

Appendix C-3

Congestion Management Process

The federal government requires that Transportation Management Areas (TMAs) – urbanized areas with a population over 200,000 – develop and implement a Congestion Management Process (CMP). The CMP represents a systematic process for managing traffic congestion, designed to provide for the safe and effective management and operation of new and existing transportation facilities, and information on transportation system performance. Federal requirements state that in all TMAs, the CMP shall be developed and implemented as part of the metropolitan planning process. In TMAs designated as ozone or carbon monoxide non-attainment areas, the CMP takes on a greater significance. Federal guidelines prohibit projects that increase capacity for single occupant vehicles unless the project comes from a CMP.

The CMP and MTP/SCS

In the SACOG region, the Congestion Management Process (CMP) and MTP/SCS are developed as a single integrated document. As part of the MTP/SCS, SACOG’s CMP addresses the six-county Sacramento region and the transportation network therein. The CMP focuses on travel corridors with significant congestion and critical access and mobility needs in order to identify projects and strategies that meet CMP objectives. The MTP/SCS uses a multi-modal approach to address existing and future congestion, including strategies to increase bicycle, walk, and transit mode shares, to encourage ridesharing, and to reduce the need for single occupancy vehicle use.

Transportation projects nominated by local agencies are analyzed against community priorities identified through public outreach as well as technical performance and financial constraints. The output of the MTP and CMP is a list of projects with identified lead agencies and completion years, contained in Appendix A-1 of the MTP/SCS. The adopted list and schedule of projects for the MTP/SCS then informs the development of the Metropolitan Transportation Improvement Program (MTIP), described in more detail in Chapter 4 of the MTP/SCS, and SACOG’s Overall Work Program (OWP), which contains work elements to support implementation and monitoring of the MTP and CMP.

Development of the CMP and MTP/SCS

As part of the MTP/SCS development and ongoing CMP efforts, technical committees comprised of local public works agencies and transit operators make specific

recommendations considered by the Board of Directors. Input is also incorporated from member jurisdictions and SACOG advisory committees, including the Regional Planning Partnership, the Transit Coordinating Committee, the Bicycle and Pedestrian Advisory Committee, the Transportation Demand Management (TDM) Task Force, and the Planners Committee.

Local agency plans were reviewed by SACOG staff during 2009 for the purpose of studying and developing potential MTP/SCS/CMP alternatives, and again in early 2010, when agencies were asked to nominate projects through a call for projects to request scopes, costs, and schedules as well as priorities and information on developer-funded projects.

Working with local jurisdiction staff and agency partners SACOG developed three regional-scale transportation scenarios, as directed by the SACOG Board of Directors in the summer of 2010. The range of transportation investments was drawn from existing plans and new proposals identified through agency collaborations. Maps and supporting data for each scenario were then prepared for October 2010 public workshops, described in more detail in Chapter 2 of the MTP/SCS. The scenarios reflected different land use patterns based on new population growth estimates through 2035, and different packages of investments in roads, transit, bicycle and pedestrian modes, and transportation programs.

At the workshops, SACOG provided a variety of CMP performance measurements, including percentage of travel by mode, vehicle miles traveled per household, vehicle miles traveled per household in congestion, transit share of commute trips, and other statistics related to new miles of roads, rail transit and bus transit. The performance measurements were made available in electronic and print formats for review by the general public, agency partners and the SACOG Board.

Communication between SACOG and local agencies over the course of the MTP/SCS development led to a project list that was more financially constrained than in previous MTPs, with consistent performance measures to track through ongoing CMP efforts. Because the regional plan takes into account federal, state and regional funds as well as local funds—including developer fees and developer-built projects—projects that local agencies included were considered through multiple rounds of review. SACOG balanced as many member jurisdiction priorities as possible with community preferences, reasonably expected revenues and a more fiscally constrained budget than the 2008 MTP. The result is an MTP/SCS that reflects both strong performance and financial realities. Issues arising from the forecasting of and limitations on funding are discussed in detail in Chapter 10 on Financial Stewardship and Appendix B-1.

Performance Measurement and the CMP

Information from the regional transportation model and other data sources allow evaluation of the impacts of changes to the transportation system in the plan. Plan performance indicators are described in Chapters 5A, 5B, and 5C (Summary of Plan Performance) of the MTP/SCS, with a quick guide to performance measures provided in Appendix G-6.

Performance measurements are based on a combination of actual and modeled data. When actual data for a given year is available, it is used for performance measurements; otherwise, SACOG utilizes model outputs to extrapolate system performance from a base year with actual data inputs.

The MTP and CMP focus on four primary performance measures including:

- *Vehicle Miles Traveled* (VMT) on the region's roadways (total and per capita, by source).
- The level of *congested VMT* (also total and per capita, by source).
- *Transit ridership* and the share of trips made by transit modes (total and commute-only)
- Travel by *non-motorized travel modes* (bike and walk) and the share of trips made by those modes.
- Although not reported in the current MTP, traveler delay (total and per traveler) are being tested and, if successful, will be added to the next MTP.

Other performance measures reported in Chapters 5A, 5B and 5C of the MTP/SCS include: transit productivity and average roadway network performance. Although other performance measures are reported elsewhere in the MTP/SCS, the measures identified above are those most directly related to the CMP.

These performance measures are also used to measure progress toward meeting the goals and objectives described in Chapter 6 (Policies and Supportive Strategies) of the MTP/SCS.

