APPENDIX E
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 U.S. 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 (SIPs). The San Diego County Air Pollution Control District (APCD) prepares the San Diego portion of the California SIP. Once the standards are attained, further plans—called Maintenance Plans—are required to demonstrate continued maintenance of the NAAQS.

SANDAG and the U.S. Department of Transportation (DOT) must make a determination that the Regional Transportation Plan and the Regional Transportation Improvement Program (RTIP) conform 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.

On February 24, 2006, the SANDAG Board of Directors made a finding of conformity of the 2030 Revenue Constrained RTP: 2006 Update and adopted this plan. The U.S. DOT made its conformity determination on March 29, 2006. The 2006 RTIP was found in conformity with the SIP by the SANDAG Board of Directors and by the U.S. DOT on August 4, 2006, and on October 2, 2006, respectively.


On April 15, 2004, the U.S. EPA designated the San Diego air basin as non-attainment for the new 8-Hour Ozone Standard. This designation took effect on June 15, 2004. The air basin has been classified as a basic non-attainment area under Subpart 1 of the Clean Air Act and the attainment date for the 8-Hour Ozone Standard is June 15, 2009. Several areas that are tribal lands in eastern San Diego County were excluded from the non-attainment designation. As shown in Figure E.1 on page, E-17 La Posta Areas #1 and #2, Cuyapaipae, Manzanita, and Campo Areas #1 and #2 are attainment areas for the 8-Hour Ozone NAAQS.

As required by the Final Transportation Conformity Rule Amendments for the New 8-Hour Ozone and PM2.5 National Ambient Air Quality Standards of July 2004, the SANDAG Board of Directors and the U.S. DOT made a finding of conformity of the 2030 RTP and 2004 RTIP, as amended, prior to June 15, 2005.

In cooperation with the San Diego APCD and SANDAG, the California Air Resources Board (ARB) must develop an 8-Hour Ozone Attainment Plan for submission to the U.S. EPA by June 15, 2007. The San Diego County Air Pollution Control Board and ARB approved the 8-Hour Ozone Attainment Plan for San Diego County on May 23, 2007 and May 24, 2007, respectively. The 8-Hour Ozone Attainment Plan for San Diego County was submitted to the U.S. EPA on June 15, 2007.
The San Diego region also has been designated by the U.S. EPA as a federal maintenance area for the Carbon Monoxide (CO) standard. On November 8, 2004, ARB submitted the 2004 revision to the California SIP for CO to the U.S. EPA. Effective January 30, 2006, U.S. EPA has approved this maintenance plan as a SIP revision.

TRANSPORTATION CONFORMITY: MODELING PROCEDURES

Introduction

SANDAG has updated the Revenue Constrained Scenario of the 2030 San Diego Regional Transportation Plan: Pathways for the Future (RTP) to conduct the required air quality conformity analysis. Conformity of the 2006 Regional Transportation Improvement Program (RTIP) Amendment No. 9 has been determined simultaneously for consistency purposes. Tables E.2 – E.4 include the conformity analysis for both the 2030 Revenue Constrained RTP and the 2006 RTIP Amendment No. 9. Conformity of the 2030 Revenue Constrained RTP: 2006 Update expires on March 29, 2009. However, to comply with SAFETEA-LU standards SANDAG is updating the RTP. The 2030 RTP provides information on revenue assumptions and the Revenue Constrained Scenario.

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 2030 Regional Growth Forecast Update, which was accepted by the SANDAG Board of Directors on September 8, 2006, for use in the 2030 RTP.

The forecast process relies on three integrated forecasting models. The first one, the Demographic and Economic Forecasting Model (DEFM), provides a detailed econometric and demographic forecast for the entire region. The second one, the Interregional Commuting Model, provides a forecast of commuting between the San Diego region, Orange County, southwest Riverside County, Imperial County, and Tijuana/Northern Baja California. The third one, the Urban Development Model, allocates the results of the first two models to subregional areas based upon the current plans and policies of the jurisdictions.

