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Chapter 1 Introduction

In June 1990, California voters approved legislation that required Congestion Management Plans (CA CMP) be developed in urbanized counties to address congestion on California’s highways and roads. At the federal level, Congestion Management System (CMS) was first introduced in the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991. In 1996, CMS became the Congestion Management Process (CMP) with the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU). Fresno COG developed its first Congestion Management Program in November 1991, and it has been updated based on legislative requirements. Assembly Bill 2419 (Bowler) in 1996 allowed counties to “opt out” of the California Congestion Management Program if a majority of local governments elected to exempt themselves from the California CMP. The Fresno COG Policy Board rescinded the Congestion Management Program on September 25, 1997 at the request of the local member agencies. The 2009 Fresno County Congestion Management Process (CMP) was designed to meet the federal requirement under 23 CFR 500.109 and 450.320. The 2017 CMP is an update to the 2009 CMP based on emerging transportation planning practices such as the transportation performance measurement required under the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation Act (FAST ACT) SAFETEA-LU, and the subsequent MAP-21 and FAST Act require that Transportation Management Areas (TMAs) – urban areas with population over 200,000 – “shall address congestion management through a process that provides for safe and effective management and operation, based on a cooperatively developed and implemented metropolitan wide strategy, of new and existing transportation facilities … through the use of travel demand reduction and operation management strategies.” It further states that federal funds cannot be programmed in a carbon monoxide and/or ozone non-attainment TMA for any highway project that will result in a significant increase in single occupant vehicle (SOV) capacity, unless the project is vetted through an approved CMP.
Fresno County is designated as a non-attainment TMA for ozone, and was so designated for carbon monoxide, but the Fresno Urbanized Area was reclassified as attainment for carbon monoxide effective on June 1, 1998. However, because of the ozone non-attainment status, Fresno COG is required to comply with such requirements.

The language in 23 CFR 450.320 and 500.109 defines an effective CMP as a systematic and regionally accepted approach for managing congestion. It provides information on transportation system performance and assesses alternative strategies for alleviating congestion and improving mobility for people and goods to levels that meet State and local needs. The congestion management process should include the six elements as specified in 450.320:

• methods to monitor and evaluate the 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 parameters for measuring the extent of congestion and for supporting the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies;

• the 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 (TDM) measures, traffic operational improvements, public transportation improvements, Intelligent Transportation Systems (ITS) technologies, and additional system capacity;
• identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy proposed for implementation; and,
• implementation of a process for periodic assessment of the efficiency and effectiveness of implemented strategies, in terms of the area’s established performance measures.

The Fresno County Congestion Management Process should be an integrated part of a Metropolitan Planning Organization (MPO)’s planning process. Based on the guidebook titled “The Congestion Management Process, A Guidebook”, which was issued by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), the Fresno County CMP is a systematic process developed with regional approaches, with strategies reflected in and throughout the Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP) process. The following diagram summarizes the major components of the Fresno County CMP and illustrates how the CMP is integrated in Fresno COG’s planning process:
Figure 1
Chapter 2  CMP Steering Committee

The Fresno County CMP Steering Committee was formed in January 2009 and was reconvened in March 2015 for the current update. The CMP Steering Committee provided guidance for the development of the congestion management process and served as a technical advisory body for the process. The Committee comprised a broad membership that included engineers and planners from the local governments, representatives from the transit operators, State DOT, bike/pedestrian advocates and other stakeholders. Detailed CMP Steering Committee membership is as follows:

- County of Fresno
- City of Fresno
- City of Clovis
- Caltrans District 6 representatives
- Fresno Cycling Club
- City of Selma
- Fresno County Rural Transit Agency
- Fresno Area Express
- Clovis Transit
- City of Reedley
- City of Coalinga
- California State University, Fresno

COG’s programming staff has been involved throughout the entire CMP process to ensure successful integration into the TIP/RTP process.

