Congestion Management Process 2022

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1. BACKGROUND

Traffic congestion can result in a loss of productivity; present a higher risk to passenger safety; increase fuel consumption and pollution; and impact the economy and the quality of people's lives. The best way to combat this problem is to improve performance measurements, reduce congestion, and more efficiently manage roadway assets.

A Congestion Management Process is an FHWA requirement under Title 23, Section 450.320 of the U.S. Code of Federal Regulations, to be developed and implemented in urbanized areas with a population over 200,000. These areas are known as Transportation Management Areas (TMAs) and are an official designation by the Secretary of Transportation. Based on the 2010 census the Visalia -Tulare urbanized area was determined to exceed the 200,000-population threshold required for the local Metropolitan Planning Organization (MPO) to become as a Transportation Management Area (TMA).

In maintaining the CMP consideration is given to objectives that manage demand, reduce single-occupancy vehicle (SOV) travel, encourage the use of public transportation and alternative modes, enhance freight movement, and improve system management and operation. The CMP is a system with specified performance measures and strategies that enhance the goals of the TCAG's Regional Transportation Plan (RTP) and are reflected in the Transportation Improvement Plan (TIP).

Maintaining the Congestion Management Process

The Federal Highways Administration (FHWA) defines congestion management as "the application of strategies to improve transportation system performance and reliability by reducing the adverse impacts of congestion on the movement of people and goods." The congestion management process (CMP) is a process that examines the causes of congestion, identifies, and prioritizes the most congested areas in a locality or region, as well as areas where future congestion may occur, and develops strategies to reduce the congestion and increase mobility.

The ability to recognize and manage congestion of the transportation system has improved dramatically over the past 20 years. With the advent of technology that can provide monitoring of travel conditions, such as traffic volume, speed, travel time, and roadway video surveillance systems, the ability to capture data and respond in a timely manner provides a whole host of management tools never before available.

2. INTRODUCTION

A CMP is an important State and Federal requirement in the metropolitan transportation planning process, as it employs an objectives-driven, performance-based approach to planning for congestion management that ensures that investment decisions are made with a clear focus on desired outcomes. In this chapter, relevant statutes and codes are summarized next, followed by a discussion on the CMP's goals and objectives, and an introduction to the TCAG CMP Steering Committee.

2.1 Federal Requirements

The Congestion Management System (CMS) was first introduced by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and continued under the successor surface transportation reauthorization acts. The CMS was intended to augment and support effective decision making as part of the overall metropolitan transportation planning processes. Whereas previous laws referred to this set of activities as a congestion management system (CMS), the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), referred to a congestion management process rather than CMS, reflecting the goal of the law to utilize a process that is an integral component of metropolitan transportation planning. A CMP is required by FHWA to be developed and implemented in urbanized areas with a population over 200,000. These metropolitan areas are known as Transportation Management Area (TMA) and are officially designated by the Secretary of Transportation using population figures after each decennial census. Title 23, Section 450.320 of the U.S. Code of Federal Regulations calls for metropolitan planning organizations to "address congestion management through a process that provides for safe and effective integrated management and operation of a multimodal transportation system. The original federal regulations relevant to the current CMP date back to SAFETEA-LU, enacted in 2005. **This act prohibited the programming of federal funds in a carbon monoxide and/or ozone non-attainment TMA for any highway project that will result in a significant increase in Single Occupancy Vehicle (SOV) capacity, unless the project is based on an approved CMP.** These regulations were retained and largely unchanged by subsequent federal legislation including the Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012 and the Fixing America's Surface Transportation (FAST) Act of 2015. While the FAST Act retains the requirement for a congestion management process for MPOs, the FAST Act specifies certain requirements to include regional goals for reducing peak hour vehicle miles traveled and improving transportation connections; identify existing services and programs that support access to jobs in the region; and identify proposed projects and programs to reduce congestion and increase job access opportunities. In developing the CMP, a metropolitan planning organization shall consult with employers, private and nonprofit providers of public transportation, transportation management organizations, and organizations that provide job access reverse commute projects or job-related services to low-income individuals. The U.S. Department of Transportation's FHWA and Federal Transit Administration (FTA) jointly finalized a rule in 2016 to improve coordination of multimodal transportation planning by metropolitan planning organizations (MPOs) serving the nation's urban areas. The Code of Federal Regulations (23 CFR 450.322) specifies that a CMP should include the following six elements.

- Methods to monitor and evaluate performance of the multimodal transportation system; identify the causes of congestion; identify and evaluate alternative actions; provide information supporting the implementation of actions; and evaluate the efficiency and effectiveness of implemented actions.
- A definition of congestion management objectives and appropriate performance measures to assess the extent of congestion and support the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods. Since levels of acceptable system performance may vary among local communities, performance measures should be tailored to the specific needs of the area and established cooperatively by the state(s), affected MPO(s), and local officials in consultation with the operators of major modes of transportation in the coverage

area.

- Establishment of a program for data collection and system performance monitoring to define the extent and duration of congestion, to help determine the causes of congestion, and to evaluate the efficiency and effectiveness of implemented actions.
- Identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies, such as: Transportation Demand Management measures, traffic operational improvements, public transportation improvements, Intelligent Transportation Systems (ITS) technologies, and where necessary, additional system capacity that will contribute to the more effective use and improved safety of existing and future transportation systems based on the established performance measures.
- Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy proposed for implementation.
- Implementation of a process for periodic assessment of the effectiveness of implemented strategies, in terms of the area's established performance measures.

In short, Federal law requires TMAs to develop a CMP as a biannually updated, ongoing process fully integrated into the metropolitan transportation planning process. Additionally, FHWA recommends the following eight steps be followed in developing a CMP (hereafter called the FHWA guidance).

1. Form a CMP Steering Committee
2. Develop a list of regional objectives
3. Define the CMP network
4. Develop multimodal performance measures
5. Collect data and monitor system performance
6. Analyze areas of congestion
7. Identify and apply strategies that implement regional objectives
8. Evaluate effectiveness of the CMP strategies As TCAG's designated TMA,

TCAG updated the CMP per 23 CFR 450.320 and 450.322 and has employed FHWA's stepwise process to ensure the region complies with the federal CMP and other related legislative requirements, and to address region-wide transportation.

2.2 California State Requirements

California Government Code 65089 (a) states that **"A congestion management program shall be developed, adopted, and updated biennially, consistent with the schedule for adopting and updating the regional Draft Congestion Management Plan transportation improvement program, for every county that includes an urbanized area, and shall include every city and the county.**

In 1989, the California Legislature approved, and Governor Deukmejian signed, legislation enacting a comprehensive reform of the Gann spending limit and an $18.5 billion Transportation Financing Program. That financing program and accompanying transportation planning and development measures were presented to the voters as Propositions 111 and 108. Both propositions were approved by California's voters in June of 1990. California Proposition 111, Gasoline Tax Increase (also known as the Traffic Congestion Relief And Spending Limitation Act Of 1990) was approved by California's voters on June 5th, 1990, which enacted a statewide traffic congestion relief program and updated the spending limit on state and local government to better reflect the needs of a growing California population. Proposition 108, also passed in 1990, authorizing $1 billion in bonds to finance mass transit and $2 billion in bonds for rail transportation. The expenditure of

these funds was not left to the existing transportation organizations and the current priority practices. Instead, Assemblyman Katz also authored a linked bill, AB 1791, which gave the authority to "Congestion Management Agencies" and dealt with several problems identified with the congestion management program requirement in the package detailing the legislative intent and authority for CMPs. The CMP legislative requirements were further defined and modified by the passage of AB 471, AB 1963, AB 1791, and AB 1636, which are:

- AB 471 requires all local jurisdictions to maintain the adopted Level of Service (LOS) standard on all CMP roadways or risk losing their Proposition 111 gas tax revenues.
- AB 1963 defines the performance element of the CMP as in Government Code Section 65089(b)(2) and to meet Federal Transportation Act requirements.
- AB 1791, effective August 1, 1990, required all cities and counties that include urbanized areas to adopt and annually update a Congestion Management Plan. California Government Code section 65089 (b), states that a Congestion Management Program must contain a performance element that includes performance measures to evaluate current and future multimodal system performance for the movement of people and goods. At a minimum, these performance measures shall incorporate highway and roadway system performance, measures established for the frequency and routing of public transit and for the coordination of transit service provided by separate operators. The performance measures must also support mobility, air quality, land use, and economic objectives, and must be used in the development of the capital improvement program, deficiency plans, and the land use analysis program. California Government Code section 65089 states that the Congestion Management Program must include the following five legislatively required elements:
- LOS Standards – Establish LOS for a system of highways and roadways designated by the agency. The highway and roadway system shall include at a minimum all state highways and principal arterials. No highway or roadway designated as a part of the system shall be removed from the system. All new state highways and principal arterials shall be designated as part of the system, except when it is within an infill opportunity zone.
- Multimodal Performance Element – Evaluate current and future multimodal system performance for the movement of people and goods. At a minimum, these performance measures shall incorporate highway and roadway system performance measures established for the frequency and routing of public transit and for the coordination of transit service provided by separate operators.
- Travel Demand Element – Promote alternative transportation methods. Analyze the impacts of land use decisions made by local jurisdictions on regional transportation systems, including an estimate of the costs associated with mitigating those impacts.
- Capital Improvement Program – Determine effective projects that maintain or improve the performance of the multimodal system for the movement of people and goods, to mitigate regional transportation impacts identified pursuant to land use decisions.

