.00%	2,976	
12	Bicycle Improvements	0.10%	0.06%	10,378	
. 13	Trip Reduction Ordinances	3.95%	1.05%	289,383	
2 14	Ridesharing	0.68%	0.25%	71,414.	
15	Perking Management	0.00%	0.00%	0	
16	Telecommuting	0.12%	0.04%	10,242	
17	Flexible Work Hours	0.15%	-0.06%	0	
18	Staggered Work Hours	0.15%	-0.06%	0	
19	Compressed Work Week	0.08%	0.02%	5,377	
20	Gas Tax/Cost Increase	0.00%	0.00%	0	
21	VMT Tax	0.00%	0.00%	0	
22	Motorist Information	0.00%	0.00%	0	
23	Incident Management	0.00%	0.00%	0	
24	Delivery Timing	0.50%	-0.21%	0	
25	Loading Facility Improvements	0.88%	0.88%	0	
26	College Transit Sub	į 0.05%	0.05%	1,009	
27	College TDM Program	1 0.57%	0.21% j	12,273	
28	Shupping Trip Red.	j 0.00%	0 00%	0	
29	Event Trip Rod.	0.00%	0 00% j	0	
30	Airport Trip Red.	0.00%	0 00%	0	

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SUMMARY OF INPUT VALUES

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Filename	2000M L1 32691	00ML1326.3
Baseline 1	ravel Characteristics	
Total	person trips	13,156,044
Total	commute person trips	3,128,044
Totai	commute vehicle trips	2,695.195
Total	non-commute vehicle trips	6,127,151
Total	peak period VMT	36.361.005
Total	off-peak period VMT	42,381,491
Drive-	alone share of commute person-trips	77 4%
Perce	nt of all trips in peak period	42.0%
Perce	nt of all trips that are commute trips	24 0%
Perce	nt of all trips that are non-commute trips	76.0%
Perce	nt of commute trips in peak period	54 0%
Perce	nt of non-commute trips in peak period	38.0%
Perce	nt of peak trips that are commute trips	31.0%
Perce trips	nt of off-peak trips that are commute	19.0%
Avera	ge commute trip length	10.7
Avera	ge non-commute trip length	6.0
Avera costs	ge daily commute out-of-pocket ; per vehicle	\$5 00
Avera	ge number of telecommuters per day	0.0
Perce	nt of all trips that are transit	1.2%
Comr	lute trip share of transit	48.0%
Total	ransit vehicle miles	103173
Perce	nt of commute trips less than 6 miles	25.0%
Perce miles	nt of non-commute trips less than 5	60 .0 % :
Avera	ge cost of gas per gallon	\$ 1.75
Avera	ge cost per mile to drive	\$0.300
Avera vehic	ge commute out-of-pocket costs per de per trip	\$2 .50
Avera	ge non-commute out-of-pocket costs per de per trip	\$1.40
Percei	nt of VMT on freeways	55.8%
Avera	ge trip length for trucks	20 0

Assumptions

Elasticity of speed with respect to volume

	Peak	-0.750
	Off-Peak	-0.375
Ea	sticity of transit use with respect	-0.400
to	COST	
Eia	sticity of transit use with respect	0.800
to	Service	
Ave	erage mode shift from drive alone per mile	100
of	HOV lane per hour	
Ela	sticity of parking demand with	-0.200
re	spect to cost for commute trips	
Ela	sticity of auto use with respect to	-0.100
00	est of gasoline	
Ela	sticity of auto use with respect to	-0.075
81	ito operating costs	
TCM S	Decific Parameters	
#1	Jobs/Housing Balance	
	Revised average work trip length	10
#2	Densification	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Reduction in peak VMT	0
	Reduction in off-peak VMT	0
#3	One Trip Per Day/Mixed Use	
	Reduction in peak trips	33,750
	Reduction in off-peak trips	78,750
	Reduction in peak VMT	202.500
	Reduction in off-peak VMT	472,500
#4	Commute Transit/Vanpool Prog.	
	Reduction in peak trips	1,750
	Reduction in off-peak trips	0
	Reduction in peak VMT	18,725
	Reduction in off-peak VMT	0
#5	Pedestrian Improvements	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Reduction in peak VMT	0
	Reduction in off-peak VMT	0
#6	Traffic Signal Improvements	-
	Reduction in peak trips	0
	Reduction in off-peak trips	0 ,
	Percent increase in peak speeds	2.5-

	Percent increase in off-peak speeds	2 5 %
#7	Capacity Increases	
	Reduction in peak trips	٥
	Reduction in off-peak trips	0
	Percent increase in peak speeds	0.0%
	Percent increase in off-peak speeds	0.0%
#8	Service Increases	
	Increase in vehicle miles	61220.36
	Average percent fare decrease	0.0%
	Percent of transit ridership increase	50.0%
	that equals the trip reduction	••••
#9	Transit Pass Subsidy	
	Percent of cost of a monthly transit	50.0%
	pass subsidized	
	Percent of employment affected	3.9%
	Percent of transit ridership increase	60.0%
	that equals the trip reduction	
#10	Park-and-Ride Lots	
	Number of park-and-ride lot spaces	1730
	Average percent utilization rate	95.0%
	Percent of use that is commute trips	95.0%
	Average distance to park-and-ride lot	1.5
#11	High Occupancy Vehicle Lanes	
	Miles of freeway affected	16.0
	Number of hours in peak periods	6.0
	Number of existing lanes on freeway	4 0
	Induced number of vehicle trips on	0.0
	mixed-flow lanes due to additional capacity	
	Percent of freeways affected	0.3%
#12	Bicycle Improvements	
	Percent of commute trips less than 6	1.0%
	miles that would bicycle	
	Percent of non-commute trips less than	1.0%
	5 miles that would bicycle	
	Bicycle average commute trip length	30
-	Bicycle avg. non-commute trip length	2.5
#13	Trip Reduction Ordinances	_
	Revised average vehicle occupancy rate	1.5
	Average number of new telecommuters per day	0.0
	Percent of employees affected	52 4 %
	For employees affected, revised	63 .5%
	percent that arrive in the peak	

	Revised percent of vehicles that	61.8%
F 199	Percent present in non-drive slope	
		30.0%
	Bercent of maximum VMT realized due to	
		80.0%
	traneit	
		2.8
	Percent of employees affected	6.0 69.404
#15		32.470
	Average daily increase in	\$0.00
	parking charge	
	Percent of employees affected	90.2%
	Percent of maximum VMT realized due to	80.0%
	circuity of ridesharing or access to	
	transit	
#16	Telecommuting	
•	Workforce participation rate	1.0%
	Average number of days per week	1.9
	employees participate	
#17	Flexible Work Hours	
	Percent of all employees that shift	0.3%
	out of the peak period	
#18	Staggered Work Hours	
	Percent of all employees that shift	0.3%
	out of the peak period	
#19	Compressed Work Week	
•	Workforce participation rate	1.5%
	Average number of days per week	0.7
	employees participate	
	Percent of participating trips that	2.0%
	shift out of the peak period	
	Average number of induced non-commute	0.0
	trips on employee's day off	
#20	Gas Tax/Cost Increase	
	Increase in cost per gallon	\$0.00
#21	VMT Tax	
	VMT tax per mile	\$0.000
#22	Motorist Information	
	Percent increase in freeway speeds	5.0%
	Percent of freeway system affected	0.0%
#23	Incident Management	

	Percent increase in freeway speeds	5.0%
	Percent of freeway system affected	0.0%
#24	Delivery Timing	
	Number of trucks that shift from the peak to the off-peak	12045
#25	Loading Facility Improvements	
	Percent increase in arterial speeds	20.0%
	Percent of arterial system affected	10.0%

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TCM EMISSION REDUCTIONS SUMMARY

Year 2000 Basin SAN DIEGO I/M Yes

Run Date: 3 25 91 8 09 tm TCM File: 00ML2326 315 Cost File: 00RL2326 PRN

Base On-Road Emissions (tons/day) ROG CO NOx PM 64.84 697.88 101.49 22.06

	After	TCM	Err	115510	ns (tonsi	dav:		TCN	Emissi	on Redu		D /
Numbe	er P	NOG	C	0	NO	x	PM		RC	G C		Dx PM	TCM Name
		-	-	• -	•-	•	-		-				
1	00.00	000	00	00.	00	00.0	00	0.	00	0.00	00.00	0.00	Jobs/Housing Balance
2	00.00	000.0	CO	00.	00	00.0	00	0.0	00	0.00	00.00	0.00	Densification
3	00.00	000.	00	00.	00	00.0	00	0.0	00	0.00	00.00	0.00	Mixed Use/Personal Trvi Rec
4	00.00	000.	00	00.	00	00.0	00	0.0	00	0.00	00.00	0.00	Growth Controls
5	00.00	000.(00	00.1	00	00.0	00	0.0	00	0.00	00.00	0.00	Pedestrian Improvements
6	63.78	685.2	25	101	51	22.	06	1.	63	1.81	02	0.00	Traffic Signal Improvements
7	00.00	000.0	00	000	.00	00.	00	0.	.00	0.00	0.00	0.00	Capacity Increases
8	64.26	690.1	84	100.	62	21.	87	0.	89	1.01	0.85	0.83	Service Increases
3	04.34	691.	10	100.	33	21.	91	Q.	//	0.90	0.35	0.55	Fransit Pass Subsidy
	04.54	03/.	00	101	.43	22	.05	0	.02	0.03	0.04	0.04	Park-ang-Ride Lots
11	64.65	695.	48	101	.32	22	.02	0	.29	0.34	0.17	0.17	High Occupancy Vehicle Lanes
12	64.64	695.	75	101	.28	22	.02	Ó	.30	0.31	0.20	0.15	Bicycle Improvements
13	59.58	629.	83	095	.77	20	.54	8	.10	9.75	5.63	6.85	Trip Reduction Ordinances
14	64.C3	687.	46	100	.66	21	85	1	.24	1.49	0.82	0.93	Ridesharing
15	62.48	667 .	88	099	.06	21	.45	3	.64	4.30	2.39	2.73	Parking Management
16	63 92	685	82	100	48	21	79	۱	41	1 73	1.00	1 20	Telecommutics
17	64 75	696	90	101	49	22	06	Ó	14	0.14	0.00	0.00	Flexible Work Hours
18	64 75	695	90	101	49	22	.06	ō	.14	0.14	0.00	0.00	Staggered Work Hours
19	64.C3	687.	68	100	.95	21	92	1	.25	1.46	0.53	0.63	Compressed Work Week
20	00.00	000.	00	000	.00	00	.00	0	.00	00.00	0.00	0.00	Gas Tax/Cost Increase
.	00.00	000	00	000	00	00	00	0	00	0.00	0.00	0.00	VMT Tax
2 · 7 7	64 31	691	42	101	50	22	06	ŏ	81	0.93	01	0.00	Motorist Information
22	64 31	691	42	101	50	22	06	ō	81	0.93	.01	0.00	Incident Management
24	64.81	697	50	101	.49	22	06	ō	.04	0.06	0.00	0.00	Delivery Timing
25	64 65	695	45	101	49	22	.06	ŏ	28	0.35	0.00	0.00	Loading Facility Improvements
	•••••		~•				•••	•				•	• • • •
26	64.50	693.	56	100	.91	21	93		52	.62	.57	.58	College Transit Sub
27	64.46	693.	16	100	.78	21	90		58	.68	.69	.70	College TDM Program
28	00.00	000.0	00	000	.00	00	00		00	.00	.00	.00	Shopping Trip Red
29	00.00	000	00	000	.00	00	00	•	00	.00	.00.	.00.	Event Trip Rec
30	00.00	000.	00	000	.00	00	00		00	.00	.00	.00	Arport Trip Red

TCM Results

2000MODEL LEVEL2 3-26-91		l I Deele		Trip Redu	ction		
TCM		l Peak		UII-Pea	K	Total	
	TCM Description	Number	Percent	Number	Percent	Number	Percent
1	Jobs/Housing Balance	I I 0	0.00%	· · · · · · · · · · · · · · · · · · ·	0.00%		0.00%
2	Densilication	, 0	0.00%	Ŭ	0.00%	0	0 00%
3	One Trip Per Day/Mixed Use	337.500	9 11%	787 500	15 3996	1 125 000	12 7596
4	Commute Transit/Vanpool Program	17.500	0.47%	0	0.00%	17 500	0 20%
5	Pedestrian Improvements	1 0	0.00%	0	0.00%	0	0 00%
6	Traffic Signal Improvements	i O	0.00%	0	0.00%	Û Û	0.00%
7	Capacity Increases	i O	0.00%	0	0.00%	Ŭ O	0.00%
8	Service Increases	40.941	1.10%	48.685	0.95%	89.626	1 02%
9	Transit Pass Subsidy	30,267	0.82%	25,783	0.50%	56.050	0.64%
10	Park-and-Ride Lots	1 0	0.00%	0	0.00%	0	0.00%
11	High Occupancy Vehicle Lanes	22,140	0.60%	0	0.00%	22,140	0.25%
12	Bicycle Improvements	17,608	0.48%	25,892	0.51%	43,501	0.49%
13	Trip Reduction Ordinances	271,479	7.33%	167,807	3.28%	439,286	4.98%
14	Ridesharing	53,597	1.45%	45,657	0 89%	99,254	1.13%
15	Parking Management	105,022	2.83%	89,463	1.75%	194,485	2.20%
16	Telecommuting	55,305	1.49%	47,112	0.92%	102,417	1.16%
17	Flexible Work Hours	67,380	1.82%	(67,380)	-1.32%	0	0.00%
18	Staggered Work Hours	67,380	1.82%	(67,380)	-1.32%	0	0.00%
19	Compressed Work Week	216,657	5.85%	(162,888)	-3.18%	53,769	0 61%
20	Gas Tax/Cost Increase	550,514	14.86%	760,234	14.86%	1,310,749	14.86%
21	VMT Tax	551,131	14.87%	761,086	14.87%	1,312,217	14 87%
22	Motorist Information	0	0.00%	0	0.00%	0	0 00%
23	Incident Management	1 0	0.00%	0	0.00%	0	0 00%
24	Delivery Timing	12,045	0.33%	(12,045)	-0.24%	0	0 00%
25	Loading Facility Improvements	1 0	0.00%	0	0.00%	0	0.00%
26	College Transit Sub	21,384	0.58%	18,216	0.36%	39,600	0 45%
27	College TDM Program	26,010	0.70%	22,157	0.43%	48,167	0.55%
28	Shopping Trip Red.	126,816	3 42%	380,449	7.44%	507,265	5 75%
29	Event Trip Red	25,000	0 67%	0	0 00%	25,000	0 28%
30	Airport Trip Red.	27,000	0.73%	0	0 00%	27,000	0 31%