Travel Demand Modeling and the CMP

In terms of modeling analysis for the MTP/SCS and CMP, SACSIM transportation networks include the entire CMP area (approximately 6,000 square miles). Nominally, roadway networks include the "collector-and-above" freeways, expressways, arterials, and collectors. Not included are "local" roadways. The access which these local roadways

provide to the collector-and-above roadways included in the regional travel model is modeled through centroid connectors. Assignments of vehicles to roadways is through standard “static,” segment-based equilibrium procedures.

Roadway networks currently have three classes of vehicles assigned in the model: single occupant vehicles/trucks without access to high occupancy vehicle (HOV) lanes or bypass ramps; high occupancy vehicles that use bypass ramps, but do not use HOV lanes; and high occupancy vehicles (and a small share of single occupancy violators) that use both HOV bypass ramps and HOV lanes. Depending on the extent of use of HOV facilities, high occupancy vehicles have access to transportation facilities with lower congestion and higher travel speeds than single occupancy vehicles in the model. Bus lines that share roadways with private vehicles/trucks are coded to the roadway links they share, and congested travel speeds are based on factors applied to the auto travel speed on shared roadways. Transit lines that operate on exclusive rights-of-way (e.g., LRT) have special links coded with schedule-based travel speeds hard-coded (i.e., without congestion effects). Bicycle and pedestrian networks include a subset of roadways (freeways and other facilities on which bikes and pedestrians are prohibited), plus bike/pedestrian-only links representing major bicycle/pedestrian facilities that are not on roadways. Bike/pedestrian networks are skimmed only, and not assigned. Skims are based on average walk speed (3 mph) and bike speed (10 mph) for bike/pedestrian links.

Active or Planned CMP Activities

Regional Monitoring Report

Since the adoption of the 2008 MTP, CMP data has been used to monitor performance measures to provide historic trends and help prioritize regional projects for funding. A recent achievement in SACOG’s CMP monitoring activities is the completion of a Regional Transportation Monitoring Report that tracks performance of the regional transportation system.

SACOG compiles data from a number of sources into the Monitoring Report. These data include household surveys from the 2010 Census and American Community Survey, transit agency ridership counts and service reports, Caltrans travel statistics, and annual *Urban Mobility Reports* from the Texas Transportation Institute.

The Monitoring Report provides recent trend data on several variables of great interest to transportation planning in the SACOG region, including demographics, growth and transportation demand in the region, indicators of how the transportation system in

the region is being used, historic trend data for key variables that influence transportation (household income, age, gasoline prices, and transit service), and key measures of transportation behavior (trips by mode, vehicle miles traveled, commute travel times and congestion levels).

These data were used to track progress since the last MTP to inform the development of strategies and objectives for the MTP/SCS. SACOG is planning on updating the Monitoring Report every two years. These data are being compiled for three reasons:

- 1) To better understand what changes and trends are in evidence based on the most credible data sources for the region.
- 2) For developing SACOG's MTP base year datasets.
- 3) For evaluating macroeconomic forecasts for the six-county Sacramento region.

The Monitoring Report analyzes compiled time-series data to look for trends and measure system performance. Because the data compiled by SACOG is time-series, it allows for ongoing performance tracking as part of the CMP evaluation process. SACOG plans to continue to utilize these analyses in the development of CMP strategies and system improvements in future MTPs. Performance measures will be reviewed for usefulness and applicability during each MTP/SCS update process.

Travel Model Updates

SACOG also continues to expand and update its transportation modeling for CMP efforts and development of the MTP/SCS every four years. SACOG updates its "base year" for forecasting approximately every three to five years. During updates, new roadways, transit lines, and bicycle/pedestrian facilities are added to the model networks.

SACOG is also a participant in the Strategic Highway Research Program "C10B" project, which will integrate SACSIM with a regional-scale dynamic traffic assignment package (DYNUS-T). Significant additional detail will be added to roadway and transit networks through this project, and congestion and delay information would include some level of operational analysis (e.g., queues and delays generated by at-grade intersections).

SACOG is also testing approaches for adapting utility-based factors derived from the recently developed multi-modal level-of-service methodology (NCHRP Report 616) to enhance the coding of networks to reflect pedestrian and bicycle quality of service in skims for those users. These changes, if successfully implemented, would replace the flat, average speeds used for bike and pedestrian skims.

SACOG utilizes volume-to-capacity (V/C) analyses, described in more detail in Chapter 5B, for peak and off-peak periods to identify congestion levels and extents along

major freeways and arterials and within corridors. Regional ITS Architecture utilizes Caltrans real-time speed data along state routes to identify and monitor recurring congestion and non-recurring incidents. Non-recurrent, incident delay is currently purely “off model” in SACSIM. However, SACOG is testing a post-processing analysis approach based on the estimates of non-recurrent, incident delay reported in Urban Mobility Reports for Sacramento. This post-processing approach would apply factors or elasticity-based adjustments to a “base” percentage of non-recurrent, incident delay estimated by TTI (currently 50 percent). These factors would relate to the type and extent of incident monitoring, detection and response projects, and ongoing funding proposed in the MTP/SCS relative to the current level. If successful, this off-model, post-processing approach would be applied in the next update of the MTP/SCS to provide more information on the effects of investments in CMP strategies on congestion.