2.3 TCAG CMP STEERING COMMITTEE

In 2014, TCAG staff established a CMP Steering Committee, comprised of representatives from the eight incorporated cities, the County of Tulare, Caltrans, and TCAG staff. The FHWA also participates at will in steering committee meetings through off-site media.

The Steering Committee membership is currently comprised of local agency staff with expertise in either transportation planning, land use planning or traffic engineering. The Committee participated in the Congestion Management Process, providing critical input on the development of project goals and objectives, CMP performance measures, criterion for LOS thresholds, the Congestion Monitoring Network, data types and other aspects of the process throughout the planning effort.

Among the CMPSC's primary responsibilities are to evaluate the significance and extent of congestion in Tulare County, both from a rural and urban perspective, maintain the CMP network of regional roads and intersections to be monitored for congestion, develop and maintain objectives for congestion management which draw on the regional vision and goals articulated in TCAG's RTP, establish performance measures that identify, assess, and communicate performance of the system to local decision makers for project selection, and to prepare strategies on which to mitigate potential system breakdowns before they become a significant problem.

Additional responsibilities of the committee include obtaining signoff on the CMP from the various TCAG committees and Board of Governors and making the necessary adjustments to the TCAG planning process to fully integrate the CMP in time for TCAG's next FHWA certification review.

2.4 CMP Goals and Objectives

One of the first tasks of the CMP Steering Committee was to develop a set of CMP goals and objectives. Tulare County's steady growth rate increases the demand on the transportation system. In some cases, traffic has exceeded roadway capacity and mitigation measures are needed to relieve capacity problems. Tulare County continues to increase efforts to expand alternative modes of transportation. Despite these efforts, the automobile continues to be the primary mode of transportation in the County. As a result, it will be important to increase capacity at various existing roadways and new facilities to relieve congestion and improve air quality. Utilization of Transportation System Management (TSM), Travel Demand Management (TDM) strategies, Intelligent Transportation Systems (ITS), Transportation Control Measures (TCM) and by encouraging development and improvement of alternate modes of transportation, it is expected that Tulare County's circulation system will increase efficiency. Without such programs and improvements, urbanized areas will begin to experience increased congestion and contribute to air pollution in the San Joaquin Valley. In general, the Tulare County CMP objectives focus on operational improvements and management of our transportation facilities, emphasize the importance of sustainable land use development on congestion management, and promote the development of an integrated multi-modal transportation system.

- Support projects which result in the development of an efficient and connected regional circulation system that provides maximum achievable mobility and accessibility for all modes of travel.

- Support circulation projects that maintain and improve performance, safety, and security.

- Support projects which improve the operation and efficiency of public transportation in Tulare County, such as transit, bicycling, pedestrian, and passenger rail systems.

- Support projects which improve the efficiency of goods movement in Tulare County (including farm to market products) such as improved truck circulation projects, road rehabilitation, and highway interchange improvements.

3. CMP NETWORK

The CMP must be defined in geographic scope and system elements to be analyzed to fulfill FHWA recommended step #3 in developing a CMP. In this chapter, TCAG's Congestion Management Network (CMN) network and CMP reporting segmentations are presented.

3.1 CMP ROADWAY NETWORK

According to the FHWA's Congestion Management Process Guidebook, "… the CMP network must include those areas that meet the regionally identified definition of congested and represent the area for data collection and monitoring activities." To be consistent with California Government Code section 65089 TCAG included all state highways, and principal arterials within Tulare County on the Congestion Monitoring Network. These facilities represent the areas for which data will be collected to monitor and determine congestion in the region.

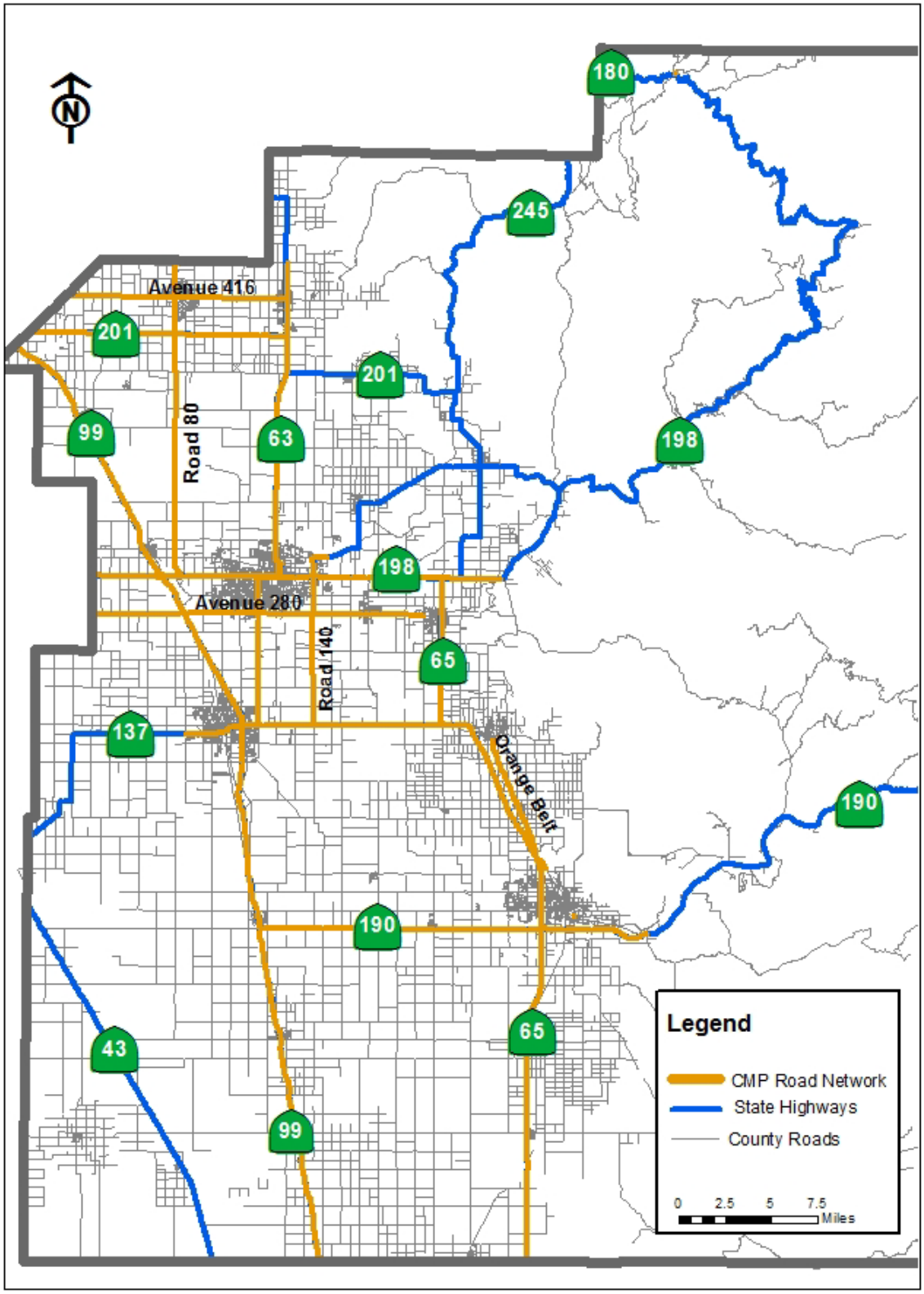
Tulare County's steady growth rate is increasing demands on the existing transportation system. In some cases, traffic has exceeded roadway capacity and mitigation measures are needed to relieve congested areas. In order to provide the fairest assessment of the transportation system in the region, traffic conditions should be studied countywide in the congestion management process. However, due to limited resources, the facilities that were studied in this process were limited to Regionally Significant Roads defined as, roads designed to maintain and improve access between cities, accommodate a high level-of-service access to and within the Visalia-Tulare Area, and to link regionally significant commercial, education, industrial and recreational facilities. The criteria used to establish the regionally significant system included factors such as functional classification, service to regional facilities, connection of regional facilities, and amount of current and future projected use.