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TCM Results

		2000MODEL LEVEL2 3-26-91	1	VMT Reduction							
TCM			l Peak		Off-Peak		Total				
	ICI										
		ICM Description	l Numbør	Percent	Number	Percent	Number	Percent			
	1	Jobs/Housing Balance	 1,018,784	2.60%	867,853	2.05%	1.886.636	2 40%			
	2	Densilication	i 0	0.00%	. 0	0.00%	0	0.00%			
	3	One Trip Per Day/Mixed Use	2,025,000	5.57%	4,725,000	11.15%	6.750.000	8 57%			
	4	Commute Transit/Vanpool Program	187,250	0.51%	0	0.00%	187.250	0 24%			
	5	Pedestrian Improvements	0	0.00%	0	0.00%	0	0 00%			
	6	Traffic Signal Improvements	0	0.00%	0	0.00%	0	0.00%			
	7	Capacity Increases	. 0	0.00%	0	0.00%	0	0 00%			
	8	Service Increases	305,298	0.84%	335,585	0.79%	640,883	0 81%			
	9	Transit Pass Subsidy	323,854	0.89%	275,876	0.65%	599,730	0.76%			
	10	Park-and-Ride Lots	18,517	0.05%	16,657	0.04%	35,174	0 04%			
	11	High Occupancy Vehicle Lanes	165,098	0.45%	0	0.00%	165,098	0.21%			
	12	Bicycle Improvements	46,750	0.13%	67,191	0.16%	113,941	0.14%			
	13	Trip Reduction Ordinances	2,904,824	7.99%	1,795,539	4.24%	4,700,363	5.97%			
с С	14	Ridesharing	458,792	1.26%	390,823	0.92%	849,615	1.08%			
	15	Parking Management	898,989	2.47%	765,805	1.81%	1,664,794	2.11%			
	16	Telecommuting	591,768	1.63%	504,09 8	1.19%	1,095,866	1.39%			
	17	Flexible Work Hours	720,965	1.98%	(720,965)	-1.70%	0	0 00%			
	18	Staggered Work Hours	720,965	1.98%	(720,965)	-1.70%	0	0.00%			
	19	Compressed Work Week	2,318,233	6.38%	(1,742,903)	-4.11%	575,330	0.73%			
	20	Gas Tax/Cost Increase	4,105,186	11.29%	5,240,294	12.36%	9,345,480	11.87%			
	21	VMT Tax	4,109,784	11.30%	5,246,163	12.38%	9,355,947	11 88%			
	22	Motorist Information	0	0.00%	0	0.00%	0	0.00%			
	23	Incident Management	0	0.00%	0	0.00%	0	0 00%			
	24	Delivery Timing	240,892	0.66%	(240,892)	-0.57%	0	0.00%			
	25	Loading Facility Improvements	1 0	0.00%	0	0.00%	0	0.00%			
	26	College Transit Sub	į 228,809	0.63%	194,911	0.46%	423,720	0.54%			
	27	College TDM Program	278,307	0.77%	237,076	0.56%	515,383	0 65%			
	28	Shopping Trip Red.	760,898	2 09%	2,282,693	5.39%	3,043,590	3 87%			
	29	Event Trip Red.	267,500	074%	0	0 00%	267,500	0 34%			
	30	Airport Trip Red.	288,900	079%	0	0 00%	288,900	0 37%			

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 Speed Increase			Reduction in
Pee	nk	Daily Commute Trips	
-	2.10%	0.77%	0
	0.00%	0.00%	0
	4 18%	4.18%	254.250
	0.39%	0.00%	5.425
	0.00%	0 00%	0
	5.00%	5 00%	0
	0.00%	0.00%	0
	0.63%	0 30%	21,942
	0.67%	0.24%	56.050
	0 04%	0.01%	0
	1.54%	0.00%	6.863
	0.10%	0.06%	10.378
	5.99%	1.59%	439,286
5	0.95%	0.35%	99.254
4	1.85%	0.68%	194,485
	1.22%	0.45%	102.417
	1.49%	-0.64%	0
	1.49%	-0.64%	0
	4.78%	-1.54%	53.769
	8.47%	4.64%	315.104
	8.48%	4.64%	315.457
	2 51%	2.51%	0
	2.51%	2.51%	0
	0 50%	-0.21%	Ō
	0.88%	0.88%	0
	0 47%	0 47%	10.090
	0 57%	0.21%	12.273
	1.57%	2 02%	111.598
	0 55%	0 00%	7.750
	0 60%	0 00%	8.370

SUMMARY OF INPUT VALUES

Baseline Travel Characteristics	
Total person trips	13.156.044
Total commute person trips	3,128.044
Total commute vehicle trips	2.695,195
Total non-commute vehicle trips	6,127,151
Total peak period VMT	36.361.005
Total off-peak period VMT	42,381.491
Drive-alone share of commute person-trips	77 4%
Percent of all trips in peak period	42.0%
Percent of all trips that are commute trips	24.0%
Percent of all trips that are non-commute trips	76.0%
Percent of commute trips in peak period	54 0%
Percent of non-commute trips in peak period	38.0%
Percent of peak trips that are commute trips	31.0%
Percent of off-peak trips that are commute trips	19.0%
Average commute trip length	10 7
Average non-commute trip length	6 0
Average daily commute out-of-pocket costs per vehicle	\$ 5 00
Average number of telecommuters per day	0.0
Percent of all trips that are transit	1.2%
Commute trip share of transit	48.0%
Total transit vehicle miles	103173
Percent of commute trips less than 6 miles	25.0%
Percent of non-commute trips less than 5 miles	60.0%
Average cost of gas per gallon	\$ 1 75
Average cost per mile to drive	\$0.300
Average commute out-of-pocket costs per vehicle per trip	\$2.50
Average non-commute out-of-pocket costs per vehicle per trip	\$1.40
Percent of VMT on freeways	55.8%
Average trip length for trucks	20.0
Assumptions	
Elasticity of speed with respect to volume Peak	-0.750

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Off-Peak	-0.375
Elasticity of transit use with respect	-0.400
Elasticity of transit use with respect	0.800
to service Average mode shift from drive slope per mile	100
of HOV lane per hour	
Elasticity of parking demand with respect to cost for commute trips	-0 .200
Elasticity of auto use with respect to cost of gasoline	-0.100
Elasticity of auto use with respect to auto operating costs	-0.075

TCM Specific Parameters

#1	Jobs/Housing Balance	
	Revised average work trip length	10
#2	Densification	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Reduction in peak VMT	0
	Reduction in off-peak VMT	0
#3	One Trip Per Day/Mixed Use	
	Reduction in peak trips	337,500
	Reduction in off-peak trips	787.500
	Reduction in peak VMT	2.025.000
	Reduction in off-peak VMT	4,725,000
#4	Commute Transit/Vanpool Program	
	Reduction in peak trips	17,500
	Reduction in off-peak trips	0
	Reduction in peak VMT	187,250
	Reduction in off-peak VMT	0
#5	Pedestrian Improvements	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Reduction in peak VMT	0
	Reduction in off-peak VMT	0
#6	Traffic Signal Improvements	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Percent increase in peak speeds	5.0%
	Percent increase in off-peak speeds	5.0%

#7	Capacity Increases	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Percent increase in peak speeds	0.0%
	Percent increase in off-peak speeds	0.0%
#8	Service Increases	
	increase in vehicle miles	122026 24
	Average percent fare decrease	0.0%
	Percent of transit ridership increase	60.0%
	that equals the trip reduction	
#9	Transit Pass Subsidy	
	Percent of cost of a monthly transit	50.0%
	pass subsidized	
	Percent of employment affected	19.3%
	Percent of transit ridership increase	60.0%
	that equals the trip reduction	
#10	Park-and-Ride Lots	
	Number of park-and-ride lot spaces	4130
	Average percent utilization rate	95.0%
	Percent of use that is commute trips	95.0%
	Average distance to park-and-ride lot	1.5
#11	High Occupancy Vehicle Lanes	
	Miles of freeway affected	36.9
	Number of hours in peak periods	6.0
	Number of existing lanes on freeway	4.0
	Induced number of vehicle trips on	0.0
	mixed-flow lanes due to additional capacity	
	Percent of freeways affected	0.6%
#12	Bicycle Improvements	
	Percent of commute trips less than 6	1.0%
	miles that would bicycle	
	Percent of non-commute trips less than	1.0%
	5 miles that would bicycle	
	Bicycle average commute trip length	3.0
	Bicycle avg. non-commute trip length	2.5
#13	Trip Reduction Ordinances	_
	Revised average vehicle occupancy rate	1.7
	Average number of new telecommuters per day	0.0
	Percent of employees affected	54.6%
	For employees affected, revised	63.5%
	percent that arrive in the peak	
	Revised percent of vehicles that	61.8%

	arrive in the neak	
	Ridesharing	
H 1 -	Percent increase in non-drive-alone	30.0%
	Percent of maximum VMT realized due to	80.004
		6 0.0 40
	transit	
	Average carpool size	2.8
	Percent of employees affected	72.8%
#15	Parking Management	
	Average daily increase in	\$2.00
	parking charge	
	Percent of employees affected	90.2%
	Percent of maximum VMT realized due to	80.0%
	circuity of ridesharing or access to	
	transit	
#16	Telecommuting	
	Workforce participation rate	10.0%
	Average number of days per week	1.9
	employees participate	
#17	Flexible Work Hours	
	Percent of all employees that shift	2.5%
	out of the peak period	
#18	Staggered Work Hours	
	Percent of all employees that shift	2.5%
	out of the peak period	
#19	Compressed Work Week	
	Workforce participation rate	15.0%
	Average number of days per week	0.7
	employees participate	
	Percent of participating trips that	50.04
	shift out of the peak period	
	Average number of induced non-commute	0.0
	trips on employee's day off	
#20	Gas Tax/Cost Increase	
	Increase in cost per gallon	\$2.60
#21	VMT Tax	
	VMT tax per mile	SO.45 0
#22	Motorist Information	·····
	Percent increase in freeway speeds	5.0%
	Percent of freeway system affected	90.0%
#23	Incident Management	
	Percent increase in freeway speeds	5.0%

	Percent of freeway system affected	90.0%
#24	Delivery Timing	
	Number of trucks that shift from the	12045
	peak to the off-peak	
#25	Loading Facility Improvements	
	Percent increase in arterial speeds	20 0 -
	Percent of arterial system affected	10.0%

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TCM EMISSION REDUCTIONS SUMMARY

Year: 2000 Basin San Diego I/M Yes Run Date: 4/04/91 4.02 pm TCM File: 00ML3325 325 Cost File: 00RL3326 PRN

