

Appendix C

SANDAG Federal Congestion Management Process

Appendix Contents

Introduction

Background

Congestion Management Process Elements

Multimodal Alternatives and Non-Single Occupancy Vehicle
Analysis

SANDAG Federal Congestion Management Process

Introduction

Federal Highway Administration 23 CFR §450.322 requires that each transportation management area (TMA) address congestion management through a process involving an analysis of multimodal metropolitan-wide strategies. These are to be cooperatively developed to foster safety and integrated management of new and existing transportation facilities that are eligible for federal funding. The requirements specifically state that “in TMAs designated as nonattainment for ozone or carbon monoxide, the congestion management process shall provide an appropriate analysis of reasonable (including multimodal) travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in capacity for single occupancy vehicles (SOV) is proposed to be advanced with Federal funds.” Additionally, the guidelines state that “Federal funds may not be programmed for any project that will result in a significant increase in the carrying capacity for SOVs (i.e., a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvements or the elimination of bottlenecks), unless the project is addressed through a congestion management process meeting the requirements of this section.”

SANDAG was designated as the TMA for the San Diego region. The 2019 Federal Regional Transportation Plan (2019 Federal RTP) meets the requirements of 23 CFR §450.322 by incorporating the following federal congestion management process: (1) performance monitoring and measurement of the regional transportation system; (2) multimodal alternatives and non-SOV analysis; (3) the provision of congestion management tools; and (4) integration with the Regional Transportation Improvement Program (RTIP) process.

Background

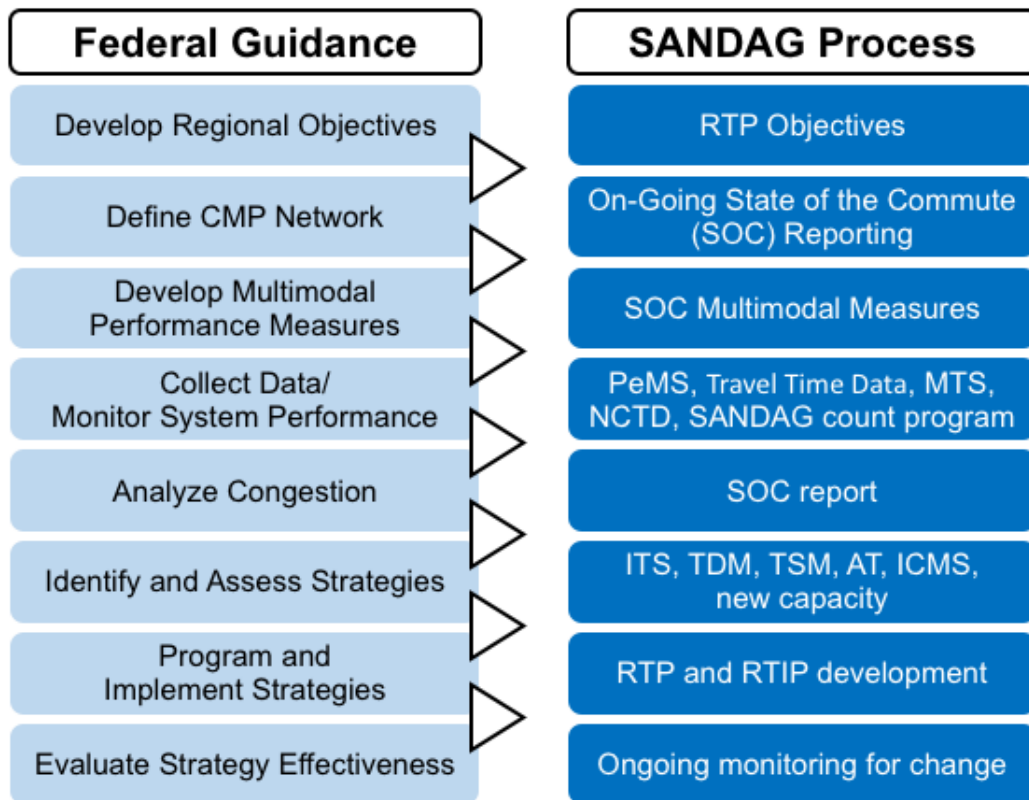
California State Proposition 111, passed by voters in 1990, established a requirement that urbanized areas must prepare and regularly update a Congestion Management Program (State CMP). The requirements within the State CMP were developed to monitor the performance of the transportation system, develop programs to address near-term and long-term congestion, and better integrate transportation and land use planning. SANDAG provided regular updates for the State CMP from 1991 through 2008. In October 2009, the San Diego region elected to be exempt from the State CMP. SANDAG continues to follow federal congestion management process (CMP) regulations, which consists of a performance monitoring program and required analysis for projects that increase the carrying capacity of single occupancy vehicles.