The Tulare County CMP Network was approved by the CMPSC in March 2014. As shown on ***Figure 1*** below, the network consists of most state freeways and highways within the valley portion of Tulare County, as well as several regionally significant roads:

- **Avenue 416 from State Route 63 to the Fresno County line.**
- **Road 80 from State Route 198 to the Fresno County line.**
- **Avenue 280 from State Route 65 to the Kings County line.**
- **Road 140 from State Route 216 to State Route 137.**
- **Orange Belt Avenue between Porterville and Lindsay.**

Numerous urban and rural intersections throughout the County which are not included in the CMP network will also be monitored for potential congested conditions.

Tulare County CMP Network



4. CMP PERFORMANCE MEASURES

The CMP consists of actions employing a variety of performance measures and analytic tools to define and identify congestion across all modes, and to develop and select appropriate strategies to reduce congestion. As presented in Section 2.1, FHWA identifies step # 4 in the preparation of the CMP for the development of performance measures by which congestion will be evaluated/assessed. Chapter 4 describes the CMP performance measures and the required data (inputs) for this update.

4.1 CMP Performance Measures

Mobility and reliability performance measures monitor the progress toward meeting the CMP goals and objectives for assessing the quality of the mobility for people and goods on the region's transportation system. These measures provide a framework to evaluate how well the transportation system serves the needs of commuters, commercial truck drivers, residents, recreational users and other roadway users. TCAG and the CMP Steering Committee reviewed a range of potential transportation performance measures, including measures identified by Caltrans and by FHWA's CMP guidance, FHWA's National Performance Management Measures and other FHWA publications on best practices for transportation performance monitoring and reporting. After an extended working group session, TCAG and the CMP Steering Committee established a set of performance measures that best met the CMP needs of the Tulare County region and the legislative requirements.

Tables 4-1 summarize TCAG's final CMP Performance Measures and data sources for each performance measure.

Table 4-1. CMP Performance Measures on the CMP Network

Performance Measures	Description
Peak Hour Speed as a Percent of Free Flow Speed	Real-world or directly measured peak hour average traffic speeds on roadways are a strong indicator of traffic delays (congestion) and roadway quality of service, especially when these speeds are compared to the speeds of freely flowing traffic on the same roadway corridors.
Roadway Level of Service (LOS)	LOS is a qualitative measure used to relate the quality of motor vehicle traffic service. LOS is used to analyze roadways (and intersections) by categorizing traffic flow and assigning quality levels of traffic based on other quantifiable performance measures. Peak Hour Travel Speeds as a Percentage of Free Flow Speed (and facility type) serve as the determinants for the Highway Capacity Manual (HCM) based LOS performance evaluation methods adopted by TCAG for CMP monitoring.

Consistency in congestion reporting is important to TCAG and its partner agencies, who are represented by the members of the CMP Steering Committee. As such, the FHWA published definitions, the NPMRDS dataset and FHWA published evaluation methods were used to quantify the three National Performance Management Measures selected to be included and reported in this CMP. This assured the consistency in the reporting of these performance measures in this CMP and with any federally mandated reporting of these measure

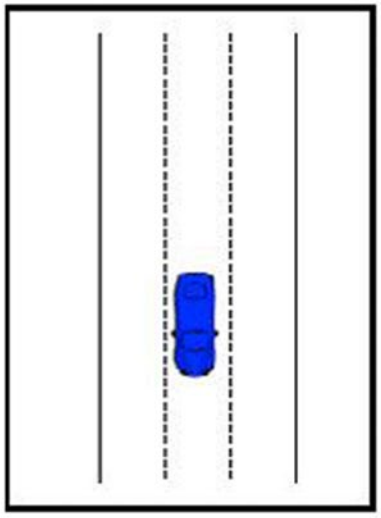
4.2 LOS Thresholds

As stated above, Tulare County does not experience the same level of congestion on its highways, streets, and roads as larger urban areas in the state. However, congestion does occur, and is expected to increase over time with increasing population. Current emphasis has been on assessment of the regional network based on a **Level of Service (LOS) standard,**

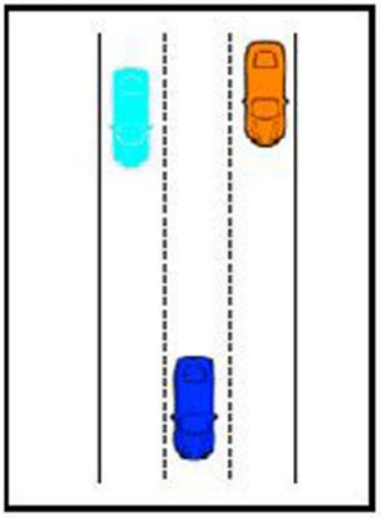
Table 4 .2 CMP Performance Measures

CMP Performance Measures

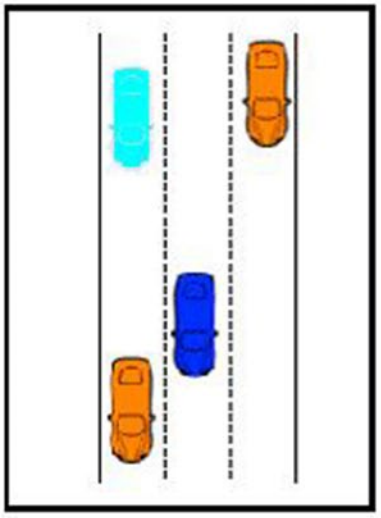
Type of Measure	Localized/Corridor Measures	Regional/System Measures
Congestion Intensity (travel time measures) *Objectives 1,2,4*	Travel time speeds (mph) Average delay time (i.e.the diff. between travel time and free flow time) Travel time index (ratio of peak period to non-peak period time)	Average regional commute time
Congestion Extent (delay measures) *Objectives 1,2,4*	Total delay on roadway (i.e. the average delay time per vehicle times the number of vehicles)	Average regional commute time (by mode)
Transit Travel *Objectives 3*	Amount of transit crowding On time performance	Percentage of buses exceeding capacity On time performance
Safety and security *Objectives 1,2,3,4*	Vehicle accidents per million miles traveled (VMT)	Vehicle accidents per million miles traveled (VMT) compared to similar corridors



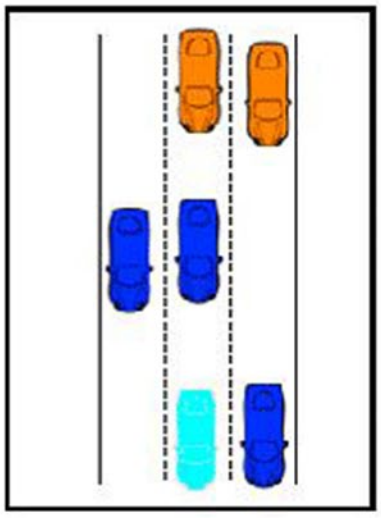
Level of Service A: Free-flow traffic with individual users virtually unaffected by the presence of others in the traffic stream.



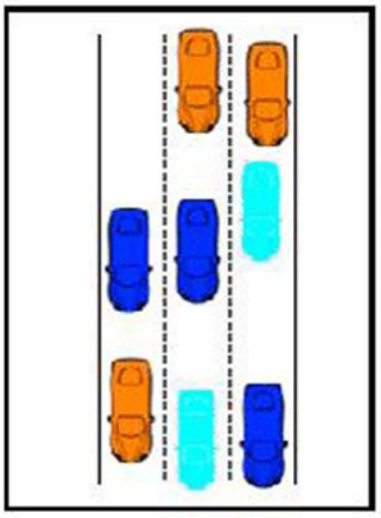
Level of Service B: Stable traffic flow with high degree of freedom to select speed and operating conditions but with some influence from other users.