The 2030 Regional Growth Forecast Update is based solely on the adopted general plans and community plans and policies of the 18 cities. For the unincorporated area, the forecast is based on the most recent (June 2005) version of the County’s GP2020 plan update, as directed by the Board of Supervisors.

In October 2006 SANDAG consulted with the San Diego Region Conformity Working Group (CWG) on the use of the 2030 Regional Growth Forecast Update for the air quality conformity analysis of the 2030 RTP. Previously, both U.S. DOT and U.S. EPA concurred that approved plans should be used as input in the air quality conformity process. Table E.1 shows the regional population and employment growth forecast for the San Diego region through 2030.
Table E.1—San Diego Regional Population and Employment Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Total Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>3,013,014</td>
<td>1,449,349</td>
</tr>
<tr>
<td>2010</td>
<td>3,245,279</td>
<td>1,573,742</td>
</tr>
<tr>
<td>2020</td>
<td>3,635,855</td>
<td>1,741,033</td>
</tr>
<tr>
<td>2030</td>
<td>3,984,753</td>
<td>1,913,682</td>
</tr>
</tbody>
</table>

Source: SANDAG, September 2006

Transportation Modeling

SANDAG follows a widely used, four-step transportation modeling process of trip generation, trip distribution, mode choice, and assignment to forecast travel activity in the San Diego region. After a first pass through the four steps, a final pass is made through the mode choice and assignment steps to reflect congested travel conditions in mode decision making. Travel model results are then combined with additional input and output functions to form the complete modeling chain.

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.

TransCAD is the transportation planning computer package used by SANDAG to provide a framework for performing much of the computer processing involved with modeling. Another software package used extensively in the modeling process is ArcInfo. This geographic information system (GIS) maintains, manipulates, and displays transportation, land use, and demographic data. SANDAG has written numerous programs that provide a linkage between TransCAD and ArcInfo. Other programs manipulate data and perform some modeling functions such as trip generation and mode choice.

A number of data files and surveys are used to calibrate the transportation models. These include:

- 1995 Travel Behavior Survey
- 2001 Caltrans Statewide Travel Survey
- 2001-2003 San Diego Regional Transit Survey
- External Trip Surveys
- Traffic Generation Studies
- 1991 San Diego Visitor Survey
- 2000 Census Transportation Planning Package
In addition to model parameters derived from these surveys, there are three major inputs to the transportation models:

- Growth forecast inputs used to describe existing and planned land use patterns and demographic characteristics;
- Highway networks used to describe existing roadway facilities and planned improvements to the roadway system; and
- Transit networks used to describe existing and planned public transit service.

**Highway Networks**

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

The route improvements and additions in the 2030 RTP are developed to provide adequate travel service that is compatible with adopted regional policies for land use and population growth. All regionally significant projects are included in the quantitative emissions analysis. These include all state highways, all proposed national highway system routes, all regionally significant arterials, and all Federal Highway Administration 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 State Route (SR) 125 South, SR 11 projects, and SR 241 are the only modeled toll facilities included in Revenue Constrained Plan for the San Diego region.

In addition, several managed/HOV lanes are included in the Revenue Constrained Plan. Facilities with proposed managed lanes include Interstates 5, 15, and 805 and SR 52. Managed lanes are defined as reversible HOV routes and HOV routes with two or more lanes in the peak direction. It is assumed that the excess capacity not utilized by carpools and transit on these facilities 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 networks and programs described above, the transportation forecasts of the 2030 RTP differentiate between four highway modes:

- drive alone non-toll
- drive alone toll
- shared-ride non-HOV/non-toll
- shared-ride HOV/non-toll

SANDAG normally maintains networks for 2004 (the 2030 Regional Growth Forecast Update base year) and the years 2010, 2020, and 2030. A 2014 network also was created to conduct air quality conformity analyses of the 2030 RTP to the 2014 1-Hour Ozone emissions budgets. Additionally, a 2009 network was created to conduct the interim emissions test for the 8-Hour Ozone Standard attainment year.
A list of the major highway and near-term regional arterial projects included in the conformity analysis and their implementation phasing is included with the draft Air Quality Conformity Determination. The Regional Arterial System and Transportation Project Evaluation Criteria and Rankings are included in the 2030 RTP. 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-cent local sales tax for transportation that expires in 2008; TransNet Extension funds, a 40-year, half-cent local sales tax extension approved by voters in 2004 that expires in 2048; and other local revenue sources.

