APPENDIX C
AIR QUALITY PLANNING AND TRANSPORTATION CONFORMITY

Background

The federal Clean Air Act (CAA), which was last amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. California has adopted state air quality standards that are more stringent than the NAAQS. Areas with levels that exceed the standard for specified pollutants are designated as non-attainment areas.

The EPA requires that each state containing non-attainment areas develop plans to attain the NAAQS by a specified attainment deadline. These attainment plans are called State Implementation Plans. The San Diego County Air Pollution Control District (APCD) prepares the San Diego portion of the California State Implementation Plan (SIP). Once the standards are attained, further plans – called Maintenance Plans - are required to demonstrate continued maintenance of the NAAQS.

The 1982 SIP anticipated attaining federal ozone and carbon monoxide standards by 1987. However, these standards were not attained at that time. In 1988, the California Clean Air Act (CCAA) was enacted requiring the APCD to prepare a revised Regional Air Quality Strategy (RAQS) for achieving the state and, by extension, the less stringent national air quality standards.

The San Diego air basin is classified as a "serious" ozone non-attainment area under both the state and federal Clean Air Acts. The non-attainment classification, based on the amount of pollutant above the standard, determines the minimum state and federal control requirements and the federal attainment deadline. In 2001, the region attained the federal one-hour ozone standard, and in December 2002, a Maintenance Plan was submitted to the EPA as a SIP revision.

San Diego County is federally designated as a maintenance area for Carbon Monoxide (CO). The CO standard was attained in 1993, and the EPA approved a ten-year Maintenance Plan in 1998. An update to the CO Maintenance Plan is under development and the plan will cover the second ten-year maintenance period through 2018.

Transportation and Air Quality Planning

SANDAG prepared the Transportation Control Measures (TCM) Plan for Air Quality for inclusion in the 1991 RAQS. The TCM Plan includes traffic signal improvements, transit service expansion, vanpools, high occupancy vehicle lanes, park-and-ride lots, and bicycle facilities.

The federal CAA Amendments of 1990, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, and the 1998 Transportation Equity Act for the 21st Century (TEA-21) promoted major reforms in the transportation planning process. The transportation conformity provisions of the CAA Amendments require that transportation plans, programs, and projects conform to the "purpose" of the SIP for the attainment of the NAAQS. Conformity is to ensure that new transportation projects do not jeopardize air quality in non-attainment or maintenance areas.

SANDAG, as the Metropolitan Planning Organization (MPO) for the San Diego region, must demonstrate that the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP) are in conformity with the SIP for meeting air quality standards. The U.S. Department of Transportation (DOT) signs

off on conformity of the region's RTP and RTIP. Conformity determinations for transportation plans, programs, and projects are based on the DOT/EPA conformity rule issued in November 1993 and its subsequent revisions.

In 1998, SANDAG and the APCD approved the San Diego Transportation Conformity Procedures. These procedures contain the Transportation Conformity Rule and locally developed Interagency Consultation Procedures. In addition to SANDAG and the APCD, the agencies involved in transportation/air quality coordination are Caltrans, the California Air Resources Board (ARB), DOT, and EPA. All these agencies comprise the San Diego Region Conformity Working Group (CWG).

Accomplishments Since 2000

Progress has been made in the region in attaining both federal and state air quality standards. Federal and state standards have been met for lead, nitrogen dioxide, sulfur dioxide, and CO, and federal standards are being met for inhalable particulates.

Since the passage of the federal CAA Amendments in 1970, air quality has gotten consistently better in spite of a more than doubling of travel. For photochemical smog (ozone), there were no exceedances of the federal one-hour standard in the San Diego air basin in 1999, 2000, and 2002. The region exceeded the federal standard on two days in 2001, compared with 12 days in 1995 and 87 days in 1980.

In 2001, the San Diego region attained the federal one-hour ozone standard. In December 2002, the San Diego Air Pollution Control Board (APCB) adopted a request for the EPA to redesignate the San Diego region from serious non-attainment to attainment/maintenance for ozone and a ten-year ozone Maintenance Plan for transmittal to ARB. Also in December 2002, ARB subsequently submitted the redesignation request and Maintenance Plan to the EPA for approval as an amendment to the SIP.

The region exceeded the more stringent state ozone standard on 15 days in 2002, compared with 96 days in 1995 and 167 days in 1980. The monitoring stations in the San Diego region are shown in Figure C.1.

ARB currently is developing a new Maintenance Plan for CO, covering the second ten-year maintenance period. This plan is expected to be adopted by ARB in Summer 2003 and then submitted to the EPA.

In 1997, the EPA revised the federal ozone standard from the current one-hour peak standard to an eight-hour average standard. At the same time, the EPA revised the standards for fine particulates. The EPA intends to release guidance to implement the revised standards by the end of 2003.

FIGURE C.1—SAN DIEGO AIR BASIN MONITORING STATIONS

Air Quality Planning Milestones

- In 2001, the APCD adopted the third Triennial RAQS revision. This revision made no changes to measures related to mobile sources.

- In 2001, the San Diego region attained the federal one-hour ozone standard.
- In December 2002, the APCB adopted the *Ozone Redesignation Request and Maintenance Plan for San Diego County and transmitted these documents to the ARB*.
- In December 2002, ARB submitted the *Ozone Redesignation Request and Maintenance Plan for San Diego County* to the EPA for approval as a SIP revision.
- In December 2002, ARB submitted a new motor vehicle emissions model (EMFAC 2002) to EPA requesting approval for use in SIP development and transportation conformity in California.
- ARB currently is preparing the CO Maintenance Plan update. Adoption is expected in Summer 2003.

Plan

The Air Quality Strategy incorporated into this RTP includes both the EPA-approved 1982 SIP transportation control measures (TCMs), and the more extensive program adopted under state law in the RAQS. Four strategies were included in the 1982 SIP: ridesharing, transit improvements, traffic flow improvements, and bicycle facilities and programs.

TCMs in the 1982 SIP have been fully implemented, but until they are formally removed from the SIP, SANDAG must continue to report on them in the conformity demonstrations required for federal approval of the RTP and RTIP. TCMs continue to be funded, and the level of improvements anticipated in the 1982 SIP for the four transportation strategies has been surpassed.

The RAQS and TCM Plan for Air Quality, adopted by the APCD, include tactics that meet the CCAA requirements for serious non-attainment areas.

Plan Requirements

A. The following RAQS and TCM Plan objectives are required by state law for the San Diego region:

1. Reasonably available TCMs sufficient to substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip.
2. Measures to achieve the use of a significant number of low-emission motor vehicles by operators of motor vehicle fleets. (ARB's Low Emission Vehicles program fulfills this requirement.)
3. Provisions to develop indirect source control programs.