The CMP Steering Committee is instrumental in establishing CMP objectives and performance measures, selecting alternative strategies, single-occupant vehicle (SOV) alternative analysis and other CMP tasks. In addition, the Congestion Management Process also provided a forum for the members to discuss regional issues, such as
sustainable development, congestion, transportation and land use planning integration, urban sprawl, active transportation, etc.
Chapter 3  CMP Objectives

The CMP Steering Committee reviewed the 2009 CMP goals and incorporated safety and other emerging technology elements in the update. Economic recovery from the Great Recession in the late 2000s has brought more jobs to the Fresno region, and the region is starting to experience some moderate delays on the urban freeways during peak hours. If not sustainably managed, the congestion would be more widespread, with greater delays expected. The updated objectives focus on operational improvements and management of the transportation facilities, emphasize sustainable land use development role in congestion management and promote the development of an integrated multi-modal transportation system. Four general objectives were established by the CMP Steering Committee:

1. Optimize the transportation facilities through efficient system management
2. Invest in strategies that reduce travel demand, improve system performance, increase safety, and provide effective incident management
3. Reduce vehicle miles traveled (VMT) by encouraging alternative modes of transportation and promotion of sustainable land use development
4. Improve public transit, expand bicycle and pedestrian system, and promote car sharing and bike sharing programs to facilitate the development of an integrated multi-modal transportation system in the Fresno region
Chapter 4  CMP Application Area and CMP Network

Fresno is the most populous county in the San Joaquin Valley, with 979,915 residents as of July 2016. The City of Fresno is the fifth largest city in California with over half a million population. There are over 600,000 people living in the Fresno-Clovis Metropolitan Area. Fresno County is also the second largest county in the San Joaquin Valley, encompassing approximately 6,000 square miles. It is home to 1.88 million acres of the world’s most productive farmland, with agricultural operations covering half of the County. Agricultural commodities in Fresno were valued at $7.03 billion in 2014 and the top 10 crops were: almonds, grapes, poultry, milk, cattle & calves, tomatoes, pistachios, garlic, peaches and cotton. Fresno County is a rural county with a large metropolitan urban center. More than 60% of the population lives in the Fresno-Clovis Metropolitan areas, with about 17% in the rural unincorporated areas and the rest residing in the 13 small incorporated cities.

Congestion and its causes are of different magnitudes in the metropolitan areas relative to the rest of the more rural county. The transportation system in the urban area is designed to take people to destinations such as jobs, schools, shopping, doctors’ appointments, etc. The rural roads mainly serve to transport agricultural goods. The urban areas experience more recurring congestion during the commute hours on the commute corridors, whereas in the rural areas, non-recurring congestion could take place due to foggy weather, truck traffic or other isolated accidents. The CMP Steering Committee agreed that the congestion management process should be applied countywide and selected different CMP strategies will be implemented where appropriate.

Due to the limitation of resources, the CMP Steering Committee identified and approved a refined CMP network, for which a more focused evaluation is conducted in the current update. Because of the recurring nature of the congestion on the urban freeways during the peak commute hours, the Committee decided that the urban freeways in the Fresno-Clovis Metropolitan Area will be the CMP network where the resources are directed.
The CMP network encompasses SR 41 from the SR 99 interchange to the Madera/Fresno County line, SR 99 from the Madera/Fresno County line to the Jensen Avenue interchange, SR 168 from the SR 180 interchange to the Herndon Avenue interchange and SR 180 from the SR 99 interchange to the SR 168 interchange, as shown in Figure 2 and Table 1. As discussed in Chapter 6, the Congestion Performance Monitoring Dashboard that features a live traffic speed feed for the CMP network. The Single Occupancy Vehicle (SOV) project analysis will be applied to qualified capacity increasing expansion project on the CMP network.