**Transit Networks**

SANDAG also maintains transit network datasets for existing and proposed transit systems. Most transit routes run over the same streets, freeways, HOV lanes, and ramps used in the highway networks. As a result the only additional facilities that are added to the transportation coverage for transit modeling purposes are:

- trolley and commuter rail lines
- streets used by buses that are not part of local general plan circulation elements

There are seven transit modes, which group routes with similar operating characteristics. They are:

- commuter rail
- trolley
- regional bus rapid transit (BRT)
- corridor BRT
- limited-express bus
- express bus
- local bus

BRT service would have stations and operating characteristics similar to commuter rail and trolleys, but service would be provided by advanced design buses operating on HOV lanes, some grade-separated transit ways, and surface streets. Once TransCAD transit networks have been built, TransCAD finds minimum time paths between transit access points (TAPs). TAPs are selected transit stops that are used to represent walk and auto access to the transit system. The following four sets of paths are created for modes:

- a.m. peak-period local bus
- a.m. peak-period premium service
- mid-day local bus
- mid-day premium service

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. Higher bus speeds may result for transit vehicles operating on highways with HOV lanes and HOV bypass lanes at ramp meters, compared to those routes that operate on highways where these facilities do not exist.
In addition to transit travel times, transit fares are required as input to the mode choice model. TransCAD procedures replicate the San Diego region’s complicated fare policies which differ between:

- buses which collect a flat fare of between $1.75 and $4.00, depending on the type of service;
- trolleys which charge a variable fare of between $1.25 and $3.00, depending on how many stations are traversed;
- commuter rail which has a zone-based fare of between $3.50 and $4.75;
- proposed regional BRT routes which are assumed to charge a distance based fare of between $0.14 and $0.60 per mile that replicates limited-express and commuter rail fares; and
- proposed corridor BRT routes, which are assumed to use trolley station-based fares.

Fares are expressed in 2004 dollars and are assumed to remain constant in inflation-adjusted dollars over the forecast period.

Near-term transit route changes are drawn from the Regional Short-Range Transit Plan produced in cooperation with the region’s transit agencies. Longer-range improvements are proposed as a part of the RTP development and other transit corridor studies. In addition to federal and state funded projects, locally funded regionally significant transit projects have been included in the air quality conformity analysis of the 2030 RTP. These transit projects also are funded with TransNet funds or other local revenue sources. Once network coding is completed, the transportation models are run for the applicable scenarios (2009, 2010, 2014, 2020, and 2030). The draft air quality conformity document contains the list of major regional transit projects included in the analysis and their implementation phasing.

**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 ten trip types.

1. home-work
2. home-college
3. home-school
4. home-shop
5. home-other
6. work-other
7. other-other
8. serve passenger
9. visitor
10. airport

The model computes person trips, which account for all forms of transportation including automobiles, trucks, taxicabs, motorcycles, public transit, bicycling and walking.

The trip generation model works by applying trip rates to zone-level growth forecasts. The model calculates each of the trip ends separately, as trip productions and attractions. Trip production rates are expressed as trips per household, while trip production rates vary by trip type and structure type. Trip attractions are expressed as trips per acre of nonresidential land use or trips per household. Trip attraction rates vary by trip type and land use category. The 2030 Regional Growth Forecast Update was used to produce trip generation forecasts for the years 2009, 2010, 2014, 2020, and 2030. Trip generation rates were established by utilizing data from traffic generator studies and expanding rates from the 1995 Travel Behavior Survey and 2001 Caltrans Statewide Travel Survey.
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.

The model reduces future year person trips by a small amount to reflect increased use of teleworking and e-commerce. Reduction factors of 3 to 5 percent were applied to selected trip purposes and land uses.