B. In addition to the state requirements above, the RTP and RTIP must meet the requirements of the DOT/EPA final conformity rule summarized below:

Transportation Plans and Programs Requirements

1. The transportation plan and program must use the most recent estimates of mobile source emissions;
2. The transportation plan and program must provide for expeditious implementation of TCMs in the SIP; and
3. The transportation plans and programs of MPOs for areas designated non-attainment for ozone or carbon monoxide must contribute to emissions reductions.

Transportation Project Requirements

1. Transportation projects must come from a conforming transportation plan and program.

Transportation Conformity: Regional Emissions Analysis & Modeling Procedures

Introduction

The 2030 Regional Transportation Plan includes policies and programs to improve mobility in the San Diego region to the year 2030. The RTP is, in essence, two long-range plans. Besides the 2030 Mobility Plan, which is based on reasonably expected transportation funding, SANDAG developed a 2030 Revenue Constrained Plan for the purpose of conducting the air quality conformity analysis.[1]

Appendix A of the 2030 RTP describes the Revenue Constrained Plan, and Chapter 4 of the 2030 RTP and the Technical Appendices provide information on revenue assumptions.

As explained in the Transportation and Air Quality Planning section of this Appendix, SANDAG and the U.S. DOT must make a determination that the Revenue Constrained Plan conforms to the SIP for air quality. Conformity to the SIP means that transportation activities will not create new air quality violations, worsen existing violations, or delay the attainment of the national ambient air quality standards.

In addition, SANDAG is required to re-determine conformity of the Regional Transportation Improvement Program (RTIP), a short-term program of major transportation projects in the San Diego region, within six months from the date of DOT's conformity determination of the new RTP.

DOT made the conformity determination for the 2020 RTP on April 13, 2000 and found the FY 2002 RTIP in conformity on October 4, 2002.

To evaluate transportation conformity, emissions forecasts were produced for three scenarios, consistent with the 2030 Revenue Constrained Plan highway and transit network alternatives. The emissions analyses were prepared for the years 2010, 2020, and 2030. In addition, a 2014 transportation network was created for the Revenue Constrained Plan air quality conformity analysis. Emissions forecasts for 2014 (the horizon year of the Ozone Maintenance Plan) also were estimated.

The SANDAG Board of Directors will be asked to make a finding of conformity of the 2030 Revenue Constrained Plan and the FY 2002 RTIP on March 28, 2003.

Growth Forecasts

Every three to five years, SANDAG produces a long-range forecast of population, housing, and employment growth for the San Diego region. The most recent is the Preliminary 2030 Cities/County Forecast, released in October 2002. The SANDAG Board of Directors accepted this forecast for use in planning studies on October 25, 2002.

The forecasts are produced in two phases. Phase 1 uses an econometric model called DEFM (Demographic and Economic Forecasting Model) to produce a detailed forecast for the region as a whole. Phase 2 employs the UDM (Urban Development Model) allocation model to distribute the regional forecast to cities and smaller geographic areas.

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[1] Consistent with 23 CFR 450, the *2030 Revenue Constrained Transportation Plan* includes only those facilities and programs that could be funded with existing state and federal programs and with the current *TransNet* local sales tax program, which expires in 2008.

Prior to 1994, the Phase 2 allocation process was based entirely on the adopted plans and policies of the 19 local jurisdictions. That year, in the course of producing the 2015 Forecast (also called the Series 8 Forecast) it became apparent that the region's plans, taken in aggregate, could not accommodate the projected growth. Specifically, not enough land was planned for residential use.

That forecast dealt with the lack of housing capacity by using a general intensification process that made small upward adjustments to planned residential densities in all jurisdictions. That produced an acceptable forecast, but it was felt that there was a better approach.

The 2020 Cities/County Forecast (used in the 2020 RTP) was released in February 1999. It dealt with the capacity issue by assuming increased residential and employment densities within a quarter-mile radius of some 150 existing and future transit stations. These Transit Focus Areas (TFAs) were, in effect, nodes of smart growth. In some areas, however, their presence represented too much of a departure from the adopted plans. Also, the locations of the TFAs came from SANDAG's 2020 RTP, rather than from the jurisdictions themselves.

The Preliminary 2030 Cities/County Forecast eliminates the TFAs in favor of Smart Growth Focus Areas (SGFAs). There are fewer SGFAs than TFAs, but all were identified in some manner by the local jurisdictions, not SANDAG. They fall into three categories:

1. Areas identified in the process of a general plan update, such as the City of San Diego's City of Villages areas.
2. Areas suggested by local planners as having good potential for smart growth.
3. Areas the jurisdictions identified as having good potential for redevelopment that also are along the proposed Yellow Car and Red Car routes of the Regional Transit Vision.

SANDAG produced three separate 2030 Cities/County Forecasts for the 2030 RTP analysis, using three different housing unit distributions and capacities. Two of the three 2030 scenarios are relevant to this discussion, as follows:

1. Current Plans: The currently adopted plans and policies of the 18 cities and the County with no smart growth areas added.
2. Smart Growth: The adopted plans in the 18 incorporated cities with the addition of the Smart Growth Focus Areas, constraining future growth in the unincorporated area to be consistent with the new plan the County of San Diego is developing.

The biggest difference in outcomes between these two forecast scenarios was in the amount of land each consumed over the 30-year period. Continued use of the currently adopted plans would result in the consumption of tens of thousands of additional acres of land, most of which are in the environmentally sensitive eastern portion of the region.

SANDAG consulted with the San Diego Region CWG to select the land use scenario for the air quality conformity analysis. Both DOT and the EPA have concurred that approved plans should be used as input in the air quality conformity process. Therefore, the Current Plans scenario was used to run the regional transportation and emissions models for air quality conformity. Table C.1 shows the regional population and employment growth forecast for the San Diego region for the Current Plans scenario.

TABLE C.1—SAN DIEGO REGIONAL POPULATION AND EMPLOYMENT FORECAST

	Current Plans	
Year	**Total Population**	**Total Employment**
2000	2,813,833	1,384,673
2010	3,217,283	1,588,170
2020	3,559,001	1,783,327
2030	3,895,009	1,882,618

SOURCE: SANDAG, 2002

Transportation Modeling

SANDAG follows a widely used four-step transportation modeling process to forecast travel activity in the San Diego region. Travel forecasting procedures are described in more detail in SANDAG's *Regional Transportation Models* (1995) and the draft *2030 Forecasting Process and Model Documentation*, which are available upon request.

The estimates of regional transportation-related emissions analysis meet the requirements established in the Transportation Conformity Rule, Sections 93.122(b) and 93.122(c). These requirements relate to the procedures to determine regional transportation-related emissions, including the use of network-based travel models, methods to estimate traffic speeds and delays, and the estimation of vehicle miles of travel.

Tranplan is the transportation planning computer package used to forecast travel activity utilizing datasets that are maintained in the geographic information system (GIS). The transportation modeling steps consist of:

1. Generating average weekday person trip ends in each zone,
2. Estimating trip movements between zones using a trip distribution model,
3. Allocating trips to different forms of transportation using a mode split model, and
4. Assigning vehicle trips to road segments using a traffic assignment model.