Base On-Road Emissions (tons/day) ROG CO NOx PM ______ 64.84 697.88 101.49 22.06

	After	TCM	Em	ISSIO	ns (ti	ons/	day)	٦	ICM	Emissio	n Reduc	tions (%)
Numbe	er A	OG	C	0	NO	ĸ	PM		RO	G CO	NO	x PM	TCM Name
	•••	-		-	-	-	-		-				
									~ ~				
1	00.00	000.	.00	000	.00	00.	00	00	.00	00.00	00.00	00.00	Jobs/Housing Balance
2	00.00	000.	.00	000	.00	00.	00	00	.00	00.00	00.00	00.00	Densification
3	53.41	567.	99	084	72	18.	5Z	17	.6Z	18.51	16.52	15.59	One Trip Per Day/Mixed Use
4	00.00	000.	.00	000	00	00.	00	00	.00	00.00	00.00	00.00	Commute Transit/Vanpool Prog
5	00.00	000.	00	000	00	00.	00	00	.00	00.00	00.00	00.00	Pedestrian Improvements
£			75	••••		~ ~	~ F	•	e 7		. 07	0.00	
7	CJ./O	807	43	101.	40	24.	00	•	03	0.00	0.02	0.00	Francisca Signal Improvements
é	64 22	637. 690	50	101.	-7 20	24.	95	0.		1.06	0.00	0.00	
٥ ۵	64.23	03U.	16	100	30	- <u>4</u> 1.	00 01	Ŭ.	34 77	0.00	0.30	0.67	Traper Base Subadu
3	64.34	807	50	100.	33	41.	3 1	0.	04	0.90	0.33	0.00	Park and Ride Lass
· •	04.01	03/	.90	101	.43	44	. 🗸 👄	U		0.05	0.08	0.07	Park-and-hiue Lots
11	64 11	689	05	101	.10	21	97	1	13	1.27	0.38	0.39	High Occupancy Vehicle Lanes
12	64.64	695	.75	101	.28	22	02	0	30	0.31	0.20	0.15	Bicycle Improvements
13	59.58	629	83	095	.77	20	.54	E.	10	9.75	5.63	6.85	Trip Reduction Ordinances
14	64.03	687	46	100	66	21	.85	1	24	1.49	0.82	0.93	Ridesharing
15	62.48	667	88	099	.06	21	.45	3	64	4.30	2.39	2.73	Parking Management
•		•••				•	•••	•					
16	63.92	685	.82	100	.48	21	.79	1.	41	1.73	1.00	1.20	Telecommuting
17	64.75	696	.90	101	.49	22	.06	0.	.14	0.14	0.00	0.00	Fiexible Work Hours
18	64.75	696	90	101	.49	22	.06	0.	14	0.14	0.00	0.00	Staggered Work Hours
19	64.03	687	.68	100	.95	21	.92	1.	25	1.46	0.53	0.63	Compressed Work Week
20	00.00	000	.00	00.	00	00.	00	0.0	00	0.00	0.00	0.00	Gas Tax/Cost Increase
• ·					• •		• •	_					
21	00.00	000	.00	000	.00	00	.00	0.	00	0.00	0.00	0.00	VMT Tax
22	64.31	691	.42	101	.50	22	.05	0.	81	0.93	•.01	0.00	Motorist Information
23	64.31	691	.42	101	.50	22	.05	0.	81	0.93	•.01	0.00	Incident Management
24	64 81	697	.50	101	.49	ZZ	.05	0.	04	0.06	0.00	0.00	Delivery Timing
25	64.65	695.	.45	101	.49	22	.05	0.	28	0.35	0.00	0.00	Loading Facility Improvements
76			E 6	100		••	62	~	57	0.87	0 57		College Traces Sub
40 77		807J.	. 30 1 #	100	.31	- <u>∠</u> . - •	33	0.	34		0.3/	0.30	College TDM Brook
4/ 98		000	00	000	./8	41		0.	30	0.00		0.70	
40 20		000	200	000	.00			U.	00	0.00	0.00	0.00	Shupping Hig HEG. Event The Bed
4J 20				000	00		00	U.	00	0.00	0.00	0.30	
30		000	00	000		00	.00	Ų.	00	0.00	0.00	0.00	mapur ing med

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TCM Results

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2000 MODEL LEVEL 3 3-26-91		l I Peak		Trip Redu Olf-Pea	ction k	Total	
	TCM Description	 Number	Percent	Number	Percent	Number	Percent
1	Jobs/Housing Balance	1	0.00%	0	0.00%	0	0.00%
2	Densilication	i O	0.00%	Ō	0.00%	0	0.00%
3	One Trip Per Day/Mixed Use	599,730	16.19%	1,399,371	27.35%	1.999.101	22 66%
4	Commute Transit/Vanpool Program	35,750	0.96%	0	0.00%	35.750	0 41%
5	Pedestrian Improvements	1 0	0.00%	Ō	0.00%	0	0.00%
6	Traffic Signal Improvements	i O	0.00%	0	0.00%	0	0.00%
7	Capacily Increases	i O	0.00%	0	0.00%	0	0.00%
8	Service Increases	43,117	1.16%	51,272	1.00%	94.389	1 07%
9	Transit Pass Subsidy	30,267	0.82%	25,783	0.50%	56.050	0.64%
10	Park-and-Ride Lots	1 0	0.00%	. 0	0.00%	0	0 00%
11	High Occupancy Vehicle Lanes	40,440	1.09%	0	0.00%	40,440	0.46%
12	Bicycle Improvements	17,608	0.48%	25,892	0.51%	43,501	0.49%
13	Trip Reduction Ordinances	361,972	9.77%	223,743	4.37%	585,715	6.64%
14	Ridesharing	53,597	1.45%	45,657	0.89%	99,254	1.13%
15	Parking Management	157,533	4.25%	134,195	2.62%	291,728	3.31%
16	Telecommuting	55,305	1.49%	47,112	0.92%	102,417	1.16%
17	Flexible Work Hours	67,380	1.82%	(67,380)	-1.32%	0	0.00%
18	Staggered Work Hours	67,380	1.82%	(67,380)	-1.32%	0	0.00%
19	Compressed Work Week	216,657	5.85%	(162,888)	-3.18%	53,769	0.61%
20	Gas Tax/Cost Increase	550,514	14.86%	760,234	14.86%	1,310,749	14.86%
21	VMT Tax	551,131	14.87%	761, 086	14.87%	1,312,217	14.87%
22	Motorist Information	1 0	0.00%	0	0.00%	0	0.00%
23	Incident Management	1 0	0.00%	0	0.00%	0	0.00%
24	Delivery Timing	12,045	0.33%	(12,045)	-0.24%	0	0 00%
25	Loading Facility Improvements	0	0.00%	0	0.00%	0	0 00%
26	College Transit Sub	21,384	0.58%	18,216	0.36%	39,600	0.45%
27	College TDM Program	26,010	0.70%	22,157	0.43%	48,167	0.55%
28	Shopping Trip Red.	126,816	3.42%	380,449	7.44%	507,265	5.75%
29	Event Trip Red.	25,000	0.67%	0	0.00%	25,000	0 28%
30	Auport Trip Red.	27,000	0 73%	0	0.00%	27,000	0 31%

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TCM Results

		2000 MODEL LEVEL 3 3-26-91	F Reduction					
			l Peak		Off-Peak		Total	
	TC	M			*****			
		TCM Description	l Number	Percent	Number	Percent	Number	Percent
	1	Jobs/Housing Balance	1.018.784	2.80%	867.853	2 05%	1 886 636	2 40%
	2	Densification	1 0	0.00%	0	0.00%	1,000,000	0.00%
	3	Onn Trip Per Day/Mixed Use	3,598,383	9.90%	8.396.226	19.81%	11 994 608	15 23%
	4	Commute Transit/Vanpool Program	382,525	1.05%	0	0.00%	382 525	0 49%
	5	Pedestrian Improvements	1 0	0.00%	· 0	0.00%	0	0.00%
	6	Traffic Signal Improvements	0	0.00%	0	0.00%	0	0.00%
	7	Capacity Increases	0	0.00%	Ō	0.00%	0	0.00%
	8	Service Increases	321,524	0.88%	353.420	0.83%	674.943	0.86%
	9	Transit Pass Subsidy	323,854	0.89%	275,876	0.65%	599,730	0.76%
	10	Park-and-Ride Lots	29,278	0.08%	26,336	0.06%	55,614	0.07%
	11	High Occupancy Vehicle Lanes	301,561	0.83%	0	0.00%	301,561	0.38%
	12	Bicycle Improvements	46,750	0.13%	67,191	0.16%	113,941	0.14%
	13	Trip Reduction Ordinances	3,873,099	10.65%	2,394,051	5.65%	6,267,150	7.96%
t,	14	Ridesharing	458,792	1.26%	390,823	0.92%	849,615	1.08%
	15	Parking Management	1,348,483	3.71%	1,148,708	2.71%	2,497,191	3.17%
	16	Telecommuting	591,768	1.63%	504,098	1.19%	1,095,866	1.39%
	17	Flexible Work Hours	į 720,965	1.98%	(720,965)	-1.70%	0	0.00%
	18	Staggered Work Hours	720,965	1.98%	(720,96 5)	-1.70%	0	0.00%
	19	Compressed Work Week	2,318,233	6.38%	(1,742,903)	-4.11%	575,330	0.73%
	20	Gas Tax/Cost Increase	4,105,186	11.29%	5,240,294	12.36%	9,345,480	11.87%
	21	VMT Tax	4,109,784	11.30%	5,246,163	12.38%	9,355,947	11.88%
	22	Motorist Information	0	0.00%	0	0.00%	0	0.00%
	23	Incident Management	0	0.00%	0	0.00%	0	0.00%
	24	Delivery Timing	240,892	0.66%	(240,892)	-0.57%	0	0.00%
	25	Loading Facility Improvements	0	0.00%	0	0.00%	0	0.00%
	26	College Transit Sub	228,809	0.63%	194,911	0.46%	423,720	0.54%
	27	College TDM Program	278,307	0.77%	237,076	0.56%	515,383	0.65%
	28	Shopping Trip Red.	760,898	2 09%	2,282,693	5.39%	3,043,590	3 87%
	29	Event Trip Red.	267,500	0 74%	0	0.00%	267,500	0 34%
	30	Airport Trip Fled.	288,900	0 79%	0	0.00%	288,900	0.37%

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2000 MODEL LEVEL 3 3-26-91

		I Speed Inc	Reduction In	
		·		
	Cm Description	Peak 	Off-Peak	Trips
1	Jobs/Housing Balance	 2.10%	0.77%	0
2	Densification	0.00%	0 00%	0
3	One Trip Per Day/Mixed Use	7.42%	7.43%	451 797
4	Commute TransiVVanpool Program	0.79%	0.00%	11.083
5	Pedestrian Improvements	0.00%	0.00%	0
6	Traffic Signal Improvements	1 5.00%	5.00%	0
7	Capacity Increases	0.00%	0.00%	0
8	Service Increases	0.66%	0.31%	23,108
9	Transit Pass Subsidy	0.67%	0.24%	56.050
10	Park-and-Ride Lots	0.06%	0.02%	0
11	High Occupancy Vehicle Lanes	5.14%	0.00%	12,536
12	Bicycle Improvements	j 0.10%	0.06%	10,378
13	Trip Reduction Ordinances	7.99%	2.12%	585,715
14	Ridesharing	0.95%	0.35%	99,254
15	Parking Management	2.78%	1.02%	291,728
16	Telecommuting	1.22%	0.45%	102,417
17	Flexible Work Hours	1.49%	-0.64%	0
10	Staggered Work Hours	1.49%	-0.64%	0
19	Compressed Work Week	4.78%	-1.54%	63,769
20	Gas Tax/Cost Increase	8.47%	4.64%	315,104
21	VMT Tax	8.48%	4.64%	315,457
22	Motorist Information	2.51%	2.51%	0
23	Incident Management	2.51%	2.51%	0
24	Delivery Timing	0.50%	-0.21%	0
25	Loading Facility Improvements	0.88%	0.88%	0
26	College Transit Sub	0.47%	0.47% (10,090
27	College TDM Program	0.57%	0.21%	12,273
28	Shopping Trip Red.	1 57%	2.02%	111,598
29	Event Trip Red.	0 55%	0 00% (7,750
30	Airport Trip Red.	0 60%	0 00%	8,370

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SUMMARY	OF INPUT	VALUES
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Filename	2000 MODEL LEVEL 3 3-26-91	00ML3326.3
Baseline Tra	ave! Characteristics	
Total pe	erson trips	13.156.044
Total co	mmute person trips	3,128,044
Total co	mmute vehicle trips	2,695,195
Total no	n-commute vehicle trips	6,127,151
Total pe	ak period VMT	36.361.005
Total of	f-peak period VMT	42,381.491
Drive-a	ione share of commute person-trips	77 4%
Percent	of all trips in peak period	42.0%
Percent	of all trips that are commute trips	24.0%
Percent	of all trips that are non-commute trips	76.0 %
Percent	of commute trips in peak period	54 0%
Percent	of non-commute trips in peak period	38.0%
Percent	of peak trips that are commute trips	31.0%
Percent trips	of off-peak trips that are commute	19.0%
Average	e commute trip length	10 7
Average	a non-commute trip length	6 0
Average costs p	e daily commute out-of-pocket Der vehicle	\$5.00
Average	number of telecommuters per day	0 0
Percent	of all trips that are transit	1.2%
Commu	te trip share of transit	48.0%
Total tra	Insit vehicle miles	103164
Percent	of commute trips less than 6 miles	25.0%
Percent miles	of non-commute trips less than 5	60.0 %
Average	cost of gas per gallon	\$1.75
Average	cost per mile to drive	\$0.300
Average vehicle	e commute out-of-pocket costs per e per trip	\$2.50
Average vehicle	non-commute out-of-pocket costs per	\$1.40
Percent	of VMT on freeways	55.84
Average	trip length for trucks	20.0
Assumption	5	
Elasticit	y of speed with respect to volume	
Pe	ak	-0.750

Off-Peak	-0.375
Elasticity of transit use with respect to cost	-0.400
Elasticity of transit use with respect to service	0.800
Average mode shift from drive alone per mile of HOV lane per hour	100
Elasticity of parking demand with respect to cost for commute trips	-0.200
Elasticity of auto use with respect to cost of gasoline	-0.100
Elasticity of auto use with respect to auto operating costs	-0.075