Figure 2
<table>
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<tr>
<th>Route</th>
<th>From</th>
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<th>Length</th>
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</thead>
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<tr>
<td>SR 99</td>
<td>Madera/Fresno County Line</td>
<td>Jensen Avenue Interchange</td>
<td>13 miles</td>
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<tr>
<td>SR 41</td>
<td>SR 99 Interchange</td>
<td>Madera/Fresno County Line</td>
<td>11 miles</td>
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<td>SR 168</td>
<td>SR 168/SR 180 Interchange</td>
<td>Herndon Avenue Interchange</td>
<td>7 miles</td>
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<td>SR 180</td>
<td>SR 99/SR 180 Interchange</td>
<td>SR 168/SR 180 Interchange</td>
<td>4 miles</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>35 miles</td>
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</table>

Table 1
Chapter 5  Performance Measures

Performance measures are used to evaluate and communicate about the system performance issues. The most commonly used measures are speed, travel time, Level of Service (LOS), volume-to-capacity ratio (V/C ratio) and travel delay. Proxies such as LOS and V/C were applied in Fresno COG’s 2009 CMP because data for more direct measures such as travel time and speed were not available. Since then, advances in probe data and system detection technologies have significantly reduced data collection costs. The Federal Highway Administration (FHWA) has contracted with HERE North America/Inrix and acquired national travel time dataset for use in the analysis of system performance. The probe data acquired by the FHWA, the National Performance Research Data Set (NPMRDS), has been made available to state Department of Transportations (DOTs) and Metropolitan Planning Organizations (MPOs). The NPMRDS provides a consistent historical profile on the performance of the National Highway System (NHS) for both passenger cars and truck traffic. In addition, cost for the probe data has become much less prohibitive and real-time speed and travel time data are more realistic for purchase for priority corridors.

Furthermore, MAP 21 and the subsequent FAST Act set goals to transition transportation planning into performance and outcome-based programs. One of the goals for the federal aid program is system reliability, that is, to improve the efficiency of the surface transportation system. Transportation Management Areas (TMAs) are encouraged to incorporate reliability measures into the CMP process because travel-time reliability considers both recurring and non-recurring events on delay over time. Traditionally, congestion has been referred to as recurring delays at the commute hours when too many people are trying to get through certain corridors. Non-recurring congestion was typically left out of the analysis.
Given the reduced probe data costs, and the federal system reliability goal, Fresno COG decided to move into travel time-based performance measurement that includes:

- Travel Time (min): Travel time to traverse a defined road segment
- Average Speed (mph): The length of a segment divided by travel time
- Travel Time Index (TTI): Ratio of average speed to the travel time at the reference speed
- Planning Time Index (PTI): Ratio of 95th percentile of the travel time to the reference travel time
- Delay (Total Hours): Delay experienced by all vehicles (measured in hours) measured relative to a nominated reference speed

The CMP Steering Committee approved travel time index and planning time index as the reliability measures in September 2015. The FHWA finalized the system performance measures in January 2017, and here are the final FHWA measures (Freight and Congestion Mitigation Air Quality not included):

- Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the interstate that are reliable, measured by Level of Travel Time Reliability (LOTTR): 80th/50th percentile of all vehicle travel times
- Non-Interstate Travel Time Reliability Measure: Percent of the person-miles traveled on the non-interstate NHS that are reliable
- Peak Hour Excessive Delay (PHED) Measure: Annual Hours of Peak Hour Excessive Delay per capita

In defining performance measures, the Committee also endorsed congestion thresholds in the traffic congestion measures. A travel time segment is considered to have excessive delay if the travel speed is equal to or slower than:

- 35 miles per hour for interstates, freeways, or expressways
• 15 miles per hour for principal arterials and all other NHS roads

Due to the timing of the publishing of the federal system performance measures and the approval of the performance measures by the CMP Steering Committee, both sets of the performance measures are applied in the analysis of system conditions within the Congestion Monitoring Dashboard, which is documented in Appendix A and in Chapter 6.

Figure 3 & 4 shows the segments in Fresno County that have excessive delays.