Two iterations through the modeling process are made to reach equilibrium between transportation facilities and demand, where congested travel times from the first iteration are input to the second iteration.

The transportation models require two major inputs. One input is a zonal level households and land use forecast, which determines the number of trips generated. Highway and transit system networks are the other key input that affects the amount and location of vehicular travel.

Highway Networks

The regional highway networks in the 2030 RTP submittals include all roads classified by local jurisdictions in their circulation elements. These roads include freeways, expressways, and the Regional Arterial System (RAS). The RAS consists of all state highways, prime arterials, and selected major streets. In addition, some residential streets are included in the networks for connectivity between zones.

The route improvements and additions in the 2030 RTP are developed as an integral part of San Diego's regional growth management and forecasting process. They are intended to provide adequate travel service that is compatible with adopted regional policies for land use and population growth. All regionally significant projects from the 2030 Revenue Constrained Plan are included in the quantitative emissions analysis. These include all state highways, all proposed National Highway System routes, all regionally significant arterials, and all FHWA functionally classified "Other Principal Arterials."

The networks also account for programs intended to improve the operation of the highway system, including high occupancy vehicle (HOV) lanes and ramp metering. Existing and proposed toll facilities also are modeled to reflect time, cost, and capacity effects of these facilities. The SR 125 South project is the only modeled toll facility in the San Diego region.

In addition, several managed/HOV lanes are included in the Revenue Constrained Plan. Facilities with proposed managed lanes include I-5, I-15, I-805, and SR 52. It is assumed that the excess capacity not utilized by carpools and transit on HOV routes with two or more lanes in the peak direction as well as reversible HOV routes would be managed so that single occupant vehicles could use these lanes under a pricing mechanism. Traffic flows would be managed so that the facility would operate at level of service D or better.

Based on the recommended networks and the programs described above, the 2030 RTP transportation forecasts differentiate between single occupant and rideshare vehicle travel times. SANDAG normally maintains networks for 2000 (the 2030 Cities/County Forecast base year) and the years 2010, 2020, and 2030. A 2014 network was created for the Revenue Constrained Plan air quality conformity analysis. Appendix A lists the major highway projects included in the analysis.

Locally funded regionally significant projects also have been included in the air quality conformity analysis. These projects are funded with *TransNet* funds, a 20-year half-percent local sales tax for transportation that expires in 2008, and other local revenue sources.

Transit Networks

SANDAG also maintains transit network datasets for existing and proposed transit systems. Bus speeds assumed in the transit networks are derived from modeled highway speeds and reflect the effects of congestion. Regional and express transit routes on surface streets are assumed to operate out of congestion due to priority transit treatments. Freeway HOV lanes and HOV bypass lanes at ramp meters are accounted for and may produce higher bus speeds than on those highways where these facilities do not exist.

Once network coding is completed, the transportation models are run for the applicable scenarios. Four highway and transit networks (2010, 2014, 2020, and 2030) were coded for the conformity analysis. Procedures described in SANDAG's *Regional Transportation Models* and the draft *2030 Forecasting Process and Model Documentation* reports were followed.

Appendix A lists the major regional transit projects included in the analysis. Locally funded regionally significant projects have been included in the air quality conformity analysis. These transit projects also are funded with *TransNet* funds or other local revenue sources.

Trip Generation

Trip generation is the first step in the transportation modeling process. Average weekday trip ends by all forms of transportation starting and ending in each zone are estimated for 10 trip types: home-work, home-college, home-school, home-shop, home-other, work-other, and other-other, serve passenger, visitor, and airport.

The trip generation model works by applying trip rates to zone level growth forecasts. Trip production rates are expressed as trips per household. Trip production rates vary by trip type and structure type. Trip attractions are expressed as trips per acre of non-residential land use or trips per household. Trip attraction rates vary by trip type and employment type. The 2030 Cities/County Forecast was used to produce trip generation forecasts for 2010, 2014, 2020, and 2030.

In recent years, urban planners have engaged in a debate about whether increasing highway capacity generates induced travel. Most opinions revolve around the following ideas:

- Households will make new trips because adding highway capacity reduces the cost or time spent traveling to a location. However, travel costs or travel times will ultimately rise as more vehicles use a facility and the new road begins to experience congestion.

- New facilities may cause a diversion of existing trips from more congested roads to less congested ones. New land uses along a corridor also may result in redistribution of trips to a new destination using an alternative route.

SANDAG's regional transportation model uses a relatively high trip generation rate for households (8.1 vehicle trips per day), which may account for possible increases in trip making as new facilities are built. Also, the model accounts for travel diversion among facilities.

Trip Distribution

After trip generation, trip movements between zones are determined using a trip distribution gravity model. Inputs to the trip distribution model include zone level trip generation forecasts by trip type, zone-to-zone travel times, and friction factors by trip type.

Travel times are based on the 2030 RTP network scenarios. Highway improvements may induce longer trip lengths by allowing motorists to travel farther in the same amount of time. This effect is represented with the trip distribution model. Travel times differ between initial and final model iterations. Initial travel times reflect free-flow conditions and final times reflect the effects of congestion.

Mode Choice

At this point in the modeling process, total person trip movements between zones are split into different forms of transportation: drive alone, 2-person carpools, 3+ person carpools, transit, and other (bicycling and walk). Trips between zone pairs are allocated to modes based on the cost and time of traveling by a particular mode compared to the cost and time of traveling by other modes. For example, vehicle trips on a congested route would be more likely to be diverted to transit than trips on an uncongested freeway.

Income level also is considered since surveys show that high income travelers are more concerned about the level of service offered by a mode than those with lower incomes. The mode choice model is calibrated using 1995 Travel Behavior Survey trip tables by mode and income and 1995 Regional Transit Survey transit trip characteristics. Preliminary Census 2000 journey-to-work data and 2000 onboard transit passenger counts also are used in the calibration process.

A number of data files are input to the mode choice model:

- Zonal incomes,
- Trip tables from the distribution model,
- Peak and off-peak period highway and transit times,
- Transit fares,
- Auto driving and parking costs, and
- Transit accessibility measures.

Highway and transit travel time datasets differ between initial and final passes through the modeling process. Final iteration times reflect congestion effects found in the first iteration.

The model produces a.m. peak, p.m. peak, and off-peak period trip tables for vehicles and transit riders. The a.m. peak period is from 6:00 to 9:00 in the morning and the p.m. peak period is from 3:00 to 6:00 in the afternoon. A series of mode choice model runs were performed in the course of analyzing the 2030 RTP scenarios through two model iterations.

Highway Assignment

Highway assignment produces traffic volume estimates for all roadway segments in the system. These traffic volumes are an important input to emissions modeling.