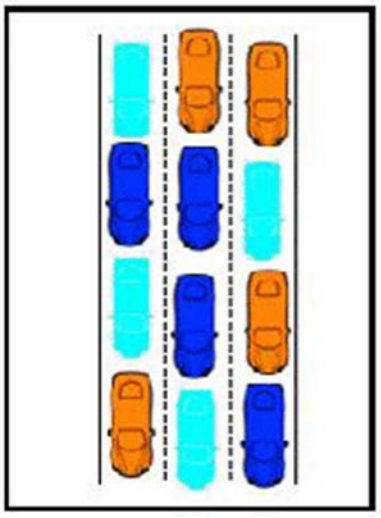
Level of Service C: Restricted flow that remains stable but with significant interactions with others in the traffic stream. The general level of comfort and convenience declines noticeable at this level.



Level of Service D: High-density flow in which speed and freedom to maneuver are severely restricted and comfort and convenience have declined even though flow remains stable.



Level of Service E: Unstable flow at or near capacity levels with poor levels of comfort and convenience.



Level of Service F: Forced traffic in which the amount of traffic approaching a point exceeds the amount that can be served. LOS F is characterized by the stop-and-go waves, poor travel times, low comfort and convenience, and increased accident exposure.

4.2 Fixed Route Transit

A clean alternative to adding additional lanes to highways, streets, and roads is to provide mass transit systems. Mass transportation provides transportation to large numbers of people to designated destinations by bus or train. In Tulare County, buses are the primary mode of public transportation. Fixed Route and Dial-A-Ride services are provided by Visalia Transit, Tulare Intermodal Express (TIME), Porterville Transit, Dinuba Transit, and Tulare County Area Transit (TCaT). The City of Woodlake also operates a Dial-a-Ride only service.

In 2016, Visalia Transit began the V-LINE- bus service between Visalia (from the transit center and Visalia Municipal Airport) to various locations in Fresno County (the Fresno Yosemite International Airport, California State University, Fresno, and Courthouse Park). Intercounty connections are also provided by Dinuba Transit (to Reedley) and TCaT (to Delano and Kingsburg).

Amtrak, California's only operating interregional passenger rail service, doesn't directly serve Tulare County. The closest Amtrak stations are in the Cities of Hanford and Corcoran in Kings County. However, Amtrak does coordinate with Visalia Transit to provide a feeder bus linking Visalia from the city's transit center with the Hanford Station in Kings County. Greyhound and Orange Belt Stages also operate in Tulare County.

Public transportation in Tulare County also takes the form of shared-ride companies, carpools, and vanpools. Fixed route transit is generally used in the more populated urban areas while demand responsive transit and blended paratransit are often used in rural areas and communities.

Several regional programs and service exist in Tulare County. All transit providers participate in the T-Pass, which provides unlimited monthly fixed route rides, College of Sequoias Student Pass, which provided unlimited fixed route rides for students with their paid student fees, and the Greenline call center.

Mass transportation has the capability to reduce many single vehicle occupancy trips and reduce emissions. All fixed-route providing public transit agencies in Tulare County have fleets of Compressed Natural Gas (CNG) vehicles and CNG fueling stations. Porterville and Visalia have begun procurement of electric buses that are scheduled to operational in 2018.

Goals for all transit agencies are to integrate transit into the growth and development of their cities and communities. As developments and road designs occur, transit shall be integrated when possible. High and medium density neighborhoods, commercial, medical, educational, and employment areas can all benefit from transit. Arterials and transit friendly corridors should be identified in cities and communities to serve the anticipated population growth to become transit users or transit dependent. Transit Plans and General Plans shall determine the feasibility and steps to implement express bus service and bus rapid transit, where demands exist or will exist in the future.

4.4 CMP Transit Performance Measures

Overall transit utilization (i.e., annual transit ridership statistics) for each of the transit agencies and overall on - time performance measures are reported from information provided by the transit providers and from Federal Transit Administration (FTA) published transit agency profiles in FTA's National Transit Database (NTD).

More detailed transit performance measures can be included in future CMP biannual monitoring reports as deemed appropriate by TCAG and as the Tulare County transit agencies continue to expand their transit monitoring and reporting capabilities.

5. TRANSPORTATION SYSTEM PERFORMANCE & MONITORING

The CMP network is and will be monitored for potential congested conditions on an ongoing basis using performance measures contained in the CMP. Initially, volume to capacity (V/C) levels may be used to establish a set of deficiencies that should be considered for mitigation using CMP strategies.

5.1 2018 LOS Performance Evaluation

Existing and future traffic operations will be quantified through the determination of Level of Service (LOS). LOS is a qualitative measure of traffic operating conditions, whereby a letter grade A through F is assigned to an intersection representing progressively worsening traffic conditions (*Table 1*). Levels of Service are calculated for different intersection control types using the methods documented in the *Highway Capacity Manual 2010* (HCM 2010).[1]LOS standards vary throughout the County and its eight incorporated cities. The TCAG 2018 Regional Transportation Plan (RTP) provides that acceptable LOS shall be no lower than LOS "D" for urban areas and LOS "C" for rural areas. However, each local agency that owns and operates transportation facilities may select a LOS standard more stringent than the minimum LOS standards identified in the RTP. LOS "D" is taken as the threshold for acceptable traffic operations at all study intersections.
Caltrans policy defines LOS "D" as an acceptable operating condition when planning for future state facilities in urbanized areas. If the existing state highway facility is operating at less than the target LOS, the existing measures of effectiveness (MOE) should be maintained. Existing measures of effectiveness are Control Delay per Vehicle (sec/veh) for signalized intersections, and Average Control Delay per Vehicle (sec/veh) for non-signalized intersections.

LOS was monitored and analyzed on the SR63, SR65, SR99, SR198 and SR190 corridors. This has provided "real world" travel time data that has been useful to identify congested roadway segments. Those roadway segments were studied further to determine the root cause of the congestion – whether it was operational issues, recurring incidents, insufficient capacity, or other causes.
Data was purchased from Iteris and used for monitoring the network.

Definition of Level of Service (LOS)

Table 1 – Intersection Level of Service Criteria (LOS)

LOS	Signalized Intersection	Unsignalized Intersection
A	≤10 sec	≤10 sec
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	≥80 sec	≥50 sec

A= Free flow
B=Reasonably free flow
C=Stable flow
D=Approaching unstable flow
E=Unstable flow
F=Forced or breakdown flow

The transportation LOS system uses the letters A through F, with A being best and F being worst.

LOS A describes operations with a control delay of 10 sec/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or cycle length very short. Most vehicles would arive during the green indication and travel through the intersection without stopping.

LOS B describes operations with a control delay of between 10 and 20 sec/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or cycle length very short. More vehicles stop than with LOS A.

LOS C describes operations with a control delay of between 20 and 35 sec/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the progression is favorable or cycle length is moderate. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles pass through the intersection without stopping.

LOS D describes operations with a control delay of between 35 and 55 sec/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or cycle length is long. Many vehicles stop, and cycle failures are noticable.

LOS E describes operations with a control delay of between 55 and 80 sec/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and progression is very poor and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with a control delay exceeding 80 sec/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: 2010 Highway Capacity Manual

5.2 Highway Performance Monitoring System (HPMS)

The Highway Performance Monitoring System (HPMS) is a federally mandated inventory system and planning tool, designed to monitor the effectiveness of the nation's highway system. HPMS is used as a management tool by state and Federal governments and local agencies to analyze the system's condition and performance.

HPMS data is used for:

- Allocation of Federal funds to the states.

- Travel trends and future transportation forecasts.
- Environmental Protection Agency (EPA) air quality conformity tracking.
- Data for *Biennial Report to Congress on the State of the Nation's Highways.*

TCAG staff works with our local jurisdictions and Caltrans to provide current traffic volume and other data for the HPMS program. Each year Caltrans prepares and publishes a report, by county and city, of the estimated maintained mileage and daily vehicle miles of travel for all counties and cities in the state based on the HPMS data provided.

5.3 Travel Time Survey

Travel time surveys have been collected and analyzed on the SR63, SR65, SR99, SR198 and SR190 corridors. This has provided "real world" travel time data that has been useful to identify congested roadway segments. Those roadway segments were studied further to determine the root cause of the congestion – whether it was operational issues, recurring incidents, insufficient capacity or other causes. Additional studies could be conducted to identify potential roadway improvements.

5.4 Traffic Count Collection Program

As a necessary function of calibrating and validating the TCAG Transportation Forecast Model, TCAG collects classified traffic counts from up to 200 locations annually throughout the County. The counts are collected at specific locations on the transportation network (screen lines and gateways) designed to intercept the major travel movements into, out of, and within the County. In addition, TCAG coordinates with its member agencies and Caltrans to share in the use of traffic count data collected by these agencies. In all, a significant volume of traffic count data is collected and available annually to assess potential areas of traffic congestion within the county.