TCM Specific Parameters

#1	Jobs/Housing Balance	
	Revised average work trip length	10
#2	Densification	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Reduction in peak VMT	0
	Reduction in off-peak VMT	0
#3	One Trip Per Day/Mixed Use	
	Reduction in peak trips	599.730
	Reduction in off-peak trips	1,399.371
	Reduction in peak VMT	3,598,383
	Reduction in off-peak VMT	8,396.226
#4	Commute Transit/Vanpool Program	
	Reduction in peak trips	35,750
	Reduction in off-peak trips	0
	Reduction in peak VMT	382.525
	Reduction in off-peak VMT	0
#5	Pedestrian Improvements	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Reduction in peak VMT	0
	Reduction in off-peak VMT	0
#6	Traffic Signal Improvements	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Percent increase in peak speeds	5.0%
	Percent increase in off-peak speeds	5.0%

#7	Capacity Increases	
	Reduction in peak trips	0
	Reduction in off-peak trips	0
	Percent increase in peak speeds	0.0%
	Percent increase in off-peak speeds	0.0%
#8	Service Increases	
-	Increase in vehicle miles	128500
	Average percent fare decrease	0.0%
	Percent of transit ridership increase	60 .0%
	that equals the trip reduction	
#9	Transit Pass Subsidy	
-	Percent of cost of a monthly transit	50.0%
	pass subsidized	
	Percent of employment affected	19.3%
	Percent of transit ridership increase	60.0%
	that equals the trip reduction	
#10	Park-and-Ride Lots	
	Number of park-and-ride iot spaces	6530
	Average percent utilization rate	95.0%
	Percent of use that is commute trips	95.0%
	Average distance to park-and-ride lot	1.5
#11	High Occupancy Vehicle Lanes	
	Miles of freeway affected	67 4
	Number of hours in peak periods	6.0
	Number of existing lanes on freeway	4 0
	Induced number of vehicle trips on	0.0
	mixed-flow lanes due to additional capacity	
	Percent of freeways affected	1.1%
#12	Bicycle Improvements	
	Percent of commute trips less than 6	1 0%
	miles that would bicycle	
	Percent of non-commute trips less than	1.0%
	5 miles that would bicycle	
	Bicycle average commute trip length	30
	Bicycle avg. non-commute trip length	2.5
#13	Trip Reduction Ordinances	
	Revised average vehicle occupancy rate	1.7
	Average number of new telecommuters	0.0
	per day	
	Percent of employees affected	72.8%
	For employees affected, revised	63.5%
	percent that arrive in the peak	
	Revised percent of vehicles that	61.8%

	arrive in the peak	
#14	Ridesharing	
	Percent increase in non-drive-alone	30.0%
	modes	
	Percent of maximum VMT realized due to	80 0%
	circuity of ridesharing or access to	
	transit	
	Average carpool size	2.8
	Percent of employees affected	72.8∻
#15	Parking Management	
		\$3.00
	parking charge	
		90.2%
	Percent of maximum VMI realized due to	80.0%
	circuity of ridesnaring of access to	
#1 E		
#10		10 004
		10.040
	Average number of days per week	1.3
#17	Elevible Work Hours	
	Percent of all employees that shift	2 534
	out of the peak period	
#18	Staggered Work Hours	
	Percent of all employees that shift	2 5 3
	out of the peak period	
#19	Compressed Work Week	
	Workforce participation rate	15.0%
	Average number of days per week	0.7
	employees participate	
	Percent of participating trips that	50.0%
	shift out of the peak period	
	Average number of induced non-commute	0.0
	trips on employee's day off	
#20	Gas Tax/Cost Increase	
	Increase in cost per gallon	\$2.60
#21	VMT Tax	
	VMT tax per mile	\$0.450
#22	Motorist Information	
	Percent increase in freeway speeds	5.0%
	Percent of freeway system affected	90.0%
#23	Incident Management	
	Percent increase in freeway speeds	5.0%

	Percent of freeway system affected	90.0%
#24	Delivery Timing	
	Number of trucks that shift from the	12045
	peak to the off-peak	
#25	Loading Facility Improvements	
	Percent increase in arterial speeds	20.0%
	Percent of arterial system affected	10.0%

1991 San Diego Regional Air Quality Strategy

Appendix F

Evaluation of SANDAG's Transportation Control Measures Plan for Consistency with District Criteria

1991 SAN DIEGO REGIONAL AIR QUALITY STRATEGY

APPENDIX F

EVALUATION OF SANDAG'S TRANSPORTATION CONTROL MEASURES PLAN FOR CONSISTENCY WITH DISTRICT CRITERIA

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Bicycle Facilities
Traffic Flow Improvements
Indirect Source Control Program
Land Use
General Criteria

1991 SAN DIEGO REGIONAL AIR QUALITY STRATEGY

APPENDIX F

EVALUATION OF SANDAG'S TRANSPORTATION CONTROL MEASURES PLAN FOR CONSISTENCY WITH DISTRICT CRITERIA

BACKGROUND

The California Clean Air Act requires transportation control measures in the revised Regional Air Quality Strategy. The Act also specifies a regional process for developing and adopting a plan for transportation control measures. The Act requires the Air Pollution Control Board (APCB) to adopt Criteria in consultation with the San Diego Association of Governments (SANDAG) to guide the development of a regional plan for transportation control measures. SANDAG is required to develop and adopt a plan that meets the Criteria, and submit the plan to the District for review and approval. The Air Pollution Control Board is required to review and approve the plan if it meets the Criteria. However, if the Board determines the plan does not meet the Criteria, the District must develop an alternative plan for transportation control measures subject to Board approval. An alternative may be prepared in coordination with SANDAG, and/or other agencies, but the District is responsible for development.

On March 12, 1991, the Board adopted the Criteria as required by the Act. On June 28, 1991, SANDAG adopted the initial Transportation Control Measures Plan (TCM Plan), and on October 1, 1991, the District Board considered the initial Plan, received public testimony, and referred the Plan back to SANDAG along with District Plan assessment and proposed District Regulation XIV, Employer-based Trip Reduction Regulation. The Board requested SANDAG to address District concerns, consider provisions of Regulation XIV, evaluate the appropriateness of requiring costly employer trip reduction plans, and submit a report or amended Plan to the Air Pollution Control Board in November.

An APCB/SANDAG subcommittee of seven SANDAG Board members (Mayors Jack Doyle, Jan Goldsmith and Lee Thibadeau, and council members Judy McCarty, Tom Behr, Leonard Moore and Richard Hendlin) and two Air Pollution Control Board members (Supervisors Bailey and Bilbray) was established to address the issues. The subcommittee reached consensus on a majority of items. On March 17, 1992, the Board considered subcommittee actions and provided comments to the SANDAG Board. On March 27, 1992, the SANDAG Board amended the Plan and forwarded it to the District.

This report presents the results of the District's review of the amended TCM Plan, relative to the Criteria adopted by the Board and March 17 Board comments.

The adopted Transportation Control Measure Criteria are organized into two components. There are twenty general Criteria that apply to the Transportation Control Measures Plan as a whole, and then specific Criteria for minimum transportation control measures. The Plan submitted by SANDAG contains eleven proposed measures. The following discussion evaluates each proposed transportation control measure meets the Criteria

specified for that measure. The format of the discussion first summarizes the SANDAG proposed program, then lists the applicable Criteria, describes substantive amendments to the original Plan, presents District comments, and provides a conclusion regarding consistency with the Criteria, including recommended amendments.

Following the last of the evaluations of the individual proposed measures, each of the twenty general Criteria that apply to the Plan as a whole are presented, with a description of what SANDAG's Transportation Control Measures Plan contains relative to that criterion, and a conclusion as to whether SANDAG's Plan meets that criterion, including recommended amendments.

GENERAL ISSUES

Funding

The amended TCM Plan provides that the public sector implementation costs of the trip reduction program should not exceed available resources, and the District Board shall allocate the funds available pursuant to AB 2766 in proportionate shares in accordance with the 1990 MOU between SANDAG and the APCB concerning use of AB 2766 funds. At one point the Plan states "No other funding measures will be considered at this time other than the \$4 increase in vehicle registration fees and, at the option of the implementing entities, the local share of the 1/2 cent transportation sales tax, and other state and federal funds made available for this purpose."

In adopting the amended TCM Plan on March 27, the SANDAG Board recognized the local authority to supplement funding by employer fees, and the Plan now provides that employer fees may be charged at the discretion of the implementing agency. While the option for implementing agencies to charge filing fees is consistent with the Board's March 17 comments, the Plan continues to assume AB 2766 revenues will be fully allocated to supporting the Transportation Demand Management Program before an AB 2766 revenue allocation plan has been considered and adopted by the Board and vehicle registration fees increased to \$4.

If the provisions in the TCM Plan regarding AB 2766 funds were adopted by the Board, the Board would be committed to allocating all of the AB 2766 revenues in some undefined proportionate manner. It is premature to commit all of the AB 2766 revenues to trip reduction program implementation prior to the development of an allocation plan pursuant to the process outlined in the 1990 MOU between SANDAG and the Air Pollution Control Board. Vehicle registration fees would have to be increased to \$4 to do so. The Board would not be able to make any reasoned allocation of those funds in context of the overall Plan and the need to optimize emission reductions. The MOU with SANDAG regarding AB 2766 funds would be, for all practical purposes, void. Accordingly, the District recommends amending the TCM Plan to state that AB 2766 revenue will be allocated in accordance with the 1990 MOU between the Board and SANDAG.

Limiting Additional Fees. Charges. or Costs

The resolution adopting the amended TCM Plan (92-49) amends the Plan requiring that no additional fees, charges or costs will be imposed on the private sector other than filing fees at the discretion of implementing agencies. This is a very broad statement and is subject to different interpretations. It could be interpreted to mean trip reduction regulations will have to be designed so there is no cost to the private sector. That is not possible. Some expenditures on part of the private sector are expected. Accordingly, the District recommends the TCM Plan be amended to remove reference to "charges or costs."

Socioeconomic Study

The resolution adopting the amended TCM Plan (92-49) amends the Plan requiring that a socioeconomic study be conducted and the TCM Plan reviewed in light of the results of that study. The District is required by a new law (AB 2061, Polanco) to conduct a socioeconomic analysis of every rule and regulation developed to implement the Strategy. Such analysis will be performed in

connection with a District rule or regulation implementing the trip reduction programs in the TCM Plan. The new socioeconomic impact requirements should address business concerns with certain measures in the Strategy. These measures will not be implemented until the required analyses are performed, considered by the Board, and an effort made to minimize adverse impacts. Accordingly, there is no need to perform a socioeconomic impact assessment of the entire TCM Plan. Accordingly, the District recommends the TCM Plan be amended to remove the requirement for a socioeconomic impact analysis of the TCM Plan.

Mandated SANDAG Assistance

The Institutional Structure of the Transportation Demand Management program, which is incorporated into the TCM Plan, mandates that SANDAG assist local agencies in implementing the Transportation Demand Management Program. It is not clear what type of assistance is being envisioned. Such references raise some of the same concerns the Board had with the institutional structure in the original Plan. SANDAG is an association of local governments, and a member agency can always request assistance from the Association. The Plan need not mandate that. There are a number of other agencies that can be expected to assist delegated implementing agencies at some point, including the District, ARB, TMA's, CALTRANS as well as SANDAG. Accordingly, the District recommends the Plan be amended to remove mandating SANDAG assistance to local agencies.

Model Ordinances

The Transportation Demand Management program, which is incorporated into the TCM Plan, includes Model Ordinances relating to commute travel, college student travel, and goods movement. The Air Pollution Control Board cannot adopt these ordinances as District Rules and Regulations without a separate noticed public hearing, and preparing the required socioeconomic impact analysis. Adopting Rules and Regulations to cover commute travel, college student travel, and goods movement will occur in the future, subject to required public hearings and socioeconomic impact analysis. Accordingly, appropriate clarifying language has been added to the resolution adopting the Strategy that approving the TCM Plan does not mean that the Model Ordinances are adopted in the form of District Rules and Regulations.

COMMUTE TRAVEL REDUCTION PROGRAM

The amended Commute Travel Reduction program is intended to reduce employment-related commute trips by influencing a shift in travel, to modes other than the single-occupant motor vehicle. The program includes a model ordinance, which provides employers a two-year voluntary period (one year for employers with over 100 employees) to meet trip reduction goals in any manner they choose. Then, if goals are still not met after the voluntary period, employers may choose between implementing District pre-approved trip reduction actions, such as financial ridesharing incentives and parking management, including parking charges, or designing their own trip reduction goals in terms of Average Vehicle Ridership (AVR) are specified through the year 2010, and apply to week day commute travel over the entire 24 hour day. Credits are allowed for commute outside the morning peak commute period. Employers with 10 or fewer employees are exempt; a study will investigate the feasibility of a trip reduction program for these employees. The stated objective is to achieve a 1.5 motor vehicle occupancy among commuters by the year 2000 at an annualized program cost of \$156.3 million: \$7 million government implementation cost, \$149.3 million compliance cost

Program administration will be delegated to local or subregional agencies. For any area that declines to implement the program, the District will administer the program. However, there are still references to a Regional Administrator.