**Trip Distribution**

After trip generation, trip movements between zones are determined using a doubly-constrained, gamma-function gravity model form of the trip distribution model. Inputs to the trip distribution model include zone-level trip generation forecasts by trip type, zone-to-zone impedances, and gamma function parameters by trip type. The model is designed to modify trip patterns in response to new development and reflects shortened trip lengths in the vicinity of smart growth, mixed-use developments. The model also modifies trip patterns as new roadways are added.

The model is calibrated to match observed trip length frequencies from the 1995 Travel Behavior Survey and 2001 Caltrans Statewide Travel Survey. Zone-to-zone impedances are a composite measure of peak and off-peak travel times and costs by highway, transit, and non-motorized modes.

**Mode Choice**

At this point in the modeling process, total person trip movements between zones are split into different forms of transportation by highway, transit, and non-motorized modes (bicycling and walking). Highway modes include drive alone non-toll, drive alone toll, shared-ride non-HOV/non-toll, and shared-ride HOV/non-toll. Nine transit modes differentiate transit trips by three ride modes (rail, BRT, and bus) and three access modes (walk, drive, and drop-off). The mode choice model is designed to link mode use to demographic assumptions, highway network conditions, transit system configuration, land use alternatives, parking costs, transit fares, and auto operating costs. 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 light rail than vehicle trips on an uncongested freeway.

Income level also is considered since lower-income households tend to own fewer automobiles, and therefore, make more trips by transit and carpooling. People in higher-income households tend to choose modes based on time and convenience rather than cost. The mode choice model is calibrated using 1995 and 2001 Travel Behavior Survey trip tables by mode and income and 2001-2003 Regional Transit Survey transit trip characteristics. Regional-level Census 2000 work trip mode shares were also used to fine tune mode share estimates.

Highway and transit travel times reflect highway congestion effects from the final iteration of the feedback loop. 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 to 9 in the morning and the p.m. peak period is from 3 to 6 in the afternoon. The off-peak period covers the remaining 18 hours of the day. A series of mode choice model runs were performed in the course of analyzing the 2030 RTP through the complete modeling process.
Highway and Transit Assignment

Highway

Highway assignment produces traffic volume estimates for all roadway segments in the system. These traffic volumes are an important input to emissions modeling. Similarly, transit trips are assigned to transit routes and segments.

SANDAG loads traffic using TransCAD’s “Multi-Modal Multi-Class Assignment” function. The highway assignment model works by finding roads that provide the shortest travel impedance between each zone pair. Trips between zone pairs are then accumulated on road segments making up minimum paths. Highway impedances consider posted speed limits, signal delays, congestion delays, and costs. The model computes congestion delays for each segment based on the ratio of the traffic volume to roadway capacity. Motorists may choose different paths during peak hours when congestion can be heavy and off-peak hours when roadways 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/networks proposed.

Model accuracy is assessed by comparing model estimated traffic volumes with actual traffic counts obtained through the SANDAG traffic monitoring program and highway performance monitoring system estimates of vehicle miles of travel (VMT).

After completing the highway assignments, additional processing is needed. Adjustments are made for calibration error volume, HOV/managed lane volume, bus volumes, hourly distribution factors, level of service (LOS), and travel time.

Transit

For transit assignment, TransCAD software assigns transit access point (TAP)-to-TAP transit trips to the network. Eight separate transit assignments are produced for peak and off-peak periods; walk and auto access; and local bus and premium service. These individual assignments are summed to obtain total transit ridership forecasts.

Before assigning transit trips, external transit trips coming into San Diego from outside the region need to be added to the internal transit trips estimated by the mode choice model. Currently, few transit trips enter from the north or east, however, over 20,000 transit trips cross the Mexican border each day. An external transit trip table for the base year is developed from on-board transit ridership surveys and factored to future years based on border crossing trends to account for these trips.

For accuracy, transit ridership forecasts from the transit assignment model are compared with transit counts from the SANDAG transit passenger counting program to determine whether transit modeling parameters need to be adjusted.