5.5 Intersection Monitoring Program

Since 1997 TCAG has monitored a minimum of 50 intersections per year throughout Tulare County. The monitoring program has assisted local agencies in identifying signalized and stop-controlled intersections that operate at unacceptable levels of service. This data is valuable to the local agencies in determining the need, and appropriate mitigation for alleviating potential congestion, such as installing traffic signals, adding lanes, roundabouts, and optimizing signal timing and phasing. It is expected that the number of intersections monitored under this program will increase over time based on the identification of specific areas of concern for recurring congestion.

5.6 Transit Monitoring

Under California Transportation Development Act, local transit providers are required to conduct a performance audit of their respective transit system every three years (the Triennial Performance Audit). The purpose of this audit is to evaluate the transit agency's use of public funds in efficiently and effectively providing public transportation services to the public. The audit identifies specific performance recommendations which can, and should be taken by the operator to improve local and regional services.

Additional monitoring may be done by the local providers to determine how well their system is meeting the needs of the public and determine where improvements are needed. The local providers routinely monitor system ridership and on-time performance as indicators of the efficiency of the system.

6. CONGESTION MANAGAMENT STRATEGIES

A wide range of strategies can be used to help relieve traffic congestion, while better accommodating the flow of people and goods and advancing CMP and RTP/SCS goals. Every corridor in the Tulare County region presents its own unique mobility challenges.

The following categories summarize the range of strategies:

- **Operational Improvements, Transportation System Management (TSM), and ITS** – Projects that maintain, optimize, and modernize the existing transportation system (roads, transit, other), including maintaining and improving safety.

- **TDM, Policy Approaches, and Smart Transportation** – Programs and projects that encourage the use of alternative modes of transportation other than driving alone and that otherwise focus on the demand side of trip-making through physical or policy approaches, often also advancing other quality-of-life, environmental, and economic development goals.

- **Public Transit Improvements** – Programs and projects to increase the capacity of existing services and facilities first, and to add capacity only if necessary.

- **Goods Movement** – Policies, strategies, and projects to maintain and optimize the safe and efficient movement of freight.

- **Road Improvements and New Roads** – Projects that increase the capacity of existing roads, as a last resort to build new capacity on new right-of-way.

6.1 Operational Improvements, Transportation System Management (TSM), and ITS

Strategies in this category address traffic congestion problems through the improved management of existing roads and transportation facilities. Operational improvements may address such issues as better coordinating traffic signals or more safely managing combinations of through and local vehicles, primarily through engineering-based approaches. TSM is an even broader range of ways to maximize the use of the entire transportation system while minimizing the expense and impacts of building major new capacity. While ITS addresses many of the same goals, it focuses on integrating new technologies and coordinating data for these purposes.

Signage Improvements to clearly communicate location and direction information, including adding or removing signs (to reduce clutter), redesigned signs, “trailblazing” to key locations, maintenance of signs and line of sight to them, and pavement markers to provide information.

Intersection Improvements of a Limited Scale Minor isolated intersection widening and lane restriping

to increase intersection capacity and safety. This may include auxiliary turn lanes (right or left) and widened shoulders. Intersection design should be context sensitive. Truck routes may need special geometries.

Integrated Corridor Management (ICM) Building upon ITS technologies, ICM coordinates the individual network operations between parallel facilities to create an interconnected system. A corridor is defined as a combination of parallel surface transportation networks (e.g., freeway, arterial, transit networks) that link the same major origins and destinations. A coordinated effort between networks along a corridor can effectively manage the total capacity in a way that will result in reduced congestion. ICM uses many other strategies in this list, such as Closed Loop Computerized Traffic Signals, Transit Signal Priority (TSP), Incident Management, and Traveler Information Services. Often, these efforts are done from a Transportation Management Center.

Safety Improvements and Programs A significant component of frustration with congestion is from unexpected delays, such as those caused by crashes. This item's strategies cover the range of generally low-cost improvements to improve safety in areas with high rates of crashes by evaluating deficiencies and addressing them by use of improved guard or guide rails, lane dividers, signage, Line-of-sight clearances, lighting, and if necessary, minor engineering projects, enhanced enforcement of speed limits, and educational programs.

Incident Management Programs to effectively manage incidents by reducing the time for incident detection/ verification, response, and clearance. They usually include improved institutional coordination.

Turning-Movement Enhancements

Strategies to make turning movements cause less congestion and fewer crashes.

Center-Turn Lanes

This strategy is used in conditions where there are many vehicles turning left midblock to reduce the amount that through traffic is slowed.

Channelization

Strategy used in optimizing the flow of traffic for making right turns, usually using concrete islands or pavement markings.

Left-Turn Lanes

This strategy installs left-turn lanes to decrease left-turning traffic causing friction with through traffic.

Signal Improvements

Strategies, ranging from basic to sophisticated, that improve the efficiency of signals individually and in systems. This includes specific applications, such as for preemption for emergency vehicles or buses.

Basic Upgrading of Traffic Signals

Adjustments and maintenance of signal timing and phasing, including installation of new signals as warranted, to improve flow and reduce congestion. This also includes equipment update, traffic signal removal, and pre-timed signal plans.

ITS

Strategies that encompass a broad range of technologies to relieve congestion, improve safety, and disseminate real-time travel information to the public when integrated into the transportation system's infrastructure.

Traveler Information Services

Provision of pre-trip and en-route information to travelers on current traffic and other conditions and real-time guidance on route information. This includes advisory services to warn of traffic or transit delays. It is especially relevant to special-event generators and roadways with significant concentrations of travelers unfamiliar with the transportation system.

Ramp Metering

Time-differentiated metering that acts as a traffic signal for vehicles entering freeways in order to control access to the highway and assist in maintaining vehicle flow. For SR 99, strategies should aim to reduce weaving, as the movement requires space in two lanes, rather than the single travel lane. To some degree, ramp metering in reducing the number of vehicles on the freeway may reduce weaving's impact on capacity. However this may not be enough in segments where large amounts of capacity are consumed in weaving movements. Consideration should be given to educate drivers to remain in their lanes when commuting through informal lane management (e.g., Changeable Message Signs requesting long distance drivers to employ particular lanes in contrast with short distance trips employing other lanes)[9].

Commercial Vehicle Operations (CVO)

Utilization of ITS technologies to improve efficiency and effectiveness of commercial vehicles. This includes weigh station preclearance, automated safety inspections, and onboard safety monitoring.

Queue Warning

The use of technologies such as warning signs, flashing lights, or in-vehicle devices to alert motorists of downstream queues. Goals include effectively utilizing available roadway capacity and reducing the likelihood of collisions related to queuing. In some applications, the cause of the queue (crash, maintenance activities, congestion) is also displayed on dynamic message signs.

Route Shield Pavement Marking

The route shield pavement markings, placed on selected highways around the state, are intended to give another visual aid to travelers who are more accustomed to looking up or to the side of the highway for traditional route shield signs.

Improve Circulation

Strategies designed to move more vehicles through the existing road system often using engineering approaches.

Street Circulation Patterns

Changing and/or restricting the direction of travel or separating two- way traffic on roadways. This can involve changing the designation of roadways from two-way travel to one-way, or vice-verse.

Vehicle Use Limitations and Restrictions

The outright or time-of-day restrictions of vehicles, usually limited to trucks, to increase roadway capacity. This also includes turn restrictions during peak hours to eliminate conflicting movements.

Roundabouts

These are circular intersections with specific design and traffic-control features. Key features include yield control of entering traffic, channelized approaches, and appropriate geometric curvature to slow speeds. Roundabouts provide substantially better operational and safety characteristics than older traffic

circles and rotaries and are safer than comparable signalized intersections.

6.2 TDM, Policy Approaches and Smart Transportation

These are a wide range of policy and planning strategies that serve to get people and goods to their desired locations, while minimizing congestion and also advancing other quality-of-life, environmental, and economic development goals. They generally make the transportation system more efficient and sustainable, often at less cost than building new capacity, though often requiring education and outreach efforts. By improving the quality of life and sustainability of communities, they make it possible for more people to have a range of non-auto transportation options. By reducing the length and number of car trips, they reduce congestion.

Economic-Development-Oriented Transportation Policies

These are transportation strategies that serve the goals of redevelopment, revitalization, renewal, and recentralization of the region in keeping with adopted plans and programs. Such approaches are generally more efficient ways for a region to manage congestion, while retaining or increasing employment, than developing new rural areas.