Criteria:

A single passenger trip reduction program will be implemented and enforced by the District, subject to delegation as authorized by the California Clean Air Act to Cities and the County and not to another regional agency. Delegation to Cities and the County shall be limited to ordinances certified by the District as being at least as stringent as the District regulation. The Single Passenger Vehicle Trip Reduction Program shall include the following elements:

- Trip reductions will be mandated and measured as average vehicle ridership for at least commute, educational, airport, special event and shopping trips, according to the size, type and location of facility. The mandated trip reduction levels shall represent the maximum achievable reductions as expeditiously as practicable.
- Minimum standards for facility rideshare/transit promotion efforts consistent with mandated trip reduction measures shall be specified and include financial incentives and contributions, information dissemination, and telecommuting programs.
- Average vehicle ridership shall be defined as the average daily number of employees/students/customers who would be normally expected to work/attend/shop at a facility divided by the average number who drive to the facility, to account for all alternative transportation modes, including telecommuting, teleshopping, part time ridesharing, and compressed work weeks. Average Vehicle Ridership credits shall be provided employers who establish satellite work centers designed to significantly reduce the length of commuting by employees who would otherwise report to the principal work site. Low emission vehicles, as defined in Health and Safety Code Section 39037.05 may be excluded.

- Facilities shall be required to submit an annual report to the District documenting the average vehicle ridership, any incentives provided to promote alternative transportation modes, and necessary supporting data.
- Facilities shall be required to submit a deficiency correction plan to the District for review and approval when the average vehicle ridership fails to meet mandated requirements. The deficiency correction plan shall analyze why the required reductions were not achieved, and shall specify the design, funding requirements and sources, and expeditious implementation schedule for deficiency correction measures sufficient to achieve the required reductions, as approved by the District. Facilities will be required to fund and implement the District-approved deficiency correction plans.
- Multifacility averaging and combined reports and deficiency correction plans within appropriately defined subregional areas will be provided for, as approved by the District.

A parking management program implemented and enforced by the District shall be designed to reduce the number of drive-alone trips by making parking more expensive and less convenient. The program shall, at a minimum, be optimized to support the Single Passenger Vehicle Trip Reduction Program and include the following elements:

- Charges for commuter parking where that parking is now free and increased long-term rates for existing fee-based parking. One consideration in setting or increasing parking charges may be health-related costs associated with motor vehicle trips. The parking charges shall be structured to create disincentives for the solo driver, and the program shall be structured so parking charges are paid by drivers, and not subsidized by employers. Revenues from parking management fees are to be deposited with the District for allocation by the District to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost effective measures, and measures with high emission reduction potential. The parking fee program may be structured to allow facilities to retain the parking charges from their employees to help defray the cost of required incentive programs and transportation control measures, provided sufficient funding, as determined by the District, is provided for transportation related District programs including transit expansion and other similar programs.
- · Free or reduced-cost carpool and vanpool parking;
- Preferential parking spaces for carpools and vanpools in the most convenient locations at the parking facility;
- Limits on the supply of parking for drive-alone commuters;
- Require cities and County control on-street parking where necessary to support the purpose and goals of the parking management program;
- Review of city and County land use and zoning policies regarding parking and recommended changes to those policies and ordinances consistent with the purpose and goals of the parking management program.

The plan shall substantially reduce passenger vehicle trips and trip length as expeditiously as practicable. The rate of increase in vehicle trips shall be reduced to or below the rate of population growth.
The plan shall achieve a regionwide average vehicle ridership of 1.5 or more during weekday commute hours as expeditiously as practicable, but no later than 1999, and no net increase in vehicle emissions after 1997. The vehicle trip reduction goal shall be in terms of average vehicle ridership, not drive-alone ratio as the latter reduces the incentive for transit promotion, thereby diminishing the opportunity to further reinforce the viability of the region's investment in mass transit.

Substantive Amendments:

- The initial proposal included creating a regional TDM Board to administer the program, which was not consistent with the Criteria. This has been amended to reflect program administration by each delegated local or subregional agency. For any area that declines to implement the program, the District will administer the program. This is consistent with the Criteria and the Board's March 17 comments.
- In the initial TCM plan, the institutional structure bifurcated program accountability in two separate agencies. Administration and implementation would rest with the Regional Program Administrator, while enforcement would be pursued by the District upon referrals by the Administrator. In the amended Plan, the same agency to which implementation is delegated by the District also does enforcement. This is consistent with the Criteria and the Board's March 17 comments.
- The initial proposal did not mandate employer actions required by the Criteria. The amended version offers employers the option of implementing a set of District pre-approved trip reduction actions or developing an alternative trip reduction plan, which must be at least as effective as the pre-approved measures. This is consistent with the Criteria and the Board's March 17 comments.
- The Commute Travel Reduction Program did not include a mandatory parking management program, as specified in the Criteria. However, parking management is included in the set of pre-approved measures added to the program. This is consistent with the Criteria and the Board's March 17 comments.
- SANDAG's initial TCM Plan did not demonstrate that the Transportation Control Measures Plan will achieve sufficient trip reductions to meet the Criteria. However, the Commute Travel Reduction Program was amended to add the District's pre-approved set of trip reduction measures and requiring an alternative plan must be at least as effective as the preapproved measures. This ensures that required trip reductions will be achieved, and is consistent with the Criteria and the Board's March 17 comments.
- In the initial trip reduction program, employers were required to prepare trip reduction plans the first year, if they did not meet their Average Vehicle Ridership Target for that year. The amended program provides employers a two-year voluntary period (one year for employers with over 100 employees) to try to meet trip reduction goals in any manner they choose, without needing to file a plan Then, if goals are still not met after the voluntary period, employers must either implement pre-approved trip reduction actions, or prepare and implement trip reduction plans which must be at least as effective as the pre-approved measures. This is consistent with the Criteria and the Board's March 17 comments.

District Comments:

The amended proposal still retains credits for driving alone outside the morning peak travel period, which are not specifically authorized in the Criteria. The Board's March 17 comments expressed concern with off peak credits. The District recommends amending the Commute Travel Reduction Program to remove these credits.

Such credit encourages shifting commute trips outside the peak period to address congestion, but does not reduce vehicle trips, vehicle miles travelled, or emissions. The Average Vehicle Ridership (AVR) in that case is artificially inflated. Additionally, it would make it easier for multishift businesses to comply without actually reducing trips. Shifting commute trips also reduces potential carpooling matching.

Under these off-peak credits, compliance with the federal Clean Air Act would not be demonstrated because actual AVR will be less than the required AVR. A large company with three shifts could get a trip reduction credit of about 0.3 AVR. That means, if this company's actual AVR is 1.2, it could demonstrate compliance with a 1.5 AVR standard with the credit. However, a single shift company of the same size or even a smaller company would have to reduce proportionately more trips to achieve 1.5 AVR. These credits help even more in the case of a business with part-time employees where it is a normal practice to have some employees work during the peak period and some during off-peak. This business does not have to make a greater effort since many employees already work during off-peak providing significant credit.

There are still references at various places in the amended Plan to a Regional Administrator, which is inconsistent with the Criteria. According to SANDAG staff, these references were inadvertently left in and should be removed. The District recommends amending the TCM Plan to remove those references.

<u>Conclusion</u>: With the exception of general issues discussed previously, off-peak credits and references to a Regional Program Administrator, the amended version of the Commute Travel Reduction Program meets the Criteria.

It is recommended that the Commute Travel Reduction Program be amended to remove off-peak credits and references to a Regional Program Administrator, and be adopted into the Revised Regional Air Quality Strategy.

COLLEGE TRAVEL REDUCTION PROGRAM

The amended College Travel Reduction Program proposes to reduce motor vehicle trips made to colleges and universities by students at an annualized cost of \$12.9 million. The College Program is structured similarly to the Commute Program. Campuses are required to implement trip reduction plans in order to meet Average Vehicle Ridership targets. Credits are provided for rescheduling classes outside the peak traffic period, campus parking management programs, and other unspecified actions. Student related trip reductions would be further encouraged through student transit subsidies, if additional annual funding of \$7.4 million becomes available.

Criteria: Same Criteria apply to this Program as for the Commute Travel Reduction Program.

Substantive Amendments:

• The initial College Travel Reduction Program applied to faculty and staff, not only to students. The amended program clarifies that only students are covered by the College Program. Faculty and staff are covered by the Commute Program. This is consistent with the Criteria and the Board's March 17 comments.

District Comments:

The amended proposal still retains credits not specifically authorized in the Criteria. The Board's March 17 expressed concern with these credits. The District recommends amending the College Travel Reduction Program to remove the credit provisions. The proposed credit for class rescheduling would shift the time of student trips to address congestion, but would not reduce vehicle trips and emissions. An extra credit is proposed for campuses implementing parking management programs. Parking management programs can be effective at increasing Average Vehicle Ridership, but the proposed credit just double counts the effect. Additional credits would be provided for implementing other unspecified new or enhanced Transportation Demand Management actions. These credits have the same double counting effect and further reduce Program effectiveness.

The San Diego Community College District has questioned program feasibility. An appendix to the amended Plan refers to a process for the College and University TDM Policy Advisory Committee to consider and address any concerns regarding the feasibility of the Program for Community College students. However, this is not addressed in the main body of the Plan, or in the TDM Program. There is no specific commitment and work program for ultimately resolving the issue. The District recommends amending the College Travel Reduction Program to require the College and University TDM Policy Advisory Committee to address the issue, in consultation with Community Colleges.

School Districts have indicated that student travel to high schools should be covered by an education trip reduction regulation. SANDAG has established a committee to investigate the feasibility of addressing high school student travel. However, a work program is not included to complete the feasibility study. The District recommends amending the College Travel Reduction Program to require a work program be developed.

There are still references at various places in the amended Plan to a Regional Administrator, which is inconsistent with the Criteria. According to SANDAG staff, these references were inadvertently

left in and should be removed. The District recommends amending the College Travel Reduction Program to remove those references.

The amended TCM Plan does not commit to obtaining the funding needed for the student transit pass subsidy. As discussed later under Transit Improvements, federal Intermodal Surface Transportation Efficiency Act (ISTEA) funding should be pursued to fully fund this program.

<u>Conclusion</u>: It is recommended that the College Travel Reduction Program be amended to remove the credit provisions, references to a Regional Program Administrator, and provide for work programs to address the feasibility of the Program for Community College and high school students, and be adopted into the Revised Regional Air Quality Strategy. It is recommended that ISTEA funds be pursued to provide additional funding for student transit subsidies.

NON-COMMUTE TRAVEL REDUCTION PROGRAM

The amended Non-Commute Travel Reduction measure proposes a public education program intended to convince the public to voluntarily reduce one non-commute trip a day or its equivalent, such as linking or combining trips to reduce cold start emissions, at an annualized cost of \$1 million. Expansion of the public education program up to \$5 million annually is recommended if additional funding becomes available.

Criteria:

• Trip reductions will be mandated and measured as average vehicle ridership for at least commute, educational, airport, special event and shopping trips, according to the size, type and location of facility. The mandated trip reduction levels shall represent the maximum achievable reductions as expeditiously as practicable.

Substantive Amendments:

- In the amended plan, the minimum cost estimate was reduced from \$5 million to \$1 million; however, the program remains voluntary, and thus inconsistent with the Criteria. Accordingly, the District recommends this element of the TCM Plan be deleted.
- In a document (R-79) appearing in the appendices to the amended Plan, SANDAG proposes preparing a work program and schedule for a study to evaluate the feasibility of trip reduction programs for Lindbergh Field, the Stadium, regional shopping centers and other large trip attractions. This is consistent with the Criteria and the Board's March 17 comments. However, that work program is not mentioned in the main body of the Plan.

District Comments:

In the original proposal it was noted that the Non-Commute Travel Reduction Program is only a public information and education program, not a regulatory program; there were no mandated trip reductions for airport, special event and shopping trips, as specified in the Criteria. Even though inconsistent with the Criteria, SANDAG retained the proposed public information program in the amended TCM Plan, but the cost estimate was reduced from \$5 million to \$1 million annually. Accordingly, the District recommends this element of the TCM Plan be deleted. The California Clean Air Act requires the District to provide for public education programs to promote actions to reduce emissions from transportation and areawide sources. The District will be providing a significant public information and education program for the Commute Travel Reduction Program, which will have priority for the available public information program funding. The non-commute program may be added later if sufficient funding becomes available.

The proposal in R-79 for SANDAG to develop a work program and schedule for a study to evaluate the feasibility of non-commute trip reduction programs is consistent with the Criteria. During meetings with SANDAG staff, it was agreed to include a work element to develop a regulatory program for non-commute travel. A commitment to include a work element and schedule in the TCM Plan to evaluate the feasibility of trip reduction programs for Lindbergh Field, the Stadium, regional shopping centers and other large trip attractions is in the Appendix to the Plan. However, it should be included in the Plan. The District recommends the voluntary

non-commute public information program be deleted from the TCM Plan and replaced with the proposed work program for studying the feasibility of non-commute trip reduction programs for large traffic generating facilities.

<u>Conclusion</u>: The Non-Commute Travel Reduction Program does not meet the Criteria because it is voluntary, not regulatory as required by the Criteria, and therefore does not mandate trip reductions for airport, special event and shopping trips, as specified in the Criteria.

The proposed work program to evaluate the feasibility of non-commute trip reduction programs is consistent with the Criteria.

It is recommended that the Non-Commute Travel Reduction Program be amended to delete the voluntary non-commute public information program and replace it with the proposed work program and schedule, specified in R-79, for a study to evaluate the feasibility of trip reduction programs for Lindbergh Field, the Stadium, regional shopping centers and other large trip attractions, and be adopted into the Revised Regional Air Quality Strategy.