The highway assignment model works by finding roads that provide the shortest travel time between each zone pair. Trips between zone pairs are then accumulated on road segments making up minimum paths. Highway travel times consider posted speed limits, signal delays, and congestion delays. The model computes congestion delays for each segment based on the ratio of the traffic volume to roadway capacity. Four iterations of equilibrium assignment and capacity restraint are performed within each assignment model run.

Motorists may choose different paths during peak hours when congestion can be heavy than during off-peak hours when roads are typically free-flowing. For this reason, traffic is assigned separately for a.m. peak, p.m. peak, and off-peak periods. Vehicle trip tables for each scenario reflect increased trip-making due to population growth and variations in travel patterns due to the alternative transportation facilities proposed.

Model accuracy is assessed by comparing model estimated 2000 traffic volumes with actual traffic counts obtained through SANDAG's traffic monitoring program and Highway Performance Monitoring System (HPMS) estimates of vehicle miles of travel (VMT).

Post-Tranplan Processing

Standard Tranplan output needs to be reformatted and adjusted to be useful for emissions modeling. Several routines and Fortran programs have been written to accomplish the following major functions:

- Correcting link specific traffic volume forecasts for calibration error
- Adding in estimated travel on roads not in the transportation modeling process
- Computing link speeds based on corrected link volumes and Highway Capacity Manual relationships between congestion and speed (or signal delay)
- Splitting link volumes into heavy-duty truck and other traffic to obtain speed distributions by vehicle class
- Preparing a data set that contains total VMT, number of trip starts, and VMT by speed bin by time of day for each vehicle class

Post-Tranplan processing routines are performed twice. First, they are run after the initial model iteration to provide travel times for the final model iterations. Finally, they are performed on the final model assignments to provide inputs for emissions modeling.

Motor Vehicle Emissions Modeling

Emissions Model

In October 2002, ARB released EMFAC 2002, a new emissions inventory model that calculates emissions for motor vehicles operating in California. It is an integrated model that combines emission rate data with vehicle activity to calculate regional emissions. ARB transmitted EMFAC 2002 to the EPA in December 2002 requesting approval for use in conformity determinations. EPA’s approval is expected by late March 2003.

The EMFAC 2002 model supports calculation of emissions for the Burden mode. The Burden mode is used for calculating regional emission inventories. In this mode, the model reports total emissions as tons per day for each pollutant, by vehicle class and the total vehicle fleet. The Burden mode uses emission factors that have been corrected for ambient conditions and speeds combined with vehicle activity to calculate emissions in tons per day. Vehicle activity includes the number of vehicles, daily vehicle miles traveled, and the number of daily trips.

The air quality analysis for the 2030 Revenue Constrained Plan was conducted using EMFAC 2002's Burden mode. Projections of daily regional emissions were prepared for reactive organic gases (ROG), nitrogen oxides (NOx), and carbon monoxide (CO).

On-road motor vehicle emissions are attributed to several different processes:

- Starting exhaust
- Running exhaust
- Idle exhaust (calculated for heavy-duty trucks only)
- Resting and diurnal evaporation
- Running losses
- Hot soak evaporation

Emission factors vary by vehicle class, fuel usage, and technology. Thirteen vehicle classes are modeled: passenger car, two types of light-duty trucks, medium-duty truck, two types of light-heavy-duty trucks, medium-heavy-duty truck, heavy-heavy-duty truck, line-haul vehicle, urban bus, school bus, motorcycle, and motor-home. The fuels modeled are gasoline, diesel, and electrically powered vehicles. Technology categories can be grouped into catalyst, non-catalyst, and diesel.

Emission factors for processes that vary by temperature (i.e., starting exhaust, hot soak, and running exhaust) are broken down further by specified temperature ranges. Exhaust emission factors also are broken down by speed range.

Regional Emissions Forecasts

A countywide forecast of average weekday ROG, NOx, and CO emissions was produced for 2010, 2014, 2020, and 2030 using the EMFAC 2002 model.

Emissions Modeling Results

At the date of release of this report (February 12, 2003), the 2030 Revenue Constrained Plan must meet the ozone motor vehicle emissions budget contained in the 1994 ozone SIP as well as the CO emissions budget established in the 1993 CO Maintenance Plan. The emissions budget is the part of the SIP that identifies emissions levels necessary for meeting emissions reduction milestones, attainment, or maintenance demonstrations.

The 1994 ozone SIP establishes a 1999 NOx and ROG budget of 114.25 and 89.60 tons/day, respectively. A 1993 CO budget of 1,194.87 tons/day was established in the CO Maintenance Plan. The projected emissions of ROG, NOx, and CO from the 2030 Revenue Constrained Plan are lower than the 1994 SIP ozone emissions budget and the 1993 CO Maintenance Plan budget.

However, since the San Diego region attained the federal one-hour ozone standard in 2001, the San Diego APCD prepared an Ozone Redesignation Request and Maintenance Plan, which were adopted by the District Board in December 2002.

The Maintenance Plan includes motor vehicle emissions budgets for ROG and NOx for the years 2010 and 2014. ARB submitted this Maintenance Plan to the EPA in December 2002.

These new ROG and NOx budgets will become the applicable budgets for conformity determinations after the EPA makes a budget adequacy finding. EPA's action is expected by late March 2003. In anticipation of EPA's budget adequacy finding, the projected ROG and NOx emissions from the 2030 Revenue Constrained Plan also were compared against the proposed budgets. The regional emissions of ROG and NOx meet the budgets for 2010 and 2014 included in the Ozone Maintenance Plan.

ARB currently is preparing a CO Maintenance Plan for the San Diego region. This plan would update the 1993 plan and would cover the second ten years of the maintenance period. ARB is expected to transmit the CO Maintenance Plan to the EPA in Summer 2003. The new CO budget would become the applicable budget for conformity determinations after the EPA makes a budget adequacy finding. Within 18 months of that finding, SANDAG and the U.S. DOT are required to redetermine conformity of the RTP to comply with Section 93.104(e)(2) for initial SIP submissions.

The FY 2002 RTIP relies on the 2030 RTP regional emissions analysis and is consistent with that analysis. SANDAG and the U.S. DOT must redetermine conformity of the RTIP within six months after the MPO adopts a new RTP.

Tables C.2 and C.3 summarize the 2030 Revenue Constrained Plan and FY 2002 RTIP air quality conformity analysis and the budget test for the current budgets and the proposed ozone Maintenance Plan budgets, respectively. The analysis for the 2030 Revenue Constrained Plan (including interim years) shows that the Plan meets both existing budgets as well as the more stringent proposed Maintenance Plan budgets.