Some of these comparisons of model-estimated boardings with actual boardings include:

- System-level boardings, which may reveal transfer rate problems and lead to changes to the transfer wait time factor in the mode choice model;
- Boardings by mode, which may reveal modal biases and lead to changes in mode choice modal constants;
Boardings by frequency of service, which may show biases that lead to changes in the first wait factor in the mode choice model; and

Centre City screenline crossings, which may lead to changes in parking costs, and boardings by stop location, which may indicate problems which specific generators such as a university.

Post-TransCAD Processing

Standard TransCAD output needs to be reformatted and adjusted to be useful for emissions modeling. Several routines and computer 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, 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; and
- Preparing a data set that contains total VMT, number of trip starts, and VMT by speed category by time of day for each vehicle class.

Motor Vehicle Emissions Modeling

Emissions Model

In October 2002, ARB released EMFAC 2002, an 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. The U.S. EPA approved EMFAC 2002 for use in conformity determinations on April 1, 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 of the 2030 RTP 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; and
- Hot soak evaporation.
Emission factors vary by vehicle class, fuel usage, and technology. The fuels modeled are gasoline, diesel, and electrically powered vehicles. Technology categories can be grouped into catalyst, noncatalyst, and diesel. 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
- motor home

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**

Regional transportation forecasts were initiated in April 2007. Output from the TransCAD model was then reformatted and adjusted to be useful for emissions modeling.

**8-Hour Ozone Standard**

The transportation conformity rule prescribes different conformity tests for 8-Hour ozone areas that have 1-Hour Ozone SIP budgets and for areas that do not have 1-Hour Ozone SIPs. The San Diego 1-Hour Ozone Maintenance Plan established ROG and NOx budgets for 2010 and 2014, but not for 2009. On June 26, 2003, the U.S. EPA approved the maintenance plan and motor vehicle emissions budgets as SIP revisions. These SIP revisions became effective on July 28, 2003.

Prior to the October 20, 2006, court decision 1 SANDAG consulted with the CWG on various options for interim emissions analysis. The approach agreed by the CWG prior to the court decision was as follows:

- Under the new 8-Hour Ozone Standard, the San Diego air basin falls under Boundary Scenario 2, where the 8-Hour Ozone area is smaller than and within the 1-Hour Ozone boundary. Figure E.1, on page E-17, shows the Eastern San Diego County attainment areas, which are tribal lands (Cuyapaipe, La Posta #1 and #2, Campo #1 and #2, and Manzanita). The CWG agreed to use the existing approved budget for the entire 1-Hour Ozone non-attainment area for the analysis years for which 1-Hour Ozone budgets are available (2010 and 2014) and for the remaining analysis years (2020 and 2030).
- To conduct the interim emissions test for 2009, the CWG agreed to use the no-greater-than-2002 test for the attainment year 2009.

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1 United States Court of Appeals for the District of Columbia Circuit, No. 04-1291, October 20, 2006
The October 20, 2006, court decision requires that conformity to the 8-Hour Ozone Standard for the attainment year 2009 be conducted using approved 1-Hour Ozone budgets. The 1994 1-Hour Ozone SIP includes emissions budget for ROG and NOx for the attainment year 1999. Therefore, to demonstrate conformity of the 2030 RTP to the attainment year 2009, SANDAG is required to use the 1-Hour Ozone SIP budgets. In March 2007, the CWG was consulted on the new approach described above for the 8-Hour Ozone emissions analysis of the 2030 RTP.

In April 2007 SANDAG prepared countywide forecasts of average weekday ROG and NOx emissions for 2009, 2010, 2014, 2020, and 2030 using the EMFAC 2002 model. ROG and NOx emissions are based on the summer season.

The analysis years were selected to comply with Sections 93.106(a) (1) and 93.118 (a) of the Transportation Conformity Rule. According to these sections, the first horizon year (2010) must be within ten years from the base year used to validate the regional transportation model (2004), the last horizon year must be the last year of the transportation plan’s forecast period (2030), and the horizon years may be no more than ten years apart (2020). In addition, as explained above, the interim regional emissions analysis for the 8-Hour Ozone Standard must be conducted for the emissions budgets in the applicable SIP (ROG and NOx budgets for 2010 and 2014). Finally, emissions forecasts for 2009 were prepared to conduct the interim attainment year 2009 test.