The non-commute public information program may be added to the District's commute-related public information program if funding is available. The District recommends amending the Non-Commute Travel Reduction Program to remove the commitment at this time.

GOODS MOVEMENT/TRUCK OPERATION PROGRAM

The Goods Movement/Truck Operation Program proposes Off-Peak Truck Travel Targets, with reporting and plan requirements similar to the Commute and College Programs, to shift truck operations out of the morning peak period (6:30-8:30) to reduce congestion. An Incident Management and Prevention Program and a Motorist Information System are also part of the Goods Movement/Truck Operation Program. The Incident Management Program clears congestion-causing traffic incidents, such as accidents and breakdowns, more quickly. The Incident Prevention Program provides driver education to improve car-truck interactions. The Motorist Information System uses video and road sensors to gather continuous information on traffic conditions, with radio and changeable electronic message boards providing motorists information to avoid problem areas and minimize congestion. Annualized government cost of \$0.6 million is projected.

Criteria:

A regional goods movement truck travel reduction program consistent with Air Resources Board guidance shall be evaluated for feasibility and emission reductions in San Diego County. The program will be implemented and enforced by the District, subject to delegation to the Cities and County consistent with the California Clean Air Act. The truck operation control regulations to be evaluated shall:

- Prohibit idling of trucks for more than five minutes, except in specific situations of necessity.
- Prohibit facilities from operating in a manner that causes trucks to idle for more than five minutes.
- Require freight consolidation centers for less than truckload shipments into and out of San Diego County.
- Require operations at freight consolidation centers be conducted in a manner to minimize motor vehicle emissions and traffic congestion, such as low emission service vehicles and appropriate off-peak operations.
- Require establishments shipping or receiving goods by truck to shift some or all shipments to off-peak hours.
- Prohibit travel by specified trucks during appropriate peak periods. Criteria for considering
 which trucks shall be subject to travel restrictions shall include the ability of the class of truck
 to accelerate, decelerate, merge with, or otherwise operate in a manner that does not interfere
 with peak period traffic flow. Peak periods during which truck travel shall be restricted may
 be established separately from other definitions of peak period.
- Require the Cities and County to revise provisions of local plans and ordinances to be consistent with the purpose and goals of the truck operation control regulations.

The Incident Management program in the Regional Transportation Plan shall be implemented as rapidly as feasible.

Substantive Amendments:

• The Off-Peak Truck Travel Targets in the Technical Supplement were clarified in the amended version.

District Comments:

The original Transportation Control Measures Plan was inconsistent with the Criteria, because the feasibility of the truck operation control regulations was not evaluated as required. Instead, it proposed a regulatory Goods Movement/Truck Operation Program that establishes Off-Peak Truck Travel Targets, without addressing the feasibility of each Criterion. The feasibility analyses were required because, at the time the Criteria were being developed, there was a strong concern that all the truck operation control regulations suggested by a statewide committee and included in the draft Criteria may not be feasible and appropriate in all areas of the state, especially considering San Diego's border traffic.

The Construction Industry (CIF) expressed serious reservations with the SANDAG program. To address CIF concerns, R-15 (revised), an appendix of the amended Plan, proposes developing a work program to address exemptions proposed by CIF. It should be included in the amended TCM Plan. The District recommends providing for the work program in the Goods Movement/Truck Operation Program.

There are still references at various places in the amended Plan to a Regional Administrator, which is inconsistent with the Criteria. According to SANDAG staff, these references were inadvertently left in and should be removed. The District recommends amending the Goods Movement/Truck Operation Program to remove those references.

<u>Conclusion</u>: It is recommended that the Goods Movement/Truck Operation Program be amended to remove references to a Regional Program Administrator, provide for the work program to address CIF proposed exemptions, and be adopted into the Revised Regional Air Quality Strategy.

TRANSIT IMPROVEMENTS AND EXPANSION

The amended Transit Improvement and Expansion measure is based on anticipated funding prior to the federal Intermodal Surface Transportation Efficiency Act (ISTEA). No transit expansion is proposed beyond the existing Regional Transportation Plan. A 17% further increase in transit service, focusing on peak period commute services, is proposed if additional annual funding of \$18.1 million becomes available. Replacing the existing bus fleet with low emission vehicles as a part of the normal fleet replacement program is also proposed. Half the fleet would be converted by 2000 under current funding; the entire fleet would be converted if additional annual funding of \$3.4 million becomes available.

Criteria:

Air quality related transit improvements shall, through ease of use, convenience, comfort and security, be optimized to attract "choice" riders (those riders who have a choice of modes available) who would otherwise use personal vehicles.

- Air quality related transit services shall be designed to include feeder transit service to linehaul transit routes to the maximum extent feasible to minimize the number of vehicle trips needed to access transit.
- Transit expansion shall be as extensive and implemented as rapidly as feasible to accommodate choice riders induced by other transportation control measures.
- Transit system design shall minimize travel time and maximize convenience for the largest number of potential riders.
- The Trolley shall to the maximum extent feasible be conveniently accessible by walking, bicycle, or feeder transit. Trolley corridors shall be reviewed for potential realignment to go through the areas of greatest ridership potential rather than along the fringes. Where such realignments prove infeasible, development plans along the Trolley corridors shall maximize the number of potential riders who would otherwise be single-occupant-vehicle drivers.
- Transit-only streets shall be implemented as appropriate in congested, high density activity centers.
- Closing of existing regionwide arterial gaps shall be evaluated to enhance transit service.

Substantive Amendments:

• The initial TCM Plan had recommended a 17% transit expansion for which funding was not available. The Plan was amended to propose a level of transit expansion reflecting currently programmed funding prior to the availability of ISTEA funds. The 17% further increase in transit service, focusing on peak period commute services, is proposed, if funding becomes available. Funding implementation at the higher level would be consistent with the Criteria.

District Comments:

The Plan does not commit to obtaining all the funding needed for the transit expansion. It has not been demonstrated that the level of transit expansion with currently programmed funding will be adequate to meet the increased demand from the Commute and other TDM programs.

The most apparent source of additional funding for transit is the federal Intermodal Surface Transportation Efficiency Act (ISTEA). The purpose of the ISTEA is to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides a foundation for the nation to compete in the global economy and will move people and goods in an energy efficient manner. Facilities serving the drive-alone mode run counter to these goals.

A major feature of ISTEA gives state and local governments more flexibility in determining transportation solutions. Highway funds can be used to fund transit, enhance the environment, and contribute to meeting air quality standards. Under ISTEA, states have the flexibility to move highway funds to pay for transit improvements and up to 50 percent of National Highway Program (part of the ISTEA) may be transferred to the Surface Transportation Program (also within ISTEA) and then utilized for transit and other transportation control measures. With the approval of the Secretary of Transportation, 100% of Highway funds can be transferred to the Surface Transportation and Air Quality Improvement program within the ISTEA directs funds toward transportation projects in the federal non-attainment areas for ozone and carbon monoxide.

Every effort must be made to transfer needed funds to transportation control measures. If the funds are not transferred, they may be used for projects with lesser air quality benefits, or which exacerbate the air quality problem in the long term.

<u>Conclusion</u>: It is recommended that the transit measure be adopted into the Revised Regional Air Quality Strategy, and additional funding for transit expansion be pursued from ISTEA funds.

VANPOOL PROGRAM

The amended Vanpool measure reflects current funding (prior to ISTEA) and existing vanpool efforts. It is projected that 10 vanpools per year will be formed. Dependent upon additional funding becoming available, transit districts would obtain 2500 vans, each with a capacity of 7-15 passengers, and lease the vans to employers to expand vanpools for commuting to work. The annualized cost would be \$16.5 million.

Criteria: No Criteria were established specifically addressing vanpools.

Substantive Amendments:

• The initial TCM Plan had recommended van purchases for which funding was not available. The Plan was amended to reflect a level of vanpool expansion consistent with funding available prior to ISTEA. Funding implementation at the higher level would be consistent with the general Criteria.

District Comments:

Although no specific Criteria were established for a vanpool program, the District encourages placement of vanpools to provide an alternative to solo-commute. Funding this measure is an issue. The Plan does not commit to obtain the funding needed for the vanpool program. As discussed above under Transit Improvements, the District recommends ISTEA funds be pursued to obtain the needed funding.

<u>Conclusion</u>: It is recommended that the vanpool measure be adopted into the Revised Regional Air Quality Strategy, and additional funding for vanpool expansion be pursued from ISTEA funds.

HIGH OCCUPANCY VEHICLE LANES

The amended High Occupancy Vehicle (HOV) Lanes measure reflects current funding (prior to ISTEA) and existing HOV efforts. HOV bypass lanes will be completed on all metered freeway on-ramps under existing funding, and the I-15 HOV lanes, which still have significant unutilized capacity, would remain the only major HOV facility in the region. If sufficient additional funding becomes available, additional HOV Lanes are proposed to provide travel time savings and encourage ridesharing. About 67 miles are proposed at an annualized cost of \$21.1 million. Freeway HOV lanes are proposed on I-5 from I-8 to SR-78, I-15 from SR-56 to SR-78, I-15 from SR-163 to I-8, and I-805 from I-5 to SR-52. Additionally, arterial High Occupancy Vehicle Lanes are proposed on Pacific Highway, South Harbor Drive, and Friars Road.

Criteria:

High Occupancy Vehicle lanes shall be given priority consideration in funding highway capacity expansion on existing highways.

- Adequate provisions shall be made for HOV lanes on new highways.
- A regional system of High Occupancy Vehicle lanes shall be provided, when feasible, in all congested corridors, at least those identified in the Regional Transportation Plan, or where queueing onto local streets creates excessive congestion or safety problems.
- The Regional High Occupancy Vehicle Facilities Plan shall include transit stops for the transfer of passengers between local transit and transit travelling in High Occupancy Vehicle lanes where there is or is the potential for connecting local transit. Where there are space constraints in the medians, it is not necessary to build the transit stops in the facility itself. Alternative designs for transit-only access should allow transit riders the added convenience and time savings associated with HOV use that might be otherwise unavailable without transit stops.
- High Occupancy Vehicle bypass lanes shall be provided at all metered freeway entrance ramps where economically feasible and consistent with public safety standards.

Substantive Amendments:

- The initial TCM Plan had recommended HOV lanes for which funding was not available. The plan was amended to reflect a level of HOV facilities consistent with funding available prior to ISTEA. Funding implementation at the higher level would be consistent with the Criteria.
- The amended plan provides a cost analysis indicating that converting existing lanes to HOV use costs only one sixth as much as adding lanes, but no corridor-specific analysis is provided to recommend whether lane conversion would be warranted. The HOV facilities measure is not consistent with the Criteria, because it does not provide such an analysis.

District Comments:

The Plan does not commit to obtaining funding needed for HOV lane system expansion. As discussed previously under Transit Improvements, the District recommends ISTEA funds be pursued to obtain the needed funding.

A study is needed of congested freeways that lack right-of-way to add lanes, to determine if converting an existing lane to HOV use would be feasible and desirable. The District recommends the HOV Lanes measure be amended to provide for such a study.

<u>Conclusion</u>: It is recommended that the High Occupancy Vehicle facilities measure be amended to provide for a study of congested freeways that lack rights-of-way to add lanes, to determine if converting an existing lane to HOV use would be feasible and desirable. It is recommended that the High Occupancy Vehicle facilities measure as amended be adopted into the Revised Regional Air Quality Strategy and additional funding for HOV lanes be pursued from ISTEA funds.

PARK-AND-RIDE FACILITIES

The amended Park-and-ride Facilities measure reflects current funding (prior to ISTEA) and existing park-and-ride efforts. No additional park-and-ride lots are proposed under current funding. However, existing lots are, on the average, still only half utilized, so additional capacity exists. If additional funding becomes available, the Plan proposes adding 4800 park-and-ride spaces oriented toward car/van pooling, located to serve long commute trips in major travel corridors, at an annual cost of \$2.38 million.

Criteria:

For purposes of air quality improvement, park-and-ride facilities have a lower priority than providing a convenient feeder transit system. Wherever feasible, convenient feeder transit to line haul transit shall be provided and promoted, rather than providing park-and-ride lots. However, where park-and-ride facilities are necessary, the following design criteria shall apply.

- Park-and-ride locations shall serve all trip origin areas that cannot be feasibly served by feeder transit.
- Park-and-ride facilities shall be located at or near other trip generating activities or services such as grocery stores, banks, or day care to minimize or eliminate additional motor vehicle trips to these activities or services.
- Park-and-ride facilities shall be located to intercept trips as close to the origin as possible.
- Park-and-ride facilities shall be available at regional transit centers in trip origin areas.
- Park-and-ride lots shall have adequate spaces to meet demand.
- Park-and-ride facilities shall target longer trips along corridors with High Occupancy Vehicle lanes.
- Park-and-ride facilities shall be equipped with secure bicycle storage to minimize vehicle trips.

Substantive Amendments:

- The initial TCM Plan had recommended park-and-ride lots for which funding was not available. The Plan was amended to reflect a level of park-and-ride facilities consistent with funding available prior to ISTEA. Funding implementation at the higher level would be consistent with the Criteria.
- The amended plan includes, as an appendix, a CALTRANS work program for developing a comprehensive park-and-ride plan consistent with the Criteria.

District Comments:

The Park-and-ride Facilities Measure does not indicate that park-and-ride lots would be collocated with other trip generating activities in order to eliminate extra trips to those activities, as specified in the Criteria. However, the appended CALTRANS work program does address collocated facilities, consistent with the Criteria.