Congestion Management Process Elements

The CMP is cyclical; successive elements inform previous elements in an iterative process. The CMP is reviewed with each update of the Regional Transportation Plan (RTP) for improvements in efficiency, data sources, and strategies. The CMP¹ includes the following elements: regional objectives, multimodal transportation network, performance measures, data collection, analysis of congestion, strategy identification, strategy implementation, and evaluation. Figure C.1 illustrates these elements paired with corresponding SANDAG processes. The following section describes each SANDAG process within the context of the CMP.

Figure C.1

CMP Elements – Federal Guidance / SANDAG Process



SANDAG Process abbreviations listed in Figure C.1

RTP – Regional Transportation Plan

PeMS – Performance Measurement System

MTS – San Diego Metropolitan Transit Service: transit operator

NCTD – North County Transit System: transit operator

ITS – Intelligent Transportation System

TDM – Travel Demand Management

TSM – Transportation System Management

AT – Active Transportation

ICMS – Integrated Corridor Management Study

RTIP – Regional Transportation Improvement Program

Develop Regional Objectives

SANDAG updates the region’s RTP every four years, and the SANDAG Board of Directors discusses the RTP’s vision, goals, and objectives, which are included in Chapter 1.

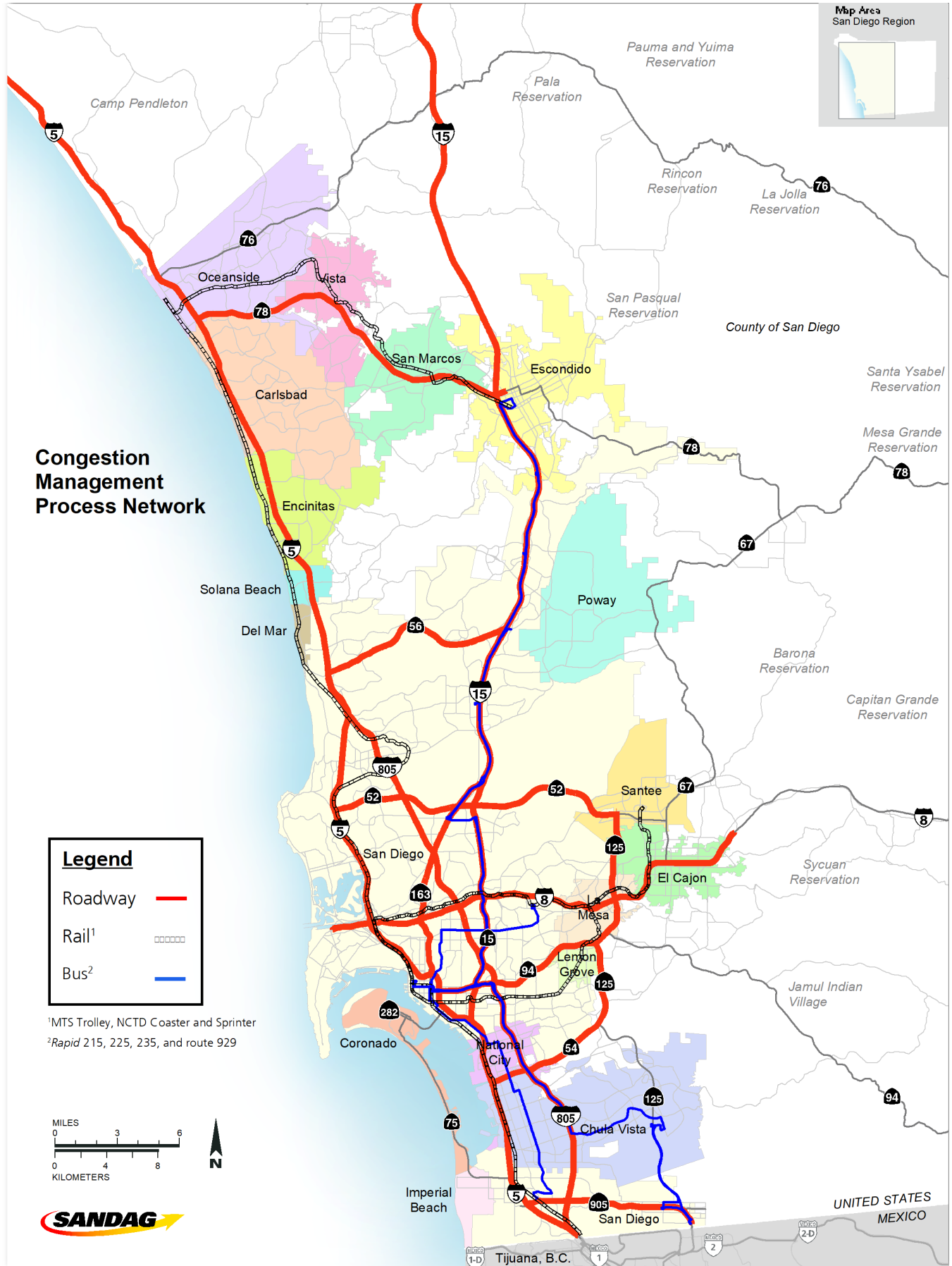
Policy objective categories include habitat and open space preservation, regional economic prosperity, environmental stewardship, mobility choices, partnerships/collaboration, and healthy and complete communities. Within these categories, below are selected policy objectives that inform the CMP.

- Build infrastructure that makes the movement of freight in our community more efficient and environmentally friendly.
- Take advantage of new technologies to make the transportation system more efficient and accessible.
- Connect communities through a variety of transportation choices that promote healthy lifestyles, including walking and biking.
- Increase the supply and variety of housing types – affordable for people of all ages and income levels in areas with frequent transit service and with access to a variety of services.

Define CMP Network