The Board will be asked to make a finding of conformity for the years 2009, 2010, 2014, 2020, and 2030 using EMFAC 2002. This emissions model was approved by the U.S. EPA for use in conformity findings on April 1, 2003.

**CO Standard**

CO regional emissions were projected for 2010, 2018, 2020, and 2030 for the conformity determination of the 2030 RTP. CO emissions are based on the winter season.

**Emissions Modeling Results**

An emissions budget is the part of the SIP that identifies emissions levels necessary for meeting emissions reduction milestones, attainment, or maintenance demonstrations.

To determine conformity of the 2030 RTP, the plan must comply with the emission analysis described in the Regional Emissions Forecast section. Table E.2 shows that the projected ROG and NOx emissions from the 2030 RTP are below the ROG and NOx budgets.
## Table E.2—2030 Revenue Constrained RTP
Air Quality Conformity Analysis for 8-Hour Ozone (EMFAC 2002)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Weekday Vehicle Starts (1,000s)</th>
<th>Average Weekday Vehicle Miles (1,000s)</th>
<th>ROG</th>
<th>NOx</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>14,244</td>
<td>89,173</td>
<td>114.25</td>
<td>44</td>
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<tr>
<td>2010</td>
<td>14,420</td>
<td>90,376</td>
<td>46</td>
<td>41</td>
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<tr>
<td>2014</td>
<td>15,050</td>
<td>94,803</td>
<td>36</td>
<td>32</td>
</tr>
<tr>
<td>2020</td>
<td>16,102</td>
<td>102,202</td>
<td>36</td>
<td>25</td>
</tr>
<tr>
<td>2030</td>
<td>17,862</td>
<td>114,693</td>
<td>36</td>
<td>17</td>
</tr>
</tbody>
</table>

Note: Emissions budgets for the 2009 attainment year are from the 1994 1-Hour Ozone SIP (Approved in February 1997) and for 2010, 2014, and subsequent years are from the San Diego Region 1-Hour Ozone Maintenance Plan (Approved as SIP revision in July 2003).

Table E.3 shows that projected CO emissions from the 2030 RTP are below the 2003 CO budget of 730 tons per day.

## Table E.3—2030 Revenue Constrained RTP
Air Quality Conformity Analysis for Carbon Monoxide (EMFAC 2002)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Weekday Vehicle Starts (1,000s)</th>
<th>Average Weekday Vehicle Miles (1,000s)</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SIP Emissions Budget Tons/Day</td>
</tr>
<tr>
<td>2010</td>
<td>14,420</td>
<td>90,376</td>
<td>730</td>
</tr>
<tr>
<td>2018</td>
<td>15,766</td>
<td>99,837</td>
<td>730</td>
</tr>
<tr>
<td>2020</td>
<td>16,102</td>
<td>102,202</td>
<td>730</td>
</tr>
<tr>
<td>2030</td>
<td>17,862</td>
<td>114,693</td>
<td>730</td>
</tr>
</tbody>
</table>

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).

Table E.4 on the following page illustrates the exempt projects considered in the 2030 Revenue Constrained RTP. 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.

Implementation of Transportation Control Measures

There are four federally-approved 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. The TCMs 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 1-Hour Ozone Maintenance Plan, which is the applicable SIP. The list of actions that implemented the TCMs is available at SANDAG.

Interagency Consultation Process and Public Input

The consultation process followed to prepare the air quality conformity analysis for the 2030 RTP complies with the San Diego Transportation Conformity Procedures adopted in July 1998. In turn, 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, U.S. DOT, and U.S. 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
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
Table E.4—Exempt Projects