The Plan claims that transit-related park-and-ride facilities are not included in the measure because they are included in the transit measure. However the transit measure does not mention park-andride facilities. The appended CALTRANS work program does address both transit as well as car/van pool oriented park-and-ride facilities, consistent with the Criteria.

A specific schedule of facility construction and responsible jurisdictions is not provided. However, the amended Plan includes a CALTRANS work program for a study of park-and-ride options which will lead to a comprehensive park-and-ride plan and a specific implementation program.

The Plan does not commit to obtaining funding needed for park-and-ride expansion. As discussed previously under Transit Improvements, the District recommends ISTEA funds be pursued to obtain the needed funding.

<u>Conclusion</u>: It is recommended that the Park-and-Ride facilities measure be amended to incorporate the CALTRANS park-and-ride plan development work program, and be adopted into the Revised Regional Air Quality Strategy. It is recommended that additional funding for park-and-ride be pursued from ISTEA funds.

BICYCLE FACILITIES

The amended Bicycle Facilities measure reflects current funding (prior to ISTEA) and existing bikeway efforts to add 25 miles of bikeways annually, with existing funding, to encourage bicycling instead of the auto for shorter trips. The measure would be expanded to 50 miles of bikeways per year, if additional annual funding of \$3.9 million becomes available. The expanded measure also includes improving bicycle access to transit, showers and lockers and secure bicycle parking at new buildings, and encouraging employers to provide a direct subsidy to all bicycle commuters.

Criteria:

Bicycle and pedestrian facilities represent two distinct forms of nonmotorized transportation. Recognizing that the safety and access of cyclists and pedestrians may be jeopardized by combined facility use, bicycle facilities shall be designed for bicycle use and pedestrian facilities for pedestrian use to the extent necessary to provide safe, accessible facilities for each.

- The priority for pedestrian and bicycle access to facilities shall be at least as high as motor vehicle access.
- Pedestrian and bicycle circulation patterns and paths providing convenient, attractive, secure pedestrian and bicycle travel shall have priority in development design.
- The bicycle element of the Regional Transportation Plan shall be implemented as expeditiously as feasible.
- Bicycling shall be enhanced through improved bicycle lane maps, improved bicycle destination signage, improved intersections accommodating right turn only traffic, and separate bicycle paths at strategic locations.
- Pedestrian and bicycle access shall be designed to provide quick and convenient access to transit nodes.
- Secure bicycle storage at transit stops and on transit vehicles shall be expanded to encourage bicycle-transit trips.

Substantive Amendments:

- The initial TCM Plan recommended a level of bicycle facilities expansion for which funding is not available. The Plan was amended to reflect a level of expansion consistent with funding available prior to ISTEA. Funding implementation at the higher level would be consistent with the Criteria.
- Pedestrian access improvement measures were not addressed in the initial Plan, as specified in the Criteria, but are in the final plan. This is consistent with the Criteria.

District Comments:

The Plan does not commit to obtain the funding needed for accelerated bikeway expansion. As discussed above under Transit Improvements, the District recommends ISTEA funds be pursued to obtain the needed funding.

<u>Conclusion</u>: It is recommended that the bicycle facilities measure be adopted into the Revised Regional Air Quality Strategy, and additional funding for accelerated bikeway expansion be pursued from ISTEA funds.

TRAFFIC FLOW IMPROVEMENTS

The amended Traffic Flow Improvements measure reflects an increase over current funding and existing traffic flow improvement efforts. Computer optimizing and coordinating all 2500 signalized intersections in the County by 2000 are proposed, as well as constructing 3 additional central computer control facilities at an annual cost of \$3.28 million, to increase traffic flow and reduce emissions caused by vehicle stops and starts. If no additional funding becomes available, 1800 traffic signals would be interconnected and computerized in the region by 2000. The specific source of the necessary funding for the increased effort is not identified, though several possible sources are mentioned. It is presumed SANDAG is confident the funding is available for the recommended level of implementation.

Criteria:

Suggest appropriate monitoring criteria and auditing procedures to be used by the District to effectively track the emission reduction effectiveness of each transportation system management measure.

- Any measure to improve the flow of traffic shall not undermine the safety of cyclists or pedestrians.
- Advanced computer-based traffic signal control systems shall be implemented to minimize travel time, stops and delay on the urban highway network.
- First priority shall be given to transit vehicles. On streets with bus frequency of 15 minutes or less, signal timing should favor short cycles compatible with pedestrian traffic.
- Replacing stop signs with optimized signals shall have a high priority.
- Traffic controls along all regional arterials identified in the Regional Transportation Plan shall be optimized to minimize stops and delay and give priority to regional travel.
- Traffic signals in all major local and regional activity centers shall be optimized to minimize stops and delay.
- Traffic signals at the street end of freeway on and off ramps shall be coordinated and integrated with the surrounding city street signals.
- The Ramp Metering program in the Regional Transportation Plan shall be implemented as rapidly as feasible unless research indicates ramp metering causes a net emission increase.

Substantive Amendments:

• The initial Plan estimated 1200 intersections could be interconnected by 2000 with existing funding. An appendix to the amended Plan increases that estimate to 1800 intersections based on recent experience. The TCM Plan should be amended to reflect the commitment to interconnecting 1800 intersections with current finding. This is consistent with the Criteria.

District Comments:

The specific funding source for the accelerated traffic flow improvements is not identified.

<u>Conclusion</u>: It is recommended that the Traffic Flow Improvements measure be adopted into the Revised Regional Air Quality Strategy.

INDIRECT SOURCE CONTROL PROGRAM

The amended TCM Plan recommends that the District work with the Growth Management Technical Committee to prepare policies and design requirements for new developments. The policies and requirements, if approved by the Regional Planning and Growth Management Board, would be recommended for adoption to every city, the County and the Port District, and will become part of the air quality programs/elements of General Plans.

Criteria:

The transportation control measure plan submittal shall suggest a regional process, including the following features, for developing a District indirect source review program to ensure that developments are designed to facilitate use of alternative transportation modes to the maximum extent feasible.

- The Air Pollution Control Board will adopt an indirect source control regulation requiring evaluation and mitigation of individual land use development projects.
- A condition for delegating the regulation to local land use agencies in the the Cities, County, and Port District will be their adopting an air quality element into the local general plan or an air quality program that conforms to the District's indirect source control regulation as determined by the Air Pollution Control Board. While the District suggests that air quality elements be adopted as individual elements of general plans, jurisdictions may incorporate the regulation into the planning process by means of air quality programs.
- Air quality elements for general plans will be developed for implementation as a part of the Regional Growth Management Plan development effort in accordance with the indirect source review criteria adopted by the Air Pollution Control Board.
- Air quality elements and/or programs for general plans as well as other air quality related measures to be implemented through the Regional Growth Management Plan will conform to the adopted Air Quality Strategy as determined by the Air Pollution Control Board.
- If the Air Pollution Control Board finds that the air quality elements do not conform to the Air Quality Strategy, deficiencies will be identified and transmitted to the Regional Growth Management Board.
- Indirect source review program development and implementation shall be completed by 1994.

Substantive Amendments

• The Indirect Source Control Program Measure in the original TCM Plan recommended only enhanced review of environmental documents under the California Environmental Quality Act (CEQA). That was not consistent with the Criteria which specify a specific regulatory approach to addressing air quality impacts of new developments. The APCB/SANDAG subcommittee decided against enhanced review, and the revised Plan now states that enhanced review of environmental documents under the California Environmental Quality Act will not serve as the indirect source control program. The amended Indirect Source Control

Program now recommends implementation through the regional Growth Management Process and adoption by the Regional Planning and Growth Management Board. This is still not consistent with the Criteria because the process for developing and adopting air quality mitigating policies and design requirements by the Air Pollution Control Board as provided in the Criteria and required by the California Clean Air Act is not included. Without this, there is no assurance that adequate mitigating policies and design requirements will be implemented, nor broad based participation by affected and interested parties.

District Comments:

The District Board has adopted Criteria specifying a regional process to implement an indirect source control program, which is to be adopted by the Board as required by the California Clean Air Act and delegated to local agencies. The process was accepted by the regional Growth Management Technical Committee. However, the TCM Plan recommends the indirect source program be developed through the regional Growth Management Process, and adopted by the Regional Planning and Growth Management Board. This is not consistent with the Criteria because consideration and adoption of air quality mitigating policies and design requirements by the Air Pollution Control Board are not included. Without this, there is no assurance that adequate mitigating policies and design requirements will be implemented.

There was no subcommittee consensus on the process recommended in the TCM Plan. The District recommends that the TCM Plan be amended to reflect coordination with the Growth Management Technical Committee, cities, interested parties, affected businesses and agencies in developing policies and design requirements, using the process contained in the Criteria. The process was agreed to and developed in consultation with development and construction industry interests as well as the Growth Management Technical Committee.

Conclusion:

The Indirect Source Control Program is not consistent with the Criteria. It is recommended that the Program be amended to reflect the Criteria, and adopted in the Revised Regional Air Quality Strategy.

LAND USE

The amended Plan, like the original Plan, suggests that the Regional Planning and Growth Management Board will propose land use policies to address the Criteria.

Criteria:

A model air quality element for comprehensive land use plans shall be developed for consideration by the Cities, the County, the Port District, and other applicable jurisdictions.

Job-Housing Balance

- Each major statistical area (as defined by SANDAG and concurred by the District) shall, to the extent feasible, contain affordable housing for the employment spectrum in that area.
- Land use policies and programs shall be established to attract appropriate employers to overly residential areas and to encourage appropriate housing in and near industrial and business areas.

Mixed Use Development

• Development designed to maximize walking and minimize vehicle use by providing housing, employment, education, shopping, recreation, and any support facilities within convenient proximity shall be maximized.

Transit Corridor Development

- City, County, and Port District land use plans, zoning ordinances, and development policies shall be designed to foster transit ridership.
- High residential densities shall be encouraged within walking distance of major transit routes.
- Industrial and commercial development shall focus at transit nodes.
- Developments shall have convenient access to transit.
- Multiuse development at transit centers shall offer such facilities as day care, groceries, banking, etc.

District Comments:

No specific programs are proposed to address these Criteria.

The primary studies to develop new land use development policies are being conducted by other agencies, supporting pedestrian oriented urban development forms accessible by transit. The City of San Diego is developing policies. The County has completed a study approaching this issue

from a more operative perspective and is now in the preliminary implementation stage. The District also has a contract to develop an indirect source review program to address land use development policies to mitigate air quality impacts which will integrate and build on the current work being accomplished in the region.

<u>Conclusion</u>: Additional time and effort are needed to develop new land use policies and reach a regional consensus. SANDAG did not address the Criteria in a comprehensive manner through integrating Indirect Source Review with other related work being accomplished in the region. The District program being developed by the contractor will integrate the program with related efforts in the region.

GENERAL CRITERIA

1. <u>Criterion</u>: The plan shall substantially reduce passenger vehicle trips and trip length as expeditiously as practicable. The rate of increase in vehicle trips shall be reduced to or below the rate of population growth.

<u>Comments</u>: The amended Transportation Control Measures Plan indicates 633,758 vehicle trips will be reduced in 2000. For the rate of trip growth to not exceed the population growth rate, the District has estimated that about 500,000 trips should be reduced in 2000.

Conclusion: This Criterion is met.

2. <u>Criterion</u>: The plan shall achieve a regionwide average vehicle ridership of 1.5 or more during weekday commute hours as expeditiously as practicable, but no later than 1999, and no net increase in vehicle emissions after 1997. The vehicle trip reduction goal shall be in terms of average vehicle ridership, not drive-alone ratio as the latter reduces the incentive for transit promotion, thereby diminishing the opportunity to further reinforce the viability of the region's investment in mass transit.

<u>Comments</u>: As commented under the Commute Travel Reduction Program, with the inclusion of the APCD pre-approved measures and the requirement that alternative plans must be equivalently effective, the 1.5 target will be met. Goals in the Plan are in terms of Average Vehicle Ridership.

<u>Conclusion</u>: Analysis of the proposed Transportation Control Measures Plan indicates the Average Vehicle Ridership specified in the Criterion will be met.

3. <u>Criterion</u>: The plan shall include all feasible transportation control measures for peak and offpeak period travel that reflect the optimal effectiveness level to provide as much emission reduction as feasible, and be implemented as expeditiously as practicable.

<u>Comments</u>: The amended Transportation Control Measures Plan proposes transportation control measures based on currently programmed funding. Some measures need further development under work programs. Additional funding as previously discussed will be required for optimum implementation. Further, additional time is needed to develop land use measures as part of the indirect source review program being developed by the District.

<u>Conclusion</u>: All transportation control measures feasible at this time and reflecting available funding are included. This Criterion is met.

4. <u>Criterion</u>: The transportation control measures shall be developed in coordination and consultation with all affected agencies and the Air Quality Strategy Development Committee, and significant issues raised in the development shall be identified in the plan. The Air Quality Strategy Development Committee shall be the key committee to address and resolve all issues prior to making recommendations to the Board.

<u>Comments</u>: The Transportation Control Measures Plan was not developed in coordination and consultation with the Air Quality Strategy Development Committee. Only SANDAG's committees were involved.