Interregional Transportation Coordination

While part of many other strategies, this is explicit recognition that people and goods travel across regional boundaries and congestion management is made more effective by addressing the need to coordinate and communicate beyond strict geographic lines. This includes coordination of MPOs, transit authorities, and departments of transportation, as well as outreach to key stakeholders, such as the freight community. The strategies include continued strengthening of the transportation planning process.

Encourage Use of Fewer Cars

Strategies that encourage fewer cars on the road by reducing the number of SOVs, providing options for commuters, and promoting the use of transit and other modes rather than driving alone. Outreach and marketing are important to the success of these strategies.

Carpool/Vanpool Programs

Carpooling is sharing a ride with one or more other people for at least most of a trip on a regular basis. Vanpooling is sharing a ride with a larger group of riders going to the same destination. These alternative forms of transportation save time and money and are beneficial for the environment.

Emergency Ride Home

Serves as a safety net for employees who carpool, vanpool, or use transit service by providing a reliable backup ride to get them to their destination if they have to work unusual hours or if an emergency arises.

Ride-Matching

Any of a range of ways to help match people willing to coordinate their trip-making. This is most often done with regard to work commutes. There are both public services available and services provided by specific employers.

Bicycle to Work

Programs to encourage employees to commute to work by bicycle. Supportive strategies may also include the provision of bicycle amenities by employers, such as bike racks (especially weather protected), bike maintenance stations (e.g., air pumps), and shower access.

Comprehensive Policy Approaches, Land Use, Employment and Financial Incentives

Policy and market-based approaches that help to reduce congestion, which can be regional or target a specific time and location known to experience severe congestion. They can also help raise funds for transportation improvement projects. These also include strategies that reduce congestion by changing land use and

development patterns to encourage mobility options and limit new trip generation.

Complete Streets
Development and implementation of policies that require streets to be designed for all users. The design standards for such streets would serve bicyclists, pedestrians, disabled people, transit users, and drivers. A municipality may be able to adopt such standards for future roads and roads under rehabilitation.

Revisions to Existing Land Use/Transportation Regulations
Revise and better coordinate existing regulations, such as zoning, to reduce future traffic congestion. This can be done by using Geographic Information System (GIS) or travel simulation modeling, or buildout analysis. It is desirable that zoning ordinances, subdivision regulations, and other rules reflect master plans and other community goals, such as maintaining reasonable accessibility and quality of life. They can also incorporate access management.

Telecommute
This involves the elimination of a commute, either partially or completely, to a conventional office through the use of computers and telecommunication technologies (phone, personal computer, modem, fax, e-mail, etc.). It can involve either working at home or at a satellite work center that is closer to an employee's home than the conventional office.

Alternative Work Hours
These are strategies that reduce vehicle trip demand on highway facilities by shifting it to less congested time periods. This may include work schedules that spread the hours in which trips to and from the workplace occur or the complete elimination of trips to the workplace on some days, such as through compressed work weeks.

Marketing/Outreach for Transit and TDM Services
This covers outreach, education, planning, and other ways of encouraging use of transit services and TDM programs. This is applicable to employers, public entities, and the general public. This includes Carpool, Vanpool, and Ridesharing programs, Alternate Work Hours, Emergency Ride Home, and other TDM strategies.

Walking and Bicycling Improvements
Strategies to reduce congestion and promote livability by making it safer and more convenient to travel by walking and bicycling.

Improvements for Walking
Improve safety and convenience for pedestrians of all types (such as able-bodied or handicapped, the young or elderly), but especially for people who need to walk to get places. These improvements should be selected to fit the level of development and population. Examples include sidewalk improvements, crosswalk improvements, signals, and markings giving pedestrians the right-of-way. This can include pedestrian countdown type signals.

Improvements for Bicycling
Improve safety and convenience for bicyclists, especially for people using bicycles for transportation. Examples include provision of bike lanes, multiuse trails, and bicycle storage facilities at major transit centers to promote bicycles as an alternative to automobiles.

Planning and Design for Non-motorized Transportation
This covers the general work to make an area more conducive for modes other than driving alone, including landscaping, streetscaping and development of regional bicycling and walking plans and maps.

6.3 Public Transit Improvements

This group of strategies deals with ways to make existing transit services more convenient. This may include transportation by bus, rail, or other conveyance—either publicly or privately owned—providing general or special service (but not including school buses, charter or sightseeing services) on a regular and continuing basis.

Electronic Fare Payment Improvements

This involves automatic trip payment through the use of noncash media, such as magnetically encoded or Radio-Frequency Identification (RFID)-enabled fare cards. Increasingly, this method coordinates with other systems so that one medium works across various transit systems, or even for both transit and toll roads.

Advanced Transit System Management

Use of Automatic Vehicle Locator (AVL) systems on buses to communicate with people riding transit (such as information about transfers) or considering riding it (such as when the next vehicle is expected at a stop). This is sometimes called Intelligent Transit Stops. Advanced Transit System Management may be coordinated through transit centers able to make real-time adjustments to schedules. Additionally, it may include the use of ITS technologies for bus, train, and coordinated transit management, including train signals and power grids.

6.4 Road Improvements and New Roads

Strategies that add capacity to make the existing transportation system function better should be carefully coordinated with appropriate supplemental strategies to get the most long-term value from the investment. These also include strategies that, while adding some capacity, intend to address a variety of goals.

New Roadways and General-Purpose Lanes

Strategies that build new SOV capacity on new alignments. These strategies may be appropriate when major problems cannot be adequately addressed by sets of other strategies but should then be used in combination with appropriate supplemental strategies to get the most long-term value from the investment and to meet regional goals.

Major Reconstruction with Minor Capacity Additions

Major reconstruction focuses on the basic use of a roadway, but may increase capacity, safety, and access for other modes. For example, reconstructing a facility so that it meets current design standards may include wider lanes and shoulders,which result in higher actual safe operating speeds. Major new bridge or bridge replacement projects and interchange reconfigurations may fit into this category.

New Freeway Interchange with Related Road Segments

These are projects at a scale that is expected to change regional transportation patterns. They increase the capacity of the existing road network by increasing interconnection opportunities, capacity, and safety. Large intersection projects with related roads that will add major capacity would be included in this strategy.

6.5 Goods Movement

Managing congestion on roads generally helps trucks move freight. Additional strategies can increase the efficient and safe movement of goods by various modes (and the points of intermodal transfers).

The San Joaquin Valley Goods Movement Sustainable Implementation Plan (SJVGMSIP)

The study identified critical needs steps for further evaluation and development, including: “first and last mile connectivity”, truck routing and parking needs, rural priority corridors, and developing a goods movement performance and modeling framework for the San Joaquin Valley[10].

8. THE RTP/SCS AND LINKS TO THE CMP MONITORING PLAN

FHWA defines CMP as "A systematic approach to addressing congestion through effective management and operation of new and existing transportation facilities eligible for funding under title 23 U.S.C., and title 49 U.S.C. through the use of operational management strategies".[15] "Developing a CMP should result in performance measures and strategies that can be reflected in the metropolitan transportation plan and the TIP" (23 CFR § 450.322 (a)).

8.1 TCAG Regional Transportation Plan

The 2022 RTP/SCS is based on a preferred land use and transportation scenario, referred to as Scenario 4 (Cross -Valley Corridor (CVS) Blueprint Plus Preferred Scenario), which defines a pattern of future growth and transportation system investment for the region emphasizing a more transit-oriented development and a compact infill approach to land use and housing.

Scenario 4 consists of an intensified land use distribution approach that concentrates the forecasted population and employment growth in existing urban areas. This scenario emphasizes compact, mixed-use development, especially in the downtown areas of the County's existing urban areas. This focus intends to limit growth outside of the city boundaries, in order to minimize impacts on rural areas, which contain the majority of agricultural land throughout the County. The transportation network includes additional highway, local street, active transportation, and transit investments to serve a more concentrated urban growth pattern. This scenario also includes additional investments for bicycle and pedestrian improvements, which complement public transit and other nonvehicle alternatives.

8.2. The CMP Monitoring Plan – Links to the RTP/SCS

The FHWA identifies congestion monitoring as just one of the several aspects of transportation system performance that leads to more effective investment decisions for transportation improvements. Travel time reliability for automobile and for goods/freight movement, transit performance, and land use (and demographics) must also be monitored.

According to the Final Rule on Metropolitan Transportation Planning, metropolitan transportation planning agencies must establish "a coordinated program for data collection and system performance monitoring to define the extent and duration of congestion, to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions."[16] In addition, it also indicates that "to the extent possible, this data collection program should be coordinated with existing data sources and coordinated with operations managers in the metropolitan area."[17]

The intent of the TCAG CMP monitoring plan is to develop an ongoing system of monitoring and reporting that relies primarily on data already collected. The components of the monitoring plan include congestion, travel time reliability, transit utilization, and demographics and are described as follows.