Figure 3
Figure 4
Chapter 6  Transportation System Monitoring Programs

I. Traffic Monitoring Program

Fresno COG has operated a Regional Traffic Monitoring Program since 1981. Through this program, the City of Fresno, City of Clovis and County of Fresno receive annual funding from Fresno COG to take traffic counts at COG designated count locations. Hourly counts for 24 hours are taken during typical work days from Tuesday through Thursday. Truck counts are also taken by the Fresno County on county roads. The traffic count data collected through the Monitoring Program is used by private developers, government agencies, and other entities that need traffic counts for different traffic studies. As part of the CMP update, the traffic counts are also being used to calculate total hours of delays. As an input to COG’s traffic model, the traffic data is also used to interpret the region’s current mobility conditions and to forecast future infrastructure needs. The Fresno COG Regional Traffic Monitoring Program provides a traffic count database that serves COG’s traffic model validation and calibration needs.

As part of the current CMP update, Fresno COG underwent a review process for the count location system. The count system was originally developed in the 1980s, and the Fresno region has since grown significantly. More count locations were added in new growth areas and in the small cities. Traffic is counted at 750 locations biannually under the Fresno COG Traffic Monitoring Program. Figure 5 and 6 shows the coverage of the count locations in the region.
Figure 5
Figure 6
As discussed in Chapter 5, Fresno COG is moving into travel-time and reliability based performance measures for system congestion monitoring. A congestion monitoring dashboard has been developed to monitor the system performance. Probe data from HERE North America has been purchased to provide real time traffic performance information for the identified CMP network. The NPMRDS is used to perform historical system-wide analysis for the NHS network using performance measures developed by the CMP Steering Committee. A third application is being developed on the Dashboard to report the system-wide performance based on the final system performance measures established by the FHWA. Appendix A provides detailed information on the background, dataset, performance measures, methodology and functionality of the congestion monitoring dashboard. The dashboard can be found at: fresnocog.iteris-pems.com. Usage of the dashboard needs to be pre-authorized by Fresno COG.

II. Bike/Pedestrian Count Monitoring

Active transportation projects provide air quality and health benefits and have had an increasing role in providing transportation options for the general public, in addition to being used for recreational purposes. Assembly Bill 1358 requires cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users. The Active Transportation Program (ATP) provides exclusive funding sources for active transportation projects and requires before/after bike/pedestrian counts to support funding applications. In 2015, Fresno COG was selected as one of the 10 MPOs nation-wide to participate in the FHWA Bicycle & Pedestrian Count Technology Pilot Program. Fresno COG received a grant from the Pilot Program to purchase bike and pedestrian counters. Bike and pedestrian counts were taken on trails, bike lanes, sidewalk and pedestrian malls for project funding applications, usage monitoring or bike/pedestrian facility planning. Appendix B is a detailed report on the results of the Bike/Pedestrian Count Technology Pilot Program in the Fresno region.
Although the Pilot Program was completed in 2016, Fresno COG retains the bike/pedestrian counters which are loaned to the local governments and other entities on an as-needed basis. In 2017, additional bike/pedestrian counts were taken at 40 locations close to downtown Fresno, selected high schools and colleges. The bike/pedestrian counts taken in 2016/17 are used in the development of the first bike/pedestrian forecasting system in Fresno COG’s Activity-Based Model (ABM). Fresno COG is evaluating a potential regional count system to monitor bike and pedestrian activities and having such counts taken regularly.
Chapter 7  CMP Strategies

SAFETEA-LU and the subsequent MAP 21 & FAST Act mandate that a CMP should identify alternative strategies such as travel demand management (TDM), traffic operational improvements, public transit, Intelligent Transportation System (ITS), and land use strategies, etc. as congestion management strategies. Although such programs have long been in place in Fresno County, the CMP process evaluated and selected alternative strategies considered appropriate and feasible for the Fresno region. This chapter provides an overview of existing CMP programs in Fresno County and summarizes the CMP strategies identified and adopted by the CMP Steering Committee for implementation.

I. Overview of Existing CMP Related Programs

Travel Demand Management

Travel demand management (TDM) programs are designed to reduce automobile usage by changing traveler behavior and encouraging alternative transportation modes besides single occupant vehicle trips. TDMs reduce demand on the system and postpone the need for capacity improvement.