The CMP requires a multimodal transportation network that is developed regionally in order to monitor and analyze performance. The 2019 Federal RTP includes an updated CMP multimodal network of freeways, highways, railways, and select bus routes, as illustrated in Figure C.2. This network was developed with input from Caltrans and the 18 cities and County of San Diego. The freeway and highway corridors are instrumented with equipment that monitors system performance. Caltrans operates this equipment within its Performance Measurement System (PeMS). This system enables SANDAG to monitor and analyze observed data. More than half of the region’s vehicle miles traveled (VMT) are carried by this network of freeways and highway corridors. All railways and select bus routes that are on or closely parallel to highway corridors are also included. Bus routes include *Rapid 215*, *Rapid 225*, *Rapid 235*, and Route 905.

Figure C.2
Congestion Management Process Network



Develop Multimodal Performance Measures

The updated CMP network matches the SANDAG State of the Commute (SOC) network. The SOC is a monitoring program that monitors the performance of the transportation network and provides information on freeway, transit, and local roadways use and performance data collected annually. The SOC includes multimodal performance measures that utilize observed data to monitor the system's performance over time. These measures were developed with input from Caltrans, local jurisdictions, and transit operators. As new data becomes available, it is evaluated for new performance measures across this network. Current performance measures that are being monitored are:

- Average Travel Time
- Reliability – Budget Time
- Peak Period Delay
- Screenline Average Annual Daily Traffic (AADT)
- Average Weekday Transit Ridership (screenline, select routes)

Collect Data / Monitor System Performance

Data collected to support the SANDAG CMP includes PeMS, transit operations, SANDAG count programs, and travel time data. Routine review of performance measures on the CMP network allows SANDAG to determine if there has been a reduction of service. Early stages of the SOC reporting program compile these datasets and organize them for comparison over time. This enables high-level system monitoring.