- Congestion is monitored throughout the region. Each cycle, newly computed metrics are compared to previously reported congestion, to monitor changes (growth) in traffic congestion over time. The LOS performance measure also fulfills part of the California legislated reporting requirement. The monitoring of traffic congestion over time also allows for the monitoring of the effectiveness of capital improvement projects on the County's congestion, as well as other congestion management projects and programs.
- Travel time reliability is monitored throughout the County. Like the congestion performance measures, travel time reliability performance measures are compared to the previously reported reliability measures to track trends in the TCAG roadway network's reliability, and to gain insights into how capital improvement projects (as they become operational) help to improve the reliability of travel on the County's roadway system.
- Transit utilization is monitored for this region to track trends in transit demand and ridership.
- The National Performance Management Measures are monitored to comply with FHWA requirements and to track overall countywide trends in traffic congestion, and travel time reliability for auto and freight.
- The countywide land use totals and demographics are monitored to track trends in population and employment growth throughout the County.

Table 8-1. Monitoring Plan for the CMP Performance Measures

Performance Measure	Data Source	Network
LOS	Iteris, PEMS (or comparable commercial speed dataset)	TCAG CMP Network (CMP corridors)
Annual Transit Ridership	Tulare County Transit Agencies	System-wide; for each transit agency
Population, Household & Employment Statistics by Jurisdiction	TCAG	Jurisdictional Totals

The overall CMP monitoring has three basic steps:

1. Monitor transportation performance and identify corridors with congestion and/or travel time reliability issues
2. Review and selection of CMP Strategies to alleviate congestion and improve travel time reliability that also serve the CMP objectives and regional goals
3. Project identification, project evaluation and selection, funding and project implementation

The first step (the identification of transportation corridors with congestion and/or reliability issues) is a direct output of this CMP monitoring process. Logic dictates that Steps #2 and #3 combine the findings from the CMP's Step 1 with information in the RTP/SCS. Developing a project listing solely from information in the biannual CMP, independent of the RTP/SCS process would be short sighted. For pragmatic reasons of network connectivity, effectiveness of the overall transportation system and cost efficiency reasons, any recommended CMP project needs to be coordinated with (or part of) the development of the regional Tier 1 Project List which is developed during the long-range transportation planning (RTP/SCS) process.

It follows that the transportation system performance evaluation information provided by the CMP serves as one of the inputs to the RTP/SCS process, and it should provide meaningful information for the projects evaluated and selected for inclusion in the Tier 1 Project List.

For the above stated reasons, TCAG is committed to coordinate and integrate the CMP efforts with the RTP/SCS process. The CMP monitoring is biannual, while the RTP/SCS process is on a four-year cycle. To better coordinate these efforts, portions of the CMP update process have been coordinated with the RTP/SCS four-year cycle. As part of the update process, key CMP tasks that will be performed by TCAG include:

- **CMP Monitoring Schedule (2-year cycle)** – Every two years, TCAG is planning on preparing a CMP monitoring report that includes data collection and system performance monitoring. Iteris, PEMS data and/or similar data set will be used primarily to monitor and analyze the system performance.
- **CMP Update Schedule (4-year cycle)** – Every four years, TCAG would develop a CMP update, that would reevaluate the objectives and performance criteria for identifying deficient corridors, identify/assess CMP strategies as well as evaluate the effectiveness of the strategies.

Figure 8-1 shows the elements of TCAG's CMP.

Figure 8-2 show the integration of CMP into TCAG's RTP/SCS process.

Figure 8-1. Elements of TCAG's CMP

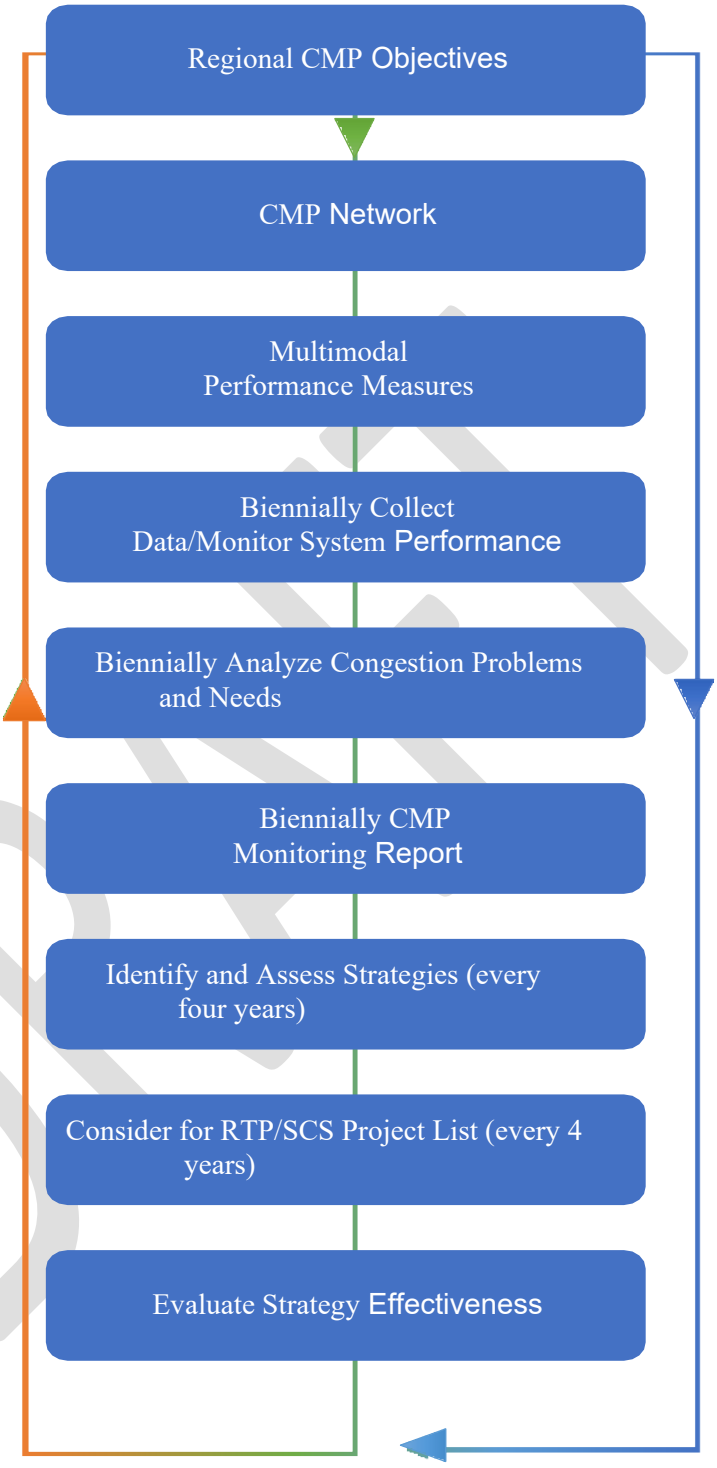
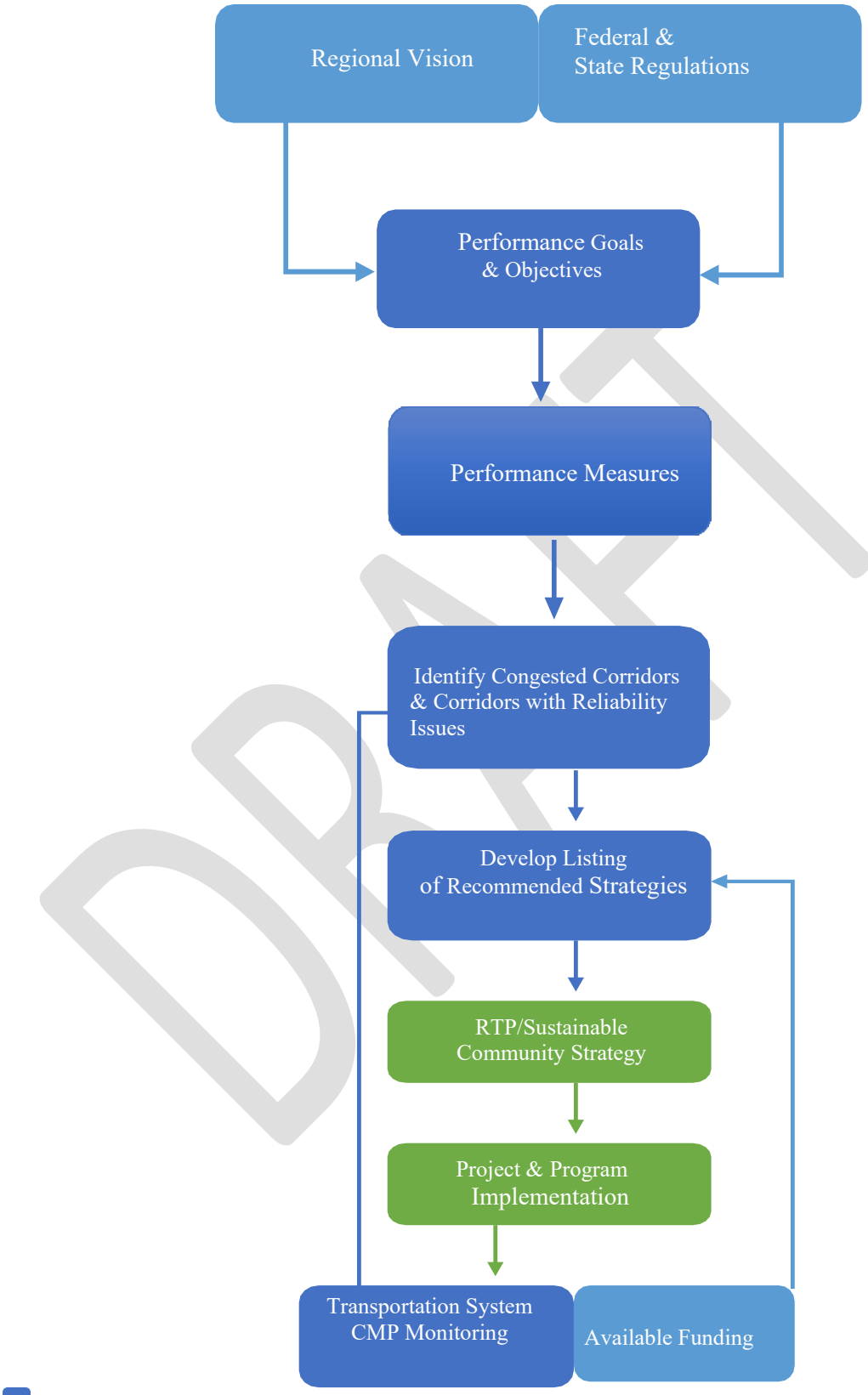