Fresno COG’s TDM has been predominately focused on ridesharing. TDM program staff has maintained the Valleyrides Program, which provides ride matching service within Fresno, Kings, Madera and Tulare Counties. In the last 11 years, program staff has worked with more than 1,200 worksites, and provided service/information in the four regions. Valleyrides partnered with California State University Fresno’s Parking & Transportation Department and developed an online ride-matching database which has been in operation since 2003.
In 2006, Fresno County voters passed the Measure “C” Extension, a half-cent sales tax measure that programs 0.6% of its revenues to fund carpool and vanpool subsidy programs originating within Fresno County. Launched in 2009, today there are 38 regular vans and 99 farmworker vans sponsored by Measure “C”. Annually through 2027, $2 million will be available from Measure “C” to expand farm labor and commuter vanpools.

CalVans provides vanpool services to farmworkers and commuters in rural counties, including: Fresno, Kern, Kings, Madera, Merced, Monterey, San Benito, Santa Barbara, Santa Cruz, Tulare, Imperial and Ventura. In 2014/15, vans out of Fresno County traveled 29 million passenger miles; in 2015/16, vans (out of Fresno County) traveled 2.6 million miles with 528,510 passengers and passenger miles reached 28.8 million, which is equivalent to 13,459 metric tons of greenhouse gas emission reduction. Nearly 500 commuter and farm labor vehicles are in service.

**Public Transit**

Fresno Area Express (FAX) is the transit service provider in the City of Fresno. FAX provides two types of public transportation service: the fixed-route service for the general public and Handy Ride, a demand-responsive service for those who are unable to use the regular fixed-route service because of physical or mental disabilities. With an annual operating budget of $37 million, FAX operates 17 fixed routes in the City of Fresno. The annual boarding was 17.6 million in 2016.

The City of Clovis also operates two types of public transportation service in the FCMA area: Stageline, a general public fixed-route service, and Round-up, a demand-responsive paratransit service for senior and disabled residents. Clovis Transit ridership in 2016 was 154,451 with an annual operating cost at $1.95 million.
Rural Fresno County is served by a combination of public transit providers: common carrier, general public and social service agencies. The Fresno County Rural Transit Agency (FCRTA) and the Fresno County Economic Opportunities Commission (FCEOC) are designated as the Rural Consolidated Transportation Service Agency (CTSA).

About 24% of the Measure “C” extension money, estimated to be about $412 million over 20 years, will be spent on public transit, of which 19.66% ($337 million) will be spent on expanding public transit programs, improving transit service and consolidating services among different transit providers. The remaining 4.34% ($75 million) is intended to enhance alternative transportation services through programs such as the Public Transportation Infrastructure Study (PTIS), carpool/vanpool, and farm worker vanpool programs.

**Operational Improvements & ITS**

Operational improvements are an effective strategy to reduce traffic delays. Such improvement projects are less costly and can be implemented in a relatively short timeframe. Projects such as signal synchronization significantly reduce wait time at intersections, which also decreases vehicle idling time, bringing considerable air quality benefits to the region. Caltrans and the cities of Fresno and Clovis have been deploying enhanced signal and traffic management strategies to manage congestion. The Fresno County Intelligent Transportation System (ITS) Strategic Deployment Plan has identified traffic operational/management projects as one of its priority strategies to address the transportation problems in the Fresno area. Some of the identified projects are as follows:

- **ITS Freeway Crossings**
  Traffic Signal Synchronization of Arterials and Freeway Crossings
• ITS Signal Coordination and Improvements/Upgrades
  Installation of ITS equipment (communications, upgraded controllers; cameras, detection, poles, cabinets, and vaults) and signal synchronization

• Ramp metering & communication gap closure
  Deploy additional ramp-metering capabilities along the freeway system within the Fresno County Region to improve freeway throughput and efficiency

The City of Fresno and Caltrans District 6 reached a mutually beneficial shared fiber network agreement to provide fiber connectivity to the SR 41 ramps through the Blackstone corridor segment of the fiber network. Meanwhile, the cities of Fresno and Clovis have been working together on the Fresno/Clovis Metropolitan Area Signal Coordination and Fresno/Clovis Regional ATMS Completion Project. Such ITS projects have been mapped in the cities’ plans, with funding aggressively pursued at the federal, state and local levels.