TABLE C.2—2030 SAN DIEGO REVENUE CONSTRAINED PLAN
& FY 2002 RTIP AIR QUALITY CONFORMITY ANALYSIS
CURRENT BUDGETS

Scenario	Average Weekday Vehicle Starts (1,000s)	Average Weekday Vehicle Miles (1,000s)	CO Tons/Day	ROG Tons/Day	NOx Tons/Day
Currently-Approved SIP Emissions Budget			1,194.87	89.60	114.25
2010 Revenue Constrained	14,989	89,547	451.98	44.12	85.25
2014 Revenue Constrained	15,731	95,610	341.89	34.88	63.30
2020 Revenue Constrained	16,958	107,622	246.95	27.66	45.13
2030 Revenue Constrained	18,111	120,766	159.08	18.59	26.86

TABLE C.3—2030 SAN DIEGO REVENUE CONSTRAINED PLAN
& FY 2002 RTIP AIR QUALITY CONFORMITY ANALYSIS
PROPOSED OZONE MAINTENANCE PLAN BUDGETS

Scenario	Average Weekday Vehicle Starts (1,000s)	Average Weekday Vehicle Miles (1,000s)	ROG Tons/Day	NOx Tons/Day
2010 Proposed Maintenance Plan Emissions Budget			46	88
2010 Revenue Constrained	14,989	89,547	44	85
2014 Proposed Maintenance Plan Emissions Budget			36	66
2014 Revenue Constrained	15,731	95,610	35	63
2020 Revenue Constrained	16,958	107,622	28	45
2030 Revenue Constrained	18,111	120,766	19	27

Exempt Projects

Section 93.126 of the Transportation Conformity Rule exempts certain highway and transit projects from the requirement to determine conformity. The categories of exempt projects include safety, mass transit, air quality (ridesharing and bicycle and pedestrian facilities), and other (such as planning studies).

The 2030 Revenue Constrained Plan assumes continued implementation of several of these types of exempt projects that, according to the conformity rule, may be implemented even in the absence of a conforming transportation plan and transportation improvement program.

Table C.4 illustrates the exempt projects considered in the 2030 Revenue Constrained Plan. This table shows short-term exempt projects. Additional unidentified projects could be funded with revenues expected to be available from the continuation of existing state and federal programs.

TABLE C.4—EXEMPT PROJECTS

Project/Program Description
Bikeway, Rail Trail and Pedestrian Projects
Camino Del Mar/Jimmy Durante Blvd. Bicycle Bridge
Cliff Street Pedestrian Overcrossing
Coastal Rail Trail
Escondido Creek Bike Path Phases 4 & 5
Escondido Creek Bike Path Undercrossings
Inland Rail Trail Phase 2
Lake Hodges Bicycle-Pedestrian Bridge Approach Improvements
Lake Hodges Bicycle-Pedestrian Bridge
Pacific Highway/Barnett Interchange Improvements
Rosa Street Pedestrian Overcrossing
Rose Creek Bicycle Bridge
San Diego River Bikeway
SR 56 Bike Path Interchanges
Sweetwater River Bike Path
Via de la Valle Bikeways
Regionwide Traffic Incident Management
Freeway Service Patrol
Transportation Demand Management
RideLink Regional Rideshare Program
Regional Vanpool Program
Transportation Management Systems
Automated Traveler Information System
Traffic Management System (I-805, SR 94)
Fiber Optic/Closed Circuit Camera (I-8/15/805)
Ramp Meters (I-5/805, SR 94)
Traffic Monitoring Stations (I-5/805, SR 94)
Other traffic management systems

IMPLEMENTATION OF TRANSPORTATION CONTROL MEASURES

There are four TCMs that must be implemented in San Diego, which the SIP refers to as Transportation Tactics. They include ridesharing, transit service improvements, traffic flow improvements, and bicycle facilities and programs.

These TCMs were established in the 1982 SIP, which identified general objectives and implementing actions for each tactic. A substantial investment has been made in these TCMs since 1982, and they have been fully implemented. Ridesharing, transit, bicycling, and traffic flow improvements continue to be funded, although the level of implementation established in the SIP has been surpassed. No TCMs have been removed or substituted from the SIP.

The four Transportation Tactics, including status and implementing actions in the SIP, are illustrated in Tables C.5 to C.8 that follow.

TABLE C.5—IMPLEMENTATION STATUS OF RIDESHARING (1982 SIP TACTIC 1, LEVEL 2)

Implementing Actions in SIP	Implementing Action Objectives	Substitute Actions	Due Date (in SIP)	Date Completed	Responsible Agency(s)	Funding Sources
Matching and Employer Promotion: Traffic Abatement Program	Extend traffic abatement ruling down to 50+ employees (from 100+).	None	None	Continues	APCD	Employer Filing Fees
Expanded Rideshare matching	Annually contact and provide personalized matching services to employers with 50 and more employees.	None	None	1988	SANDAG (1995)	STP, STIP, AB2766, TDA
	Promote ridesharing with small employers (10-50 employees) by matching on geographic area.	None	None	1988	SANDAG (1995)	STP, STIP, AB2766, TDA
Expanded Rideshare Budget	Expand budget over next five years based on additional resources provided through CA Rideshare Support and Improvement ACT (SB 320, 1982).	None	None	1987	Caltrans	STP, STIP, AB2766, TDA
Marketing: Annual Advertising and Promotion	Develop an annual advertising program describing rideshare services and benefits to the public.	None	None	1983	Caltrans, SANDAG, City of San Diego, County, Transit Agencies	STP, STIP, AB2766, TDA
Van/Bus/Taxipool Promotion: Promotion	Include promotion of van, bus, and taxi pools as alternative modes in employer presentations.	None	None	1983	SANDAG (1995)	STP, STIP, AB2766, TDA
Tax Benefits	Disseminate information on tax benefits provided for rideshare modes under Rideshare Incentive Act (SB 321, 1982).	None	None	1983	SANDAG (1995)	Caltrans
Parking Management: Vanpool	Review feasibility of free vanpool parking in Centre City. Implement if feasible.	None	None	1988	City of San Diego	City of San Diego
New Development Ridesharing	Provide preferential parking to ridesharers in new developments.	None	None	1985	Cities, County	Private Sector
Rideshare Facilities: Park-and-Ride	Implement park-and-ride program to provide 30 new lots with 3,000 spaces.	None	1987	1987	Caltrans	Caltrans, STP, STIP, AB2766, TDA
HOV Bypass	Provide ramp meter bypass lanes for HOVs where possible.	None	None	1985	Caltrans	Caltrans

TABLE C.6—IMPLEMENTATION STATUS OF TRANSIT (1982 SIP TACTIC 2, LEVEL 2)