Analyze Congestion

SOC reporting presents in-depth analysis of congestion for the CMP network in addition to larger trends that impact travel demand. The SOC includes economic and demographic data, and it provides context for changes to the San Diego region relative to peer cities across the nation. Detailed reports are generated biennially or as needed. These reports help inform the region's planning and programming processes.

The SOC analysis includes the CMP multimodal performance measures. Each major roadway corridor is evaluated by morning and afternoon peak-period delay, as well as travel time reliability over successive years. Transit is analyzed by load factor and on-time performance, among other metrics. Each corridor analysis includes a narrative summary of significant changes in performance, operations, and investments.

Identify and Assess Strategies

Facilities within the CMP network are guided by multimodal corridor plans. These plans help identify strategies appropriate for the corridor. This process begins with understanding the characteristics and performance of the corridor and surrounding network. Land use and future growth are also considered when identifying appropriate strategies. SANDAG has developed a suite of strategies to possibly include in each corridor plan.

Strategies for addressing congestion can focus on operational improvements or demand management strategies. Operational improvements aim to use the existing system more efficiently. Travel demand management (TDM) reduces congestion by decreasing SOV trips, or by shifting trips to other modes or off-peak travel periods. SANDAG has developed a series of strategies that address congestion on both the operations and demand side. Summarized below are operational improvements, including System Development, Transportation Systems Management (TSM), and TDM Strategies. Many of the operational improvement and TDM strategies are explained in greater detail in the SANDAG Intelligent Transportation Systems Strategic Plan.² This menu of strategies is meant to provide options and ideas for project sponsors, and it is not meant to be an exhaustive list. These strategies are regularly reviewed for updates and improvements.

Systems Development Strategies

- System that will improve the convenience and travel speed of bus and rail services.
- Transit services that will improve transit in more areas and offer new service types designed to attract new riders to transit.
- Transit customer experience to make transit easier, safer, and more enjoyable to use. Enhancements can include increased station amenities and low-floor vehicles to improve accessibility.
- Active transportation through bike and pedestrian facilities and bike lockers, and implementation of the [Regional Bike Plan](#).
- Safe routes to school plans and strategies, including the San Diego Regional Safe Routes to School Strategic Plan.³
- Electronic payment services including Compass Card, *FasTrak*® Open Road Tolling, and smart parking systems.
- Vehicle Technologies.
- Advanced Transportation Technology Program.
- Universal Transportation Account.
- Transit Infrastructure Electrification/Regional Charger Program.
- Smart Parking.

TSM Strategies

- Traveler information – aims to increase awareness and the information available on travel choice and impact, so that travelers can actively participate in reducing both network demand and personal trip impact. The program delivers systems and education outreach campaigns to raise awareness of the direct relationship that route choice, personal driving habits, and trip timing have on fuel consumption, vehicle operating expenses, and vehicle emissions.
- Arterial management – focuses on managing arterial roadways (major streets) in order to reduce delays and result in quicker trips and lower vehicle emissions. Improvements to arterial detection and signal interconnect will provide the ability to create a traffic signal system that is dynamic and coordinated throughout the region. Improving the flow of traffic on arterial roadways is among the most cost-effective TSM strategies for reducing stop-and-go traffic, cutting overall travel times, and lowering fuel consumption and pollution.
- Freeway management – is responsible for deploying systems that improve operational efficiency of freeway control infrastructure; enabling freeway managers to have greater control over vehicle operating speeds; and facilitating the freeway managers' ability to communicate the impact of events, incidents, and congestion to the traveling public. It also provides freeway managers with greater operational visibility of conditions on and off network. Some of the systems included in this program include traffic detection technologies, closed-circuit television cameras, ramp meters, electronic message signs, and the Advanced Transportation Management System, which provides central monitoring and sign control for managing incidents.
- Transit management – bus and light rail, including regional scheduling system, regional transit management system, positive train control, and centralized train control.