**Land use/Growth Management**

Segregated land uses and low-density suburban development have contributed to automobile dependency among American families. Both land use planners and transportation planners have realized that congestion needs to be addressed where travel is generated. Mixed-use, compact and transit-oriented development are the neo-traditional land use patterns that encourage transit use, walking and biking. These alternative transportation modes reduce driving, helping relieve congestion. Such land use/growth management strategies have been enacted in the Fresno area as part of ongoing efforts to build sustainable communities.

Fresno COG was a key partner in the San Joaquin Valley Blueprint planning efforts. The Fresno COG Policy Board adopted a preferred scenario with features such as transit
oriented development, urban centers, high intensity transit corridors, mixed uses, etc. Fresno’s preferred scenario had a density of eight housing units per acre compared to the existing 3.8 units per acre. The Valley wide preferred scenario, which was stitched together among the eight Valley counties’ locally selected scenarios, had an average density of 6.8 units/acre. Under California’s SB 375, the Blueprint preferred scenario served as a starting point for developing the 2014 RTP’s Sustainable Communities Strategy (SCS).

As mandated by Senate Bill 375, Fresno COG developed its first SCS in the 2014 RTP aimed at reducing greenhouse gas emissions through integrated transportation and land use planning. The SCS contained land use strategies such as higher density, mixed use development, infill, and allocation of growth along transportation corridors. Such land use strategies reduce the growth footprint and encourage alternative modes such as transit, biking and walking. Several cities adopted new general plans with more compact land use and other sustainable transportation strategies. Here are a few examples of the growth management efforts in the new general plans:

- The 2014 Fresno General Plan was adopted in December 2014. It envisions a balanced city with an appropriate proportion of growth and reinvestment focused in the central core, downtown, established neighborhoods and along BRT corridors. The City set a goal of directing approximately 50% of new growth towards infill areas within existing city limits, and the other half within the existing sphere of influence area by 2035. Around 20% of entire region’s housing growth and 36% of new employment by 2035 is planned to take place within ½ mile of BRT corridors inside the City of Fresno. In December 2015, the City of Fresno approved a new Development code/Zoning Ordinance, which is an essential tool to implement the 2014 General Plan.
The City of Clovis also adopted a new general plan in 2014 right after the adoption of the first SCS. Clovis’ new general plan also set “goals and policies to seek to foster more compact development patterns that can reduce the number, length, and duration of auto trips.” The Clovis General Plan introduced the concept of urban centers that require higher density and more mixed use around the community centers. Such density requirements gradually decrease further away from the center. The master-planned urban centers are also required to provide bike/trail connections within the communities.

The Fresno County Public Transportation Infrastructure Study (PTIS) took an integrated approach in long-range transit planning. The PTIS study identified potential high capacity transit corridors for Bus Rapid Transit (BRT) with the assumption that the land use in those corridors would be intensified. The Study identified transit-supportive land use typology along the BRT corridors and recommended land use strategies and policies for implementation. Such land use recommendations have been incorporated into the City of Fresno’s 2035 General Plan; the BRT is under construction at the recommended corridors and will be operating by spring 2018.
II. Adopted CMP Alternative Strategies

Based on the adopted CMP objectives, the Steering Committee endorsed a list of alternative strategies that the jurisdictions in Fresno County are encouraged to implement before roadways are widened. Those strategies are categorized as follows:

- Transportation System Management Strategies
- Travel Demand Management Strategies
- ITS Strategies
- Land Use Strategies
- Public Transit Strategies
- Bicycle and Pedestrian Strategies

A Toolbox for Alleviating Traffic Congestion published by the Institute of Transportation Engineers was referenced in developing the list. The ITS strategies were incorporated from the Fresno County Intelligent Transportation System Strategic Deployment Plan.
Table 5. Fresno County CMP Strategies-Transportation System Management Strategies