<u>Conclusion</u>: The Air Quality Strategy Development Committee was not involved in Plan development as specified in the Criterion. The Air Quality strategy Development Committee will review the Regional Air Quality Strategy, including the TCM Plan, and the Committee's statement will be submitted to the Board at or before the public hearing.

5. <u>Criterion</u>: The plan for Transportation Control Measures shall include a recommended strategy and alternative options for consideration by the Air Pollution Control Board. Each measure shall be evaluated at three implementation levels. These levels shall represent implementation to the maximum extent feasible using: (1) Existing funding sources. (2) Potentially available funding sources, including parking and other fees implemented by the District for which legislation is not required, and (3) Potentially available funding sources including those that would require legislation, such as fuel taxes and vehicle use fees. Resource needs and funding sources shall be identified for each implementation level.

<u>Comments</u>: The amended Transportation Control Measures Plan does analyze three implementation levels for each transportation control measure, projects implementation costs, and identifies potential funding sources available under existing law and those requiring additional legislation. Fees that could be charged by the District under existing law are not proposed, although implementing agencies are authorized to charge fees to supplement funding. The proposed Plan relies on increased vehicle registration fees requiring legislative authorization as the primary funding source. As discussed previously under Transit Improvements, funding transfers under ISTEA should be pursued to provide needed funding for transportation control measures.

<u>Conclusion</u>: This Criterion is met. However, further evaluation of ISTEA funding options should be conducted.

6. <u>Criterion</u>: For each implementation level, an evaluation shall be performed by analyzing transportation control strategies using TRANPLAN to determine resulting changes in trips, VMT and speeds. The assumptions and justifications for the assumptions shall be documented, and TRANPLAN outputs shall conform to District format specification. Any emission reductions determined by the San Diego Association of Governments shall be submitted to the District with supporting documentation. The District shall submit any revisions to the emission reductions to the San Diego Association of Governments for inclusion in the transportation control measure analysis.

<u>Comments:</u> The analysis of trip and VMT reductions did not consider the effects on the TDM measures of implementing transit, vanpools, HOV lanes, Park-and-Ride, etc, at limited existing funding levels versus proposed optimum levels. The College Travel Reduction Program even claims the same reductions whether or not the student transit pass subsidy program is implemented. More realistic analyses are needed that consider the interactions among the measures. However, methodologies are not available to address such interactions. An appropriate analysis will be performed when the methodology becomes available.

<u>Conclusion</u>: The Criterion could not be met due to limitations of available methodologies, but it is recommended the Plan, including District recommended amendments, be adopted into the Revised Regional Air Quality Strategy.

7. <u>Criterion</u>: The cost-effectiveness, technological feasibility, total emission reduction potential for reactive organic compounds, oxides of nitrogen and carbon monoxide, rate of emission reduction, public acceptability, and enforceability shall be determined for each control measure at

each implementation level. The proposed transportation control measure plan and alternative options shall be evaluated in terms of the same factors, with special attention to synergistic effects and other interactions among measures in the plan.

<u>Comments</u>: The amended Transportation Control Measures Plan does analyze each individual measure in terms of cost-effectiveness, technological feasibility, emission reduction potential, public acceptability and enforceability. However, no analysis is provided for the proposed Transportation Control Measures Plan as a whole, with special attention to synergistic effects and other interactions among measures in the plan. The District understands that there is no acceptable methodology currently available to reasonably and accurately address synergistic effects. Studies to develop a methodology are underway at the state level. An appropriate analysis will be performed when the methodology becomes available.

<u>Conclusion</u>: Synergistic effects can not be addressed until an acceptable methodology is developed, but it is recommended the Plan, including District recommended amendments, be adopted into the Revised Regional Air Quality Strategy.

8. <u>Criterion</u>: The performance criteria and the target levels to demonstrate expeditious progress shall be specified for each control measure. Monitoring and audit procedures to effectively track implementation and progress of each transportation system management measure by the District shall be recommended. Monitoring and audit procedures to effectively track regionwide average vehicle ridership necessary to determine compliance with the California Clean Air Act requirement for 1.5 persons per passenger vehicle during weekday commute hours shall be recommended.

<u>Comments</u>: The amended Transportation Control Measures Plan does specify goals and monitoring and audit procedures.

Conclusion: This Criterion is met.

9. <u>Criterion</u>: In light of projected funding limitations, the proposed plan shall include an analysis of benefits and recommendations as appropriate for redirecting discretionary funds from highway capacity expansion projects to other projects that accelerate expansion of alternative transportation modes.

<u>Comments</u>: The Amended TCM Plan addressed redirection of discretionary funding, except ISTEA. The District has recommended a resolution for Board consideration giving high priority to allocation of ISTEA funding to implementing transportation control measures at the optimum level.

<u>Conclusion</u>: This Criterion has been partially met. SANDAG Board concurrence with the resolution will meet this Criterion.

10. <u>Criterion</u>: Revenues from all air quality related fees shall be deposited with the District for allocation to programs that reduce motor vehicle emissions, with priority given to transit operating funds, cost-effective measures, and total emission reduction potential. The parking fee program may be structured to allow facilities to retain a portion of the parking charges from their employees to help fund incentive programs provided sufficient funding, as determined by the District, for District transportation related programs is provided to the District.

<u>Comments</u>: The amended Transportation Control Measures Plan does not address District fees. However, implementing agencies are authorized to charge fees to supplement funding.

Conclusion: This Criterion is met.

11. <u>Criterion</u>: Market-based measures, which increase the cost of driving, may be suggested, but may not replace, regulatory measures. Suggested market-based measures shall be designed to be implemented within a District regulatory structure and shall include approaches that do not require legislation. Market-based measures that may require implementing legislation may be suggested as long-term measures.

<u>Comments</u>: The amended Transportation Control Measures Plan proposes support for legislation implementing market-based measures in general, but specifically a vehicle registration and emission fee, and increased registration fee on more than one car. The size of these fees is not recommended. Revenues from these fees are intended to provide necessary funding to implement the Transportation Control Measures Plan. A statewide effort is underway to reach consensus regarding market-based measures. Appropriate legislative proposals will be developed based on the consensus.

Parking management is a market-based measure, can be implemented under current authorities, and is included in the Commute Travel Reduction Program.

Finally, the Plan proposes a demonstration project to test the feasibility of pricing the use of the I-15 HOV Lane by single occupant vehicles, and funds raised to be allocated to increase transit service in the I-15 corridor.

<u>Conclusion</u>: This Criterion is met.

12. <u>Criterion</u>: The regional plan for transportation control measures shall suggest a regional process for implementing long-term measures, and for developing and implementing future transportation control measures that may become feasible with the emergence of new technologies, enabling legislation, or legal requirements.

<u>Comments</u>: The amended Transportation Control Measures Plan identifies responsible implementing agencies and implementation actions for each proposed measure, and also includes a regional process for developing and implementing new future measures that may become feasible. The process involves the ongoing planning and programming agencies and committees.

Conclusion: This Criterion is met.

13. <u>Criterion</u>: The plan shall include sufficient incentives to induce solo drivers into alternative transportation modes, and provide for a sufficient supply of alternative transportation modes (e.g., transit, HOV lanes, vanpools) to meet the demand induced by the transportation control measures. An assessment of how much transit expansion will be necessary to meet the demand induced by the transportation control measures and of transit operating funding needs to support that expansion shall be included.

<u>Comments</u>: The amended Transportation Control Measures Plan includes the Transportation Demand Management Program to shift solo drivers into alternative transportation modes, transit improvements, bicycle facilities, high occupancy vehicle lanes, park-and-ride facilities, and a vanpool program to provide alternative transportation modes. However, no technical analysis is provided demonstrating that the recommended level of alternative transportation improvements

would be sufficient to meet demand. (See comments under Criteria 6 and 7 regarding lack of a methodology for analyzing the interactions among the various TCM's.)

<u>Conclusion</u>: This Criterion is not met, because no demonstration was provided that the alternative transportation improvements would be sufficient to meet the demand generated by the incentives. It is recommended the Plan, including District recommended amendments, be adopted into the Revised Regional Air Quality Strategy despite this minor failing.

14. <u>Criterion</u>: The transportation control measures plan shall conform to all applicable guidance documents, including California Clean Air Act Transportation Requirements Guidance, California Clean Air Act Guidance for the Development of Indirect Source Control Programs, Guidelines to Local Air Districts Considering Transportation Control Measures Directed at Heavy-Duty Truck Operations, and Cost Effectiveness - District Options for Satisfying the Requirements of the California Clean Air Act.

<u>Conclusion</u>: This Criterion is met except as otherwise noted.

15. <u>Criterion</u>: All information necessary for an environmental assessment of the plan, if necessary under the California Environmental Quality Act, shall be provided to the District upon request.

<u>Conclusion</u>: The final EIR was prepared, and no specific additional information was requested.

16. <u>Criterion</u>: If the Air Pollution Control Board adopts a strategy different from the proposed and analyzed strategies, the San Diego Association of Governments shall analyze the transportation control measures in the adopted strategy using TRANPLAN, provide appropriate outputs in a format specified by the District, and determine the overall cost-effectiveness of the adopted transportation control measures.

<u>Conclusion</u>: Since the Air Pollution Control Board has not yet adopted a strategy, this criterion is not yet applicable.

17. <u>Criterion</u>: The attached list of transportation control measures, Addendum I, constitutes the minimum measures to be included in the plan. Transportation control measures requiring local land use decisions should be developed in coordination with local land use jurisdictions. Other measures proposed in the plan must meet the definition of transportation control measures as defined by the California Clean Air Act and be approved by the Air Pollution Control Officer.

<u>Conclusion</u>: (See discussion under the measure-specific evaluations.)

18. <u>Criterion</u>: The plan for transportation control measures shall include suggested contingency measures to be implemented as necessary to offset any emission reduction shortfall if other measures are not implemented or are not as effective as anticipated.

<u>Comments</u>: The amended Transportation Control Measures Plan does not include contingency measures. Air quality related contingency measures are also required under the Congestion Management Program. The District recommends the TCM Plan be amended to provide for a work program for developing contingency measures.

<u>Conclusion</u>: This Criterion is not met, because a selection of contingency measures is needed. It is recommended that the TCM Plan be amended to provide for a work program for developing contingency measures.

19. <u>Criterion</u>: The plan for regional transportation control measures shall suggest revisions to federal, state, and local laws and regulations that would facilitate or remove barriers to reducing regional travel.

<u>Comments</u>: The amended Transportation Control Measures Plan does not contain any specific proposals. No mention is made of such issues as reducing minimum parking requirements, federal and state transportation funding formulas, or legislation to raise the \$21 limit on tax exempt transit subsidies to provide more equity with free parking benefits.

<u>Conclusion</u>: This Criterion is not met. It is recommended that the Board direct the Air Pollution Control Officer to study the current tax structure related to ridesharing incentives and parking management and develop an appropriate legislative program for Board consideration.

20. <u>Criterion</u>: The regional plan for transportation control measures shall not impede pedestrian and bicycle travel, and shall address safety issues associated with such travel as well as transit and park-and-ride lots.

<u>Comments</u>: The amended Transportation Control Measures Plan addresses safety issues in the Park-and-Ride and Bicycle Facilities tactics.

Conclusion: This Criterion is met.

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Appendix G

Transportation Control Measures Ranked by Cost Effectiveness 1991 San Diego Regional Air Quality Strategy Appendix G

Year 2000 Total Emission Reductions and Cost Effectiveness of Recommended Transportation Control Tactics Travel Emissions -Emissions Annualized Cost Effectiveness Reduced Reduced Reduced Cost (% '87) (\$ millions) (ROG+NOx) (%) (tons/day) Trips ROG NOx ROG NOx (\$/lb) Tactic VMT \mathbf{CO} Govt Other \mathbf{c} TDM Program - Non-Commute Travel* -TDM Program - Goods Movement (Level 3) -0.02 15.84 0.45 0.00 1.10 0.6 0.65 1.26 _ _ (Contingency Measure) Traffic Flow Improvements (Level 2) 3.28 0.58 0.58 12.80 0.22 0.22 0.45 3.90 **Bicycle Facilities (Level 2)** 0.09 0.33 0.13 0.13 1.45 0.05 0.05 0.10 3.9 20.50 TDM Program - High School/College Travel 0.25 0.33 8.0 12.3 0.65 0.55 0.38 0.71 4.72 0.14 25.50 (Level 2) TDM Program - Commute Travel (Level 1) 3.93 0.93 0.98 73.8 27.20 3.28 2.60 2.83 33.62 2.36 1.5 (Level 2 is a Contingency Measure) Vanpool Program (Level 3) 0.27 28.90 0.49 0.41 0.31 0.47 3.86 0.11 0.16 16.5 Transit Improvements (Level 3) 21.5 2.35 2.52 1.03 -0.04 13.65 0.37 -0.01 1.00 29.70 Park and Ride Facilities (Level 3) 0.06 0.03 0.06 0.35 0.01 0.02 0.02 2.4 36.23 --High Occupancy Vehicle Lanes (Level 3) 0.42 1.22 0.27 0.42 3.52 0.10 0.14 0.25 21.1 41.90

Transportation Control Measures Ranked by Cost Effectiveness[†]

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[†] Cost effectiveness for the transportation control measures as listed is based on the optimum implementation level, which is dependent upon the availability of additional funding. ^{*} Costs, emissions, and emission reductions for Airport, Special Event, and Shopping trips to be determined later, pursuant to work program.