<table>
<thead>
<tr>
<th>Project/Program Description</th>
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<tbody>
<tr>
<td><strong>Bikeway, Rail Trail and Pedestrian Projects</strong></td>
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<tr>
<td>Bayshore Bikeway</td>
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<tr>
<td>Bay Boulevard Bike Lanes</td>
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<tr>
<td>Escondido Creek Bike Path Bridge</td>
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<tr>
<td>SR 56/Black Mountain Road Bikeway Interchange</td>
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<tr>
<td>Lake Hodges Bicycle-Pedestrian Bridge</td>
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<td>Kearny Villa Road Bikeway Improvements</td>
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<td>Plaza Bonita Class I Bikeway</td>
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<tr>
<td>Cliff Street Pedestrian/Bicycle Bridge</td>
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<tr>
<td>Inland Rail Trail</td>
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<tr>
<td>Coastal Rail Trail</td>
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<tr>
<td><strong>Regionwide Traffic Incident Management</strong></td>
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<tr>
<td>Freeway Service Patrol</td>
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<tr>
<td><strong>Safety Improvement Program</strong></td>
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<tr>
<td>Hazard Elimination</td>
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<tr>
<td>Bridge Rehabilitation/Preservation</td>
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<td>Roadway/Roadside Preservation</td>
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<td>Noise Barrier Program</td>
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<tr>
<td><strong>Transportation Demand Management</strong></td>
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<td>RideLink Regional Rideshare Program</td>
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<td>Regional Vanpool Program</td>
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<td><strong>Transportation Management Systems</strong></td>
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<td>Automated Traveler Information System (ATIS)</td>
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<td>Intermodal Transportation Management System (IMTMS)</td>
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<tr>
<td>Joint Transportation Operations Center (JTOC)</td>
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<tr>
<td>ITS Operations</td>
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<tr>
<td>Traffic Management System (I-805, SR 94)</td>
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<tr>
<td>Ramp Meters (I-5/I-805, SR 94)</td>
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</table>
SANDAG consulted on the development of the air quality conformity analysis of the 2030 RTP at meetings of the San Diego Region Conformity Working Group (CWG), as follows:

- On May 17, 2006, SANDAG staff presented the schedule for the preparation of the 2030 RTP and its conformity analysis.
- On September 20, 2006, SANDAG staff presented information on the draft Public Involvement Program (PIP) for the 2030 RTP and solicited input from the CWG. Staff also provided information on the Revenue Constrained and Reasonably Expected financial assumptions.
- On October 18, 2006, SANDAG staff presented information on the Revenue Constrained financial assumptions and on the 2030 Regional Growth Forecast Update.
- On November 29, 2006, SANDAG staff presented additional information on the 2030 RTP, including: the travel demand model; and an update on public outreach and consultation efforts.
- On March 21, 2007, SANDAG consulted the CWG on the conformity criteria and procedures to be followed to determine conformity of the 2030 RTP including: the latest emissions model; emissions budgets and interim emissions analysis; consultation, public involvement and outreach; and Transportation Control Measures. Staff also noted that the air quality conformity modeling would begin in April 2007.
- On April 18, 2007, SANDAG staff presented the draft list of Revenue Constrained highway projects, transit services, and exempt projects, as well as revenues and expenditures projected through 2030 to the CWG.
- On May 9, 2007, SANDAG released the draft air quality conformity analysis of the 2030 RTP to the San Diego Region CWG for a 30-day, review-and-comment period. On May 16, 2007, the draft air quality analysis was discussed at the meeting of the San Diego Region CWG, and comments were incorporated in this report. On June 22, 2007, the Board of Directors authorized the distribution of the Draft 2030 RTP and draft conformity analysis for public review and comment. A public hearing was held on September 14, 2007. The public comment period closed on September 17, 2007.
- As a result of comments received from the public and other organizations, SANDAG made revisions to the 2030 Revenue Constrained Plan, which is part of the Final 2030 RTP. The air quality conformity analysis was revised to reflect changes to the Revenue Constrained Plan and was released on October 9, 2007 for a 30-day public comment period.
- On October 17, 2007 the CWG reviewed the draft revised air quality conformity. The CWG did not have any comments regarding the draft air quality conformity analysis.
- SANDAG received no public comments on the revised air quality conformity analysis of the 2030 RTP Revenue Constrained Plan and 2006 RTIP Amendment No. 9. The comment period ended on November 7, 2007.

Members of the public have been welcomed to provide comments at meetings of the San Diego Region CWG, the Transportation Committee, and the SANDAG Board of Directors.