Figure 8-2. Integration of Federal CMP with the TCAG RTP Process

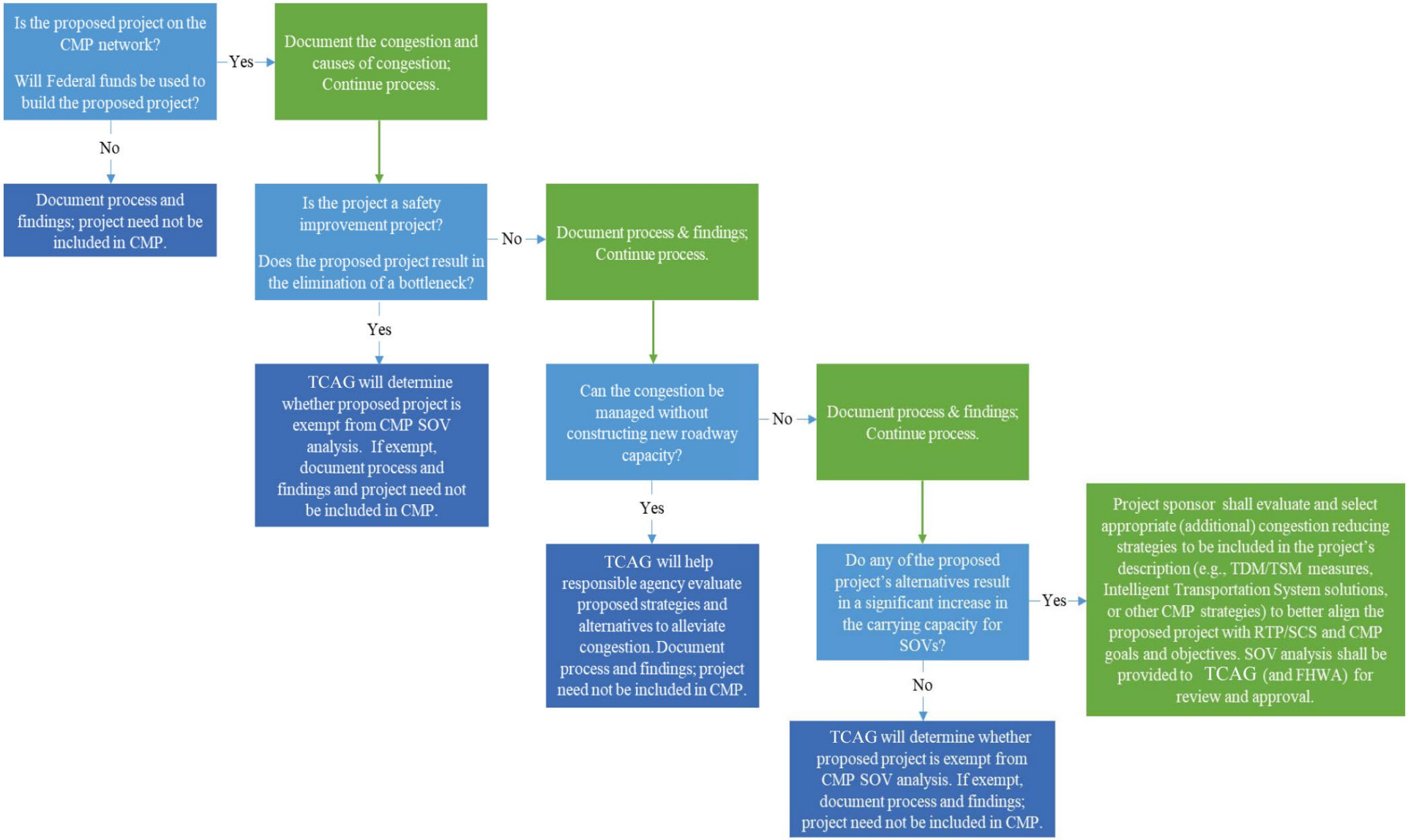


8.1 The CMP Monitoring Plan – SOV Project Analysis Methodology

Federal regulations state that "In a TMA designated as nonattainment area for ozone or carbon monoxide pursuant to the Clean Air Act, 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".

TCAG CMP has been integrated into TCAG's RTP/SCS process and serves as a screening tool for the determination if a capacity mitigating project is the only alternative to reducing congestion. Furthermore, the CMP will guide the project sponsor to evaluate and select appropriate (additional) congestion reducing strategies to be included in the project's description (e.g., TDM/TSM measures, Intelligent Transportation System solutions, or other CMP strategies) to better align the proposed project with RTP/SCS and CMP goals and objectives.

The methodology for conducting a SOV analysis to ensure that the proposed projects are compliant with the federal requirements and the CMP's goals and objectives is illustrated in the process diagram in Figure 8-3.


Is the proposed project on the CMP network?
Will Federal funds be used to build the proposed project?
Yes
No
Document the congestion and causes of congestion; Continue process.
Document process and findings; project need not be included in CMP.
Is the project a safety improvement project?
Does the proposed project result in the elimination of a bottleneck?
No
Yes
Document process & findings; Continue process.
TCAG will determine whether proposed project is exempt from CMP SOV analysis. If exempt, document process and findings and project need not be included in CMP.
Can the congestion be managed without constructing new roadway capacity?
No
Yes
Document process & findings; Continue process.
TCAG will help responsible agency evaluate proposed strategies and alternatives to alleviate congestion. Document process and findings; project need not be included in CMP.
Do any of the proposed project's alternatives result in a significant increase in the carrying capacity for SOVs?
Yes
No
Project sponsor shall evaluate and select appropriate (additional) congestion reducing strategies to be included in the project's description (e.g., TDM/TSM measures, Intelligent Transportation System solutions, or other CMP strategies) to better align the proposed project with RTP/SCS and CMP goals and objectives. SOV analysis shall be provided to TCAG (and FHWA) for review and approval.
TCAG will determine whether proposed project is exempt from CMP SOV analysis. If exempt, document process and findings; project need not be included in CMP.

8.1 CMP Corridors with Congestion Issues

The corridors identified that have unacceptable levels of roadway congestion or travel time reliability issues are geographically matched to Projects listed in the RTP/SCS.