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<td>Interconnected &amp; synchronized signals</td>
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<th>Geometric changes and bottleneck alleviation</th>
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<td>Installation of turning lanes</td>
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<td>Realignment of intersecting streets</td>
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<td>Reduce conflict points</td>
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Table 6. Intelligent Transportation System Strategies

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<td>Regional Intersection Safety and enhancement program</td>
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<td>Remote surveillance and incident scene management</td>
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<td></td>
<td>Integration of Communications channels</td>
</tr>
<tr>
<td></td>
<td>Incident Management/Response Coordination</td>
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<td></td>
<td>Task force</td>
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<tr>
<td>Transit System</td>
<td>Form a Regional Transit District</td>
</tr>
<tr>
<td></td>
<td>Transit Operations/Dispatch centers integration</td>
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<tr>
<td></td>
<td>Transit Information System</td>
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<td></td>
<td>Transit Management System Completion/Expansion</td>
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<td></td>
<td>Implement Regional Farebox System</td>
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Table 6. Intelligent Transportation System Strategies –continued

<table>
<thead>
<tr>
<th>Transportation User Information Systems</th>
<th>Regional transportation user information system</th>
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<tbody>
<tr>
<td></td>
<td>Regional transit user information system</td>
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<tr>
<td></td>
<td>Coordination with Valleywide/statewide information system</td>
</tr>
<tr>
<td>Regional ITS Configuration Management /Coordination/Planning</td>
<td>Valleywide/statewide communications linkages</td>
</tr>
<tr>
<td></td>
<td>Regional Configuration Management</td>
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<td></td>
<td>Common/Standard regional/county map</td>
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</tbody>
</table>

Table 7. Public Transit Strategies

<table>
<thead>
<tr>
<th>Modify bus routes &amp; service modification</th>
<th>Add new routes</th>
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<tbody>
<tr>
<td></td>
<td>Extend bus and feeder bus routes</td>
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<tr>
<td></td>
<td>Increase bus frequency</td>
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<td></td>
<td>Limit stop or express bus routes</td>
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<tr>
<td>Provide exclusive bus lanes</td>
<td></td>
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<tr>
<td>Construct bus shelters &amp; improve passenger amenities</td>
<td></td>
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<tr>
<td>Improve bicycle routes to transit facilities</td>
<td></td>
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<tr>
<td>Park &amp; Ride lots for transit &amp; rideshare</td>
<td></td>
</tr>
<tr>
<td>Provide information service for all transits</td>
<td>Build information center for all buses</td>
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</tbody>
</table>
Table 8. Travel Demand Management Strategies

<table>
<thead>
<tr>
<th>Ridesharing</th>
<th>Carpool</th>
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<tr>
<td></td>
<td>Vanpool</td>
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<tr>
<td>Telecommuting</td>
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<tr>
<td>Alternative Work Hours</td>
<td></td>
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<tr>
<td>Car sharing</td>
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</tbody>
</table>

Table 9. Bicycle & Pedestrian Strategies

<table>
<thead>
<tr>
<th>Provide walking infrastructure</th>
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<tbody>
<tr>
<td>Improve bicycle facilities at transit stations and other trip destinations</td>
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<tr>
<td>Improve safety of existing bicycle and pedestrian facilities</td>
</tr>
<tr>
<td>Provide biking infrastructure to eliminate existing gaps and expand and enhance the existing bicycle network</td>
</tr>
<tr>
<td>Link bicycle and pedestrian improvements to schools and retail developments</td>
</tr>
<tr>
<td>Road diet program</td>
</tr>
<tr>
<td>Bike share programs</td>
</tr>
</tbody>
</table>
Land Use Strategies

The following strategies, individually or in combination, reflect emerging and contemporary planning practices. These practices support sustainable developments that are appropriately-scaled for their environs and can provide transit-compatible densities or mixed land uses. These developments can lower traditional per capita energy demand and reduce distances traveled to work, goods and services and reduce the necessity and attractiveness of private automobile use. Further, when implemented by multiple agencies, these strategies can foster cooperative and sustainable regional policies.

The following strategies are independent of each other. A project that meets all the criteria of a strategy shall be considered supportive of the objectives of the Congestion Management Process.