TDM Strategies

- iCommute is the regional TDM program. iCommute coordinates services that increase the number of commuters who carpool, vanpool, take transit, bike, walk, and telework. This includes online ridematching services, the Regional Vanpool Program, carpool incentive program, employer outreach program, support for teleworking, bike encouragement and education programs, and regional campaigns like Rideshare Month and Bike to Work Month.
- Mobility Hubs – Mobility hubs are places of connectivity, where different modes of transportation — walking, biking, ridesharing, and transit — come together seamlessly to link users to employment, housing, and recreational destinations. Mobility hubs expand the reach of transit by offering people more incentives to use transit and leave their cars at home. Mobility hubs can promote carsharing, bikesharing, and the use of on-demand ride services.
- Active Traffic and Demand Management (ATDM) – builds on Integrated Corridor Management (ICM) to dynamically monitor, control, and influence travel demand, traffic demand, and traffic flow of key corridors. ATDM facilitates the use of transportation alternatives through various approaches, including dynamic ridesharing, dynamic speed limits, dynamically priced parking, and predictive traveler information to improve overall highway efficiency.
- Shared Mobility Services – can fill gaps in the region’s transit services and provide an efficient transportation alternative for commute and non-commute trips. Examples of shared mobility services include carsharing, bikesharing, on-demand ride services scootershare, shared electric vehicles, and on-demand shuttle and jitney services.

Program and Implementation Strategies

Corridor managers and planning and programming staff review traffic performance data to identify corridors with reduced performance. Strategies to improve the condition must be context-sensitive and fit the corridor’s need. The menu of CMP strategies offers a variety of approaches and additional strategies are reviewed as requested. Once a strategy is selected, it is programmed through the RTIP. The RTIP is a multi-billion-dollar, five-year program of major highway, transit, arterial, and nonmotorized projects funded by federal, state, *TransNet* local sales tax, and other local and private funding.

The RTIP serves as a prioritized program designed to implement the region’s overall strategy for providing mobility, and for improving the efficiency and safety of the transportation system while reducing transportation-related air pollution. This supports efforts to attain federal and state air quality standards for the region.

SANDAG supports implementation strategies through a variety of programs and tools. These same programs and tools can be used to help select strategies.

Implementation Strategies

- Outreach program
- Smart Growth Concept Map
- Visualization tools and photo library
- Smart growth design guidelines
- Smart growth trip generation
- Regional Parking Management Toolbox
- Research on connections between public health, land use, and transportation

- Planning and designing for pedestrians
- *TransNet* Smart Growth Incentive Program (SGIP)
- *TransNet* Active Transportation Grant Program (ATGP)

Evaluate Strategy Effectiveness

Evaluation of strategy effectiveness relies on local observed data, as well as larger professional studies. Where possible, SANDAG reviews observed data prior to and after the implementation of congestion-reduction strategies. The transition to the instrumented PeMS highway network, and continued collaboration with transit operators, will greatly improve this evaluation process. Professional studies are used to evaluate strategies that are more difficult to isolate. This is often the case with small-scale projects and highly complex projects.