Implementing Actions in SIP	Implementing Action Objectives	Substitute Actions	Due Date (in SIP)	Date Completed	Responsible Agency(s)	Funding Sources
Financing	Seek additional capital and operating support necessary to implement transit tactics.	None	None	1987	SANDAG, Cities, County, MTDB/ NCTD, Transit Operators	FTA, TDA/STA, TransNet, CMAQ, Farebox, State Bail Bonds, STIP, APCD
Service Frequency	Depending on financial feasibility, reduce average bus headways to 20 minutes for peak service and to 30 minutes for midday service.	None	1987	1992	Transit Operators	FTA, TDA, CMAQ, TransNet, Farebox
Service Coverage	Depending on financial feasibility, expand transit service area coverage so 70 percent of the regional population is within ¼ mile of transit service.	None	None	1991	Transit Operators	FTA, TDA, CMAQ, TransNet, Farebox, APCD
Decrease Travel Time	Eliminate underused bus stops (<5 passengers per day), realign underused portions of routes, implement skip - stop operations on routes with 5+ buses/hour.	None	None	1987	Transit Operators, Cities, County	FTA, TDA, CMAQ, TransNet, Farebox
Transit Fares	Encourage private employers to provide subsidies for employee ridesharing (i.e. bus passes) through business tax deductions (SB 321, 1982).	None	None	1983	Transit Operators, SANDAG (1995) Employers	Employers, APCD
Regional Transit Service	Depending on financial feasibility:					
	- construct the East Urban Line of the light rail transit system.	None	1987	1995	MTDB	FTA, MTDB, TransNet
	- increase express service from 12 percent to 32 percent of total peak bus miles.	None	1987	1987	Transit Operators	FTA, APCD, TransNet, Farebox

TABLE C.7—IMPLEMENTATION STATUS OF BICYCLING (1982 SIP TACTIC 3, LEVEL 1)

Implementing Actions in SIP	Implementing Action Objectives	Substitute Actions	Due Date (in SIP)	Date Completed	Responsible Agency(s)	Funding Sources
Bikeways	Construct approximately 50 miles of new bikeways a year, and require bikeways designated on community and general plans in and adjacent to new development to be built as a condition of development.	None	None	1983	Caltrans, Cities, County	TransNet, CMAQ, TDA, TEA, APCD
Parking	Require bicycle parking in new development.	None	None	1988	Cities, County	Private Sector
	Continue the government-supported bicycle locker program.	None	None	1983	Caltrans, Cities, County	STP, STIP, AB2766, TDA
	Provide information to employers on business tax deductions for bike lockers and parking provided through the Rideshare Incentive Act (SB 321, 1982).	None	None	1983	SANDAG	STP, STIP, AB2766, TDA
Marketing	Publicize existing bike racks and emphasize cost savings to bicycle commuters through employer representatives.	None	None	1983	Caltrans, Cities, County	STP, STIP, AB2766, TDA

Table C.8—IMPLEMENTATION STATUS OF TRAFFIC IMPROVEMENTS (1982 SIP Tactic 5, Level 2)

Implementing Actions in SIP	Implementing Action Objectives	Substitute Actions	Due Date (in SIP)	Date Completed	Responsible Agency(s)	Funding Sources
Improve Traffic Signal Operation:	Coordinate the cities' and County's replacement of fixed time signals with fully actuated signals where appropriate.	None	None	1983	Cities, County, Caltrans	Cities, County, TransNet, CMAQ, Caltrans, APCD
	Begin a signal optimization program among local jurisdictions in which signals are adjusted in response to public complaints and on a regular schedule of every three years.	None	None	1983	Cities, County, Caltrans	Cities, County, TransNet, CMAQ, Caltrans
	Increase the number of interconnected signalized intersections to 20 percent of all intersections regionwide.	None	None	1987	Cities, County, Caltrans	Cities, County, TransNet, CMAQ, Caltrans
	Install computer-based master control systems in San Diego and Chula Vista central business districts (around 200 signaled intersections total).	None	None	1983 - City of San Diego 1990 - City of Chula Vista	City of San Diego, City of Chula Vista	City of San Diego, City of Chula Vista
Traffic Engineering Projects	Design arterial intersections in new developments to carry projected traffic volumes without congestion (≥ LOS C).	None	None	1983	Caltrans, Cities, County	Developers, Cities, County, Caltrans, TransNet, CMAQ
	Implement traffic engineering improvements at all heavily congested intersections (≤ LOS E) as finances allow.	None	None	1983	Caltrans, Cities, County	Cities, County, TransNet, Caltrans, CMAQ, Developers

Interagency Consultation Process and Public Input

The consultation process followed to prepare the air quality conformity analysis for the 2030 Revenue Constrained Plan complies with the San Diego Transportation Conformity Procedures adopted in July 1998. These procedures comply with federal requirements under 40 CFR 93. Interagency consultation involves SANDAG (as the MPO for San Diego County), the APCD, Caltrans, ARB, DOT, and EPA.

Consultation is a three-tier process that:

1. formulates and reviews drafts through a conformity working group,
2. provides local agencies and the public with opportunities for input through existing regional advisory committees and workshops, and
3. seeks comments from affected federal and state agencies through participation in the development of draft documents and circulation of supporting materials prior to formal adoption.

Several meetings of the Conformity Working Group (CWG) were held during the preparation of the 2030 RTP and its air quality conformity analysis.

- On October 10, 2001, SANDAG staff reported on the organizational approach and presented the 2030 RTP schedule. APCD staff was appointed to represent the CWG at the 2030 RTP Working Group.

- On February 20, 2002, SANDAG staff provided an update on the development of land use and transportation network scenarios that were used for the 2030 RTP alternatives analyses.

- On May 8, 2002, the CWG discussed the use of latest planning assumptions in the 2030 RTP conformity analysis, particularly options related to vehicle registration data. On May 6, 2002, DOT announced it would no longer accept conformity findings with the vehicle registration data contained in EMFAC7F after December 31, 2002. No emissions model would be available to make conformity determinations after that date and until the EPA approves ARB's new emissions model (EMFAC 2002).

- On July 31, 2002, the CWG discussed the implications of a potential conformity lapse on planned and programmed transportation projects.

- On August 21, 2002, SANDAG staff reviewed the schedule for the development of the 2030 RTP Revenue Constrained Plan and informed the CWG that conformity of the 2002 Regional Transportation Improvement Program (RTIP) would be re-determined concurrently with the 2030 RTP.

- On September 18, 2002, SANDAG staff consulted with the CWG on the criteria and procedures to be followed in the preparation of the 2030 RTP conformity analysis. The topics discussed included: assumptions for the Revenue Constrained Plan, use of latest planning assumptions (population and employment forecasts and land use distribution, travel demand model, and vehicle registration data), transportation control measures, latest emissions model, emissions budget and analyses years, exempt projects, and consultation, public involvement, and outreach.

- On October 23, 2002, SANDAG staff presented the draft air quality conformity analysis for the 2030 RTP to the CWG for review and comment.

- On October 25, 2002, the SANDAG Board of Directors accepted the Draft 2030 RTP, including the Revenue Constrained Plan and its draft conformity analysis, for distribution and public comment. The

Draft Environmental Impact Report (DEIR) was accepted for distribution and public comment on November 14, 2002.