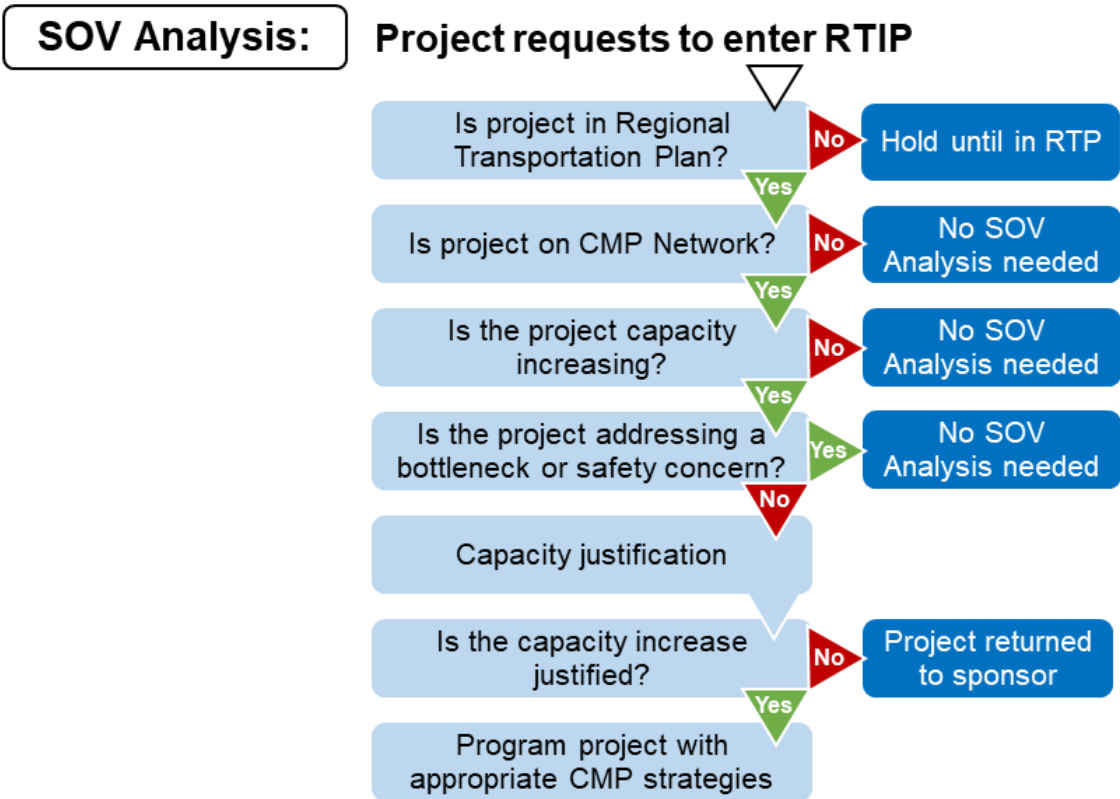
Multimodal Alternatives and Non-Single Occupancy Vehicle Analysis

In addition to the CMP elements, TMAs that include a non-attainment or maintenance area for air quality are required to conduct additional analysis for projects that add SOV capacity. The SOV Capacity Analysis is limited to projects that add general purpose lanes on the CMP network that are not addressing an identified safety or bottleneck concern. Projects subject to this analysis are required to demonstrate that appropriate, non-capacity-increasing strategies were evaluated. If this evaluation finds that the strategies do not meet the needs for additional capacity in the corridor, then the project can proceed with adding SOV capacity. This analysis is a requirement to program a capital phase of the project.

SANDAG has implemented CMP checks in its programming process. Project sponsors enter data in an online data portal, ProjectTrak, to request inclusion in the RTIP. Projects that use federal funds and are capacity increasing are flagged for further review. Figure C.3 shows the process for identifying projects that require SOV analysis.

Corridor plans, following the Caltrans Corridor Planning Guidebook and environmental review documentation, have been identified as appropriate SOV Capacity Analysis for the proposed CMP. These documents are uploaded to ProjectTrak for SANDAG review and archiving. Projects that advance through this process are to incorporate, per federal regulation, all reasonable TDM and operational strategies into the project.

Figure C.3
SOV Analysis Process



Endnotes

- ¹ Based upon [the FHWA Congestion Management Process Guidebook](#) (2011).
- ² For more information on the SANDAG Intelligent Transportation Strategic Plan, see Appendix U.6.
- ³ In 2010, the SANDAG Board of Directors approved the San Diego Regional Safe Routes to School Strategic Plan to support local communities in establishing new Safe Routes to School programs as well as sustaining and enhancing existing efforts. Regional efforts to implement this strategy are funded as part of the Active Transportation Program.