- On December 6, 2002, the SANDAG Board of Directors held a public hearing on the draft 2030 RTP and DEIR. In addition, SANDAG organized three subregional public workshops on MOBILITY 2030 that took place on December 11 in Chula Vista, on December 12 in San Marcos, and on December 14, 2002 in Lemon Grove. The public comment period extended through December 30, 2002.

- As a result of comments received from the CWG agencies, other organizations, and the public, SANDAG has made revisions to the 2030 Revenue Constrained Plan, which is part of the 2030 Draft Final RTP. The air quality conformity analysis also was revised to reflect changes to the Revenue Constrained Plan and was released on February 12, 2003 for public comment.

- The draft air quality conformity assessment of the Draft Final 2030 RTP will be included in the agendas of the February 19, 2003 meeting of the CWG, the February 21, 2003 meeting of the Transportation Committee, and the February 28, 2003 meeting of the SANDAG Board of Directors.

- Public comment on the air quality conformity analysis of the 2030 RTP Revenue Constrained Plan ends on March 14, 2003.

- On March 28, 2003, the SANDAG Board will consider certifying the 2030 RTP Final Environmental Impact Report, making a finding of conformity of the 2030 Revenue Constrained Plan and the FY 2002 Regional Transportation Improvement Program, and adopting the Final 2030 RTP at its regularly scheduled meeting.

SANDAG prepared the Air Quality Planning discussion in Chapter V and this Appendix C in consultation and cooperation with the San Diego APCD.

Public Involvement Program

From June to December 2002, SANDAG conducted a public involvement program that resulted in participation from a broad range of groups and individuals in the Plan's development and decision-making process. SANDAG staff and Board members participated in more than 30 community events and a series of public workshops throughout the region to raise awareness of the 2030 RTP, to build public support for transportation improvements outlined in the RTP, to provide information to San Diego region residents and other stakeholders, and to stimulate dialogue about the transportation challenges facing the San Diego region during the next three decades.

The public involvement program included an integrated marketing, public awareness, and public outreach program with paid advertising in print and broadcast media, public service announcements, participation in community events, public speaking engagements, and ongoing research and data collection to assess the effectiveness and awareness of the public information effort. Additional details on the program are discussed in Appendix B.

TABLE A.1—MAJOR CAPITAL IMPROVEMENTS – REVENUE CONSTRAINED SCENARIO

Transit Facilities					**Cost ($ millions)**
Mission Valley East Trolley Extension					$420
Oceanside to Escondido Rail					$350
Mid-Coast Light Rail					$590
Oceanside-Escondido Rail Double Tracking and North County Fair Extension					$170
Coastal Rail Double Tracking and Other Improvements*					$420
Coastal Rail Tunnels at University City*					$360
Regional Light Rail Grade Separations					$100
Early Action Project Funding					$80
Improved/New Major Transit Stations and Centers					$470
Direct Access Ramps to Managed/HOV Lanes					$480
Vehicles for New Regional and Corridor Transit Services					$260
Arterial Transit Priority Improvements					$100
				Subtotal	$3,800
HOV and Managed Lane Facilities					
Freeway	**From**	**To**	**Existing**	**Improvements**	
I-5	I-805	SR 56	14F	14F + 4ML	$30
I-5	SR 56	Vandergrift	8F	8F + 4ML	$750
I-15	SR 94	SR163	6F/8F	8F + 2HOV	$200
I-15	SR 163	Centre City Pkwy.	8F	8F + 4ML/MB	$540
I-15	Centre City Pkwy.	SR 78	8F	8F + 4ML	$120
SR 52	I-805	I-15	6F	6F + 2HOV	$70
SR 52	I-15	SR 125	4F	6F + 2ML (Reversible)	$170
SR 54/SR 125	I-805	SR 94	6F/4F+2HOV	6F + 2HOV	$90
SR 94	I-5	I-15	8F	8F + 2HOV	$80
SR 241***	Orange County	I-5	---	4T + 2HOV	$420
I-805	SR 905	SR 54	8F	8F + 2 HOV	$150
I-805	SR 54	I-8	8F	8F + 4ML	$450
I-805	Mission Valley Viaduct		8F	8F + 4ML	$250
I-805	I-8	I-5	8F	8F + 4ML	$380
				Subtotal	$3,700
HOV Connectors					
Freeway	**Intersecting Freeway**		**Movement**		
I-5	I-805		North to North & South to South		$180
I-15	SR 94		South to West & East to North		$150
				Subtotal	$330

Key:

C = Conventional Highway Lanes
F = Freeway Lanes
T = Toll Road
MB = Movable Barrier
ML = Managed Lanes (HOV & Value Pricing)
HOV = High Occupancy Vehicle Lanes

Highway System Completion					Cost ($ millions)
Freeway	**From**	**To**	**Existing**	**Improvements**	
I-5/I-805	Port of Entry – Mexico		---	Inspection Facility	$20
SR 11	SR 905	Mexico	---	4F	$190
SR 52	SR 125	SR 67	---	4F	$290
SR 56	Camino Ruiz	Carmel Country	---	4F	$130
SR 125***	SR 905	San Miguel Rd.	---	4T	$400
SR 125	San Miguel Rd.	SR 54	---	4F	$140
SR 125	Jamacha Road	SR 94	---	6F	$170
SR 125	Navajo Road	Grossmont	---	6F	$70
SR 905	I-805	Mexico	---	6F	$290
Subtotal					$1,700

Highway and Arterial Widenings					
Routes	**From**	**To**	**Existing**	**Improvements**	
I-5	I-805	SR 56	10F	14F	$190
I-5	SR 54	Sea World Drive	8F	Access Improvements	$170
SR 56	I-5	I-15	4F	6F	$40
SR 75/SR 282**	Glorietta Blvd.	Alameda Blvd.	6C	6C + 2TU	$6
SR 76	Melrose Drive	Mission Road	2C	4C	$100
SR 125***	Telegraph Cyn.	San Miguel Road	4T	6T	$30
SR 125	San Miguel Rd.	SR 54	4F	6F	$30
Regionally Significant Arterials and Local Freeway Interchanges					$350
				Subtotal	$916

Freeway Connectors			
Freeway	**Intersecting Freeway**	**Movement**	
I-5	SR 56	West to North & South to East	$140
I-5	SR 78	West to South & South to East	$150
SR 94	SR 125	West to North & South to East	$110
		Subtotal	$400
		Total	**$10,846**

Key:
C = Conventional Highway Lanes
F = Freeway Lanes
TU = Tunnel
T = Toll Road
MB = Movable Barrier
ML = Managed Lanes (HOV & Value Pricing)
HOV = High Occupancy Vehicle Lanes

* funding from state/national discretionary transportation funding sources

** funding for preliminary engineering only

*** privately funded

TABLE A.2 – PHASED HIGHWAY PROJECTS – REVENUE CONSTRAINED SCENARIO[1]

Year Built By	Freeway	From	To	Existing	Improvement	Cost (millions)	Cumulative Cost
2010	I-5/I-805	Port of Entry - Mexico		--	Inspection Facility	$20	$20
2010	I-5	I-805	SR 56	10F	14F	$190	$210
2010	I-15	SR 163	Centre City Pkwy	8F	8F + 4ML/MB	$540	$750
2010	SR 56	Camino Ruiz	Carmel Country	--	4F	$130	$880
2010	SR 125	SR 905	San Miguel Road	--	4T	$400	$1,280
2010	SR 125	San Miguel Rd	SR 54	--	4F	$140	$1,420
2010	SR 125	Jamacha Rd	SR 94	--	6F	$170	$1,590
2010	SR 125	Navajo Rd	Grossmont	--	6F	$70	$1,660
2014	I-5	SR 54	Sea World Drive	8F	Access Improvements	$170	$1,830
2014	I-5/SR 56	West to North and South to East		--	Freeway Connectors	$140	$1,970
2014	I-15	Centre City Pkwy	SR 78	8F	8F + 4ML	$120	$2,090
2014	SR 52	SR 125	SR 67	--	4F	$290	$2,380
2014	SR 905	I-805	Mexico	--	6F	$290	$2,670
2020	I-5	I-805	SR 56	14F	14F + 4ML	$30	$2,700
2020	I-5/I-805	North to North and South to South		--	HOV Connectors	$180	$2,880
2020	I-5	SR 56	Encinitas Blvd	8F	8F + 4ML	$400	$3,280
2020	SR 11	SR 905	Mexico	--	4F	$190	$3,470
2020	SR 54/SR 125	I-805	SR 94	6F/4F+2HOV	6F + 2HOV	$90	$3,560
2020	SR 56	I-5	I-15	4F	6F	$40	$3,600
2020	SR 76	Melrose Dr	Mission Rd	2C	4C	$100	$3,700
2020	SR 94/SR 125	West to North and South to East		--	Freeway Connectors	$110	$3,810
2020	I-805	I-8	I-5	8F	8F + 4ML	$380	$4,190

Year Built By	Freeway	From	To	Existing	Improvement	Cost (millions)	Cumulative Cost
2030	I-5	Encintas Blvd	Vandergrift Blvd	8F	8F + 4ML	$350	$4,540
2030	I-5/SR 78	West to South and	South to East	--	Freeway Connectors	$150	$4,690
2030	I-15/SR 94	South to West and	East to North	--	HOV Connectors	$150	$4,840
2030	I-15	SR 94	SR 163	6F/8F	8F + 2HOV	$200	$5,040
2030	SR 52	I-805	I-15	4F	6F + 2HOV	$70	$5,110
2030	SR 52	I-15	SR 125	4F	6F + 2ML (Reversible)	$170	$5,280
2030	SR 94	I-5	I-15	8F	8F + 2HOV	$80	$5,360
2030	SR 125	Telegraph Cyn	San Miguel Rd	4T	6T	$30	$5,390
2030	SR 125	San Miguel Rd	SR 54	4F	6F	$30	$5,420
2030	SR 241	Orange County	I-5	--	4F + 2HOV	$420	$5,840
2030	I-805	SR 905	SR 54	8F	8F + 2HOV	$150	$5,990
2030	I-805	SR 54	I-8	8F	8F + 4ML	$450	$6,440
2030	I-805	Mission Valley Viaduct		8F	8F + 4ML	$250	$6,690

[1] These projects are included in the 2010, 2014, 2020, and 2030 analysis years for air quality assessment.

TABLE A.3—PHASED TRANSIT SERVICES – REVENUE CONSTRAINED [1]

YEAR [1]	ROUTE	DESCRIPTION	PEAK HEADWAY (MINUTES)	OFF PEAK HEADWAY (MINUTES)
2010	611	El Cajon Boulevard	10	-
2010	610	Escondido to Centre City via I-15/Hwy 94 (Limited Shoulder Lane)	10	-
2010	570	Mid-Coast to Balboa	15	30
2010	399	Increase in Oceanside to Escondido Rail - North County Fair (BRT)	15 (BRT) current (rail)	30 (BRT) current (rail)
2010	694	Centre City to Otay Mesa via Hwy 95/I-805 (Limited Shoulder Use)	10	-
2020	399	Increase in Oceanside to Escondido Rail - North County Fair (BRT)	15	30
2020	621	Centre City to Fashion Valley via Hillcrest/Genesee	10	10
2020	398	Increase in Coaster	20	current
2020	611	El Cajon Boulevard	10	30
2020	570	Mid-Coast to University Towne Centre	15	30
2030	610	Escondido to Centre City via I-15/Hwy 94 (Limited Shoulder Lane)	10	30
2030	399	Increase in Oceanside to Escondido Rail - North County Fair (Rail)	15	30
2030	398	Increase in Coaster	20	60
2030	611	El Cajon Boulevard	10	10
2030	621	Centre City to Fashion Valley via Hillcrest/Genesee Centre City to University Town Centre via Hillcrest/Genesee	10 10	10 30
2030	570	Mid-Coast to University Towne Centre	7.5	15
2030	694	Centre City to Otay Mesa via Hwy 95/I-805	10	10

[1] These projects are included in the 2010, 2014, 2020, and 2030 analysis years for air quality assessment.

TABLE A.4—MAJOR EXPENDITURES – REVENUE CONSTRAINED SCENARIO ($ millions) [1]

PROJECT CATEGORIES	2002-2010	2011-2020	2021-2030	TOTAL
Major New Capital Facilities	*$1,852*	*$826*	*$1,106*	*$3,784*
Mission Valley East Extension	$424	$0	$0	$424
Oceanside to Escondido Rail	$352	$0	$0	$352
Sorrento Mesa Transitway	$0	$0	$0	$0
Kearny Mesa Transitway	$0	$0	$0	$0
Mid-Coast Light Rail	$140	$450	$0	$590
O-E Rail Doubletracking/NC Fair Extension	$75	$0	$90	$165
Coastal Rail Doubletracking & Other Improvements *	$139	$139	$143	$421
Coastal Rail Tunnel *	$0	$0	$360	$360
Regional Light Rail Grade Separations	$100	$0	$0	$100
Improved/New Major Transit Stations and Centers	$334	$104	$30	$468
Direct Access Ramps	$65	$0	$410	$475
Early Action Project Funding	$75	$0	$0	$75
Vehicles for New Services	$110	$113	$33	$256
Arterial Transit Priority Improvements	$38	$20	$40	$98
Operating Subsidies	*$1,105*	*$1,375*	*$1,581*	*$4,061*
Rehab/Replacement/Miscellaneous Cap	*$444*	*$764*	*$354*	*$1,562*
Total:	**$3,401**	**$2,965**	**$3,041**	**$9,407**

[1] These projects are included in the 2010, 2014, 2020, and 2030 analysis years for air quality assessment.

* Funding from state/national discretionary transportation sources.