1. Mixed-Use Development
   - Projects that provide a mix of land uses -- defined as the practice of allowing more than one type of use in a building or set of buildings -- or that complement existing land uses, and with residential uses within ¼ mile of other land uses.
   - Projects that provide pedestrian linkage among different land uses in the mixed use development.
   - Projects that provide a range of housing choices, 70% and above of which are planned for attached residential units.

Mixed-use development in this case does not include detached single-family development with stand-alone shopping centers, stand-alone hotels with residential space or stand-alone parking structures with ground floor retail.
2. **Infill and Redevelopment**

- Projects that are located in an existing urban area, defined here as served by urban services and within an existing incorporated boundary.

- Projects that are located on abandoned, passed-over or underutilized land within an existing urban area as defined above.

- Projects adjacent to and between currently developed areas.

3. **Transit-Oriented Development**

- Projects within a half mile of a transit stop or other COG-defined transit corridors.

- Projects that contain a mix of uses such as housing, jobs, shops, restaurants and entertainment.

- Projects that provide a range of housing choices.

- Projects that provide a strong sense of community and of place.

- Projects that increase “location efficiency” so people can walk, bike and take transit.

- Projects that encourage transit use and minimize traffic impacts.
III. Strategy Implementation

As shown in the Fresno County CMP components flowchart in Figure 1, adopted CMP strategies will be integrated and implemented through the Transportation Improvement Program (TIP) process.

In order to encourage jurisdictions to employ alternative strategies for managing congestion/mobility issues, a point system has been established in the competitive funding program in the TIP process to incentivize CMP projects that will address congestion issues. CMP projects are eligible for up to five points in the TIP scoring system. The point system takes into consideration reoccurring and non-reoccurring delays throughout the region. Recurring delays were analyzed on the National Highway System (NHS) using 2015 NPMRDS data provided by the FHWA. For roadways segments with excessive delays -- which are defined as having average travel speed at the peak hour of less than 35 miles per hour (mph) on freeways or less than 15 (mph) on arterials -- the CMP projects will be awarded two points; for segments with moderate delays, -- defined as having average travel speed at peak hour at 35-50 mph on freeways or 15-25 mph on arterials -- the CMP projects will receive one point. Figure 7 shows roadways with excessive and moderate delays.
The non-reoccurring congestion is typically caused by traffic accidents, and collisions are used as the proxy for the non-reoccurring delay analysis in this CMP update. Transportation Injury Mapping System (TIMS) data is used in the collision analysis. The TIMS data is based on the California Statewide Integrated Traffic Records System (SWITRS). The collisions are geocoded and mapped statewide with a consistent methodology. The TIMS is housed and maintained by the Safe Transportation Research and Education Center at University of California, Berkeley. The 2009-2013 TIMS data, which was the most recent data available, was applied in Fresno COG’s CMP update. CMP projects that address safety issues and fall on the segments that had the top 10th percentile in collision rates -- measured as number of collisions per 10,000 Average Daily
Traffic (ADT) -- will be awarded two points; CMP projects with safety components on locations that ranked among the top 25th percentile in total number of collisions over the analysis timeframe will receive one point. Projects that meet both of the criteria will receive the maximum two points. Figure 8 illustrates the distribution of locations that will receive safety-based points.

![Figure 8](image)

The delay/collision data and mapping analysis will be updated every other year so that the most up-to-date data will be provided to the project scoring process when a TIP call for projects is issued every other year. To encourage submittal of CMP project, the
Steering Committee also decided to grant one point to any CMP project regardless of the location.

CMP strategy implementation system details are documented with the TIP scoring process.

**IV. Strategy Assessment**

SAFETEA-LU and the subsequent MAP-21 and FAST Act require strategies to be periodically assessed to ensure their effectiveness, efficiency and consistency with the adopted performance measures. FHWA is expected to continue providing the historical NPMRDS data to the MPOs and it will be updated on the Congestion Monitoring Dashboard when it is available. Year-over-year comparisons of system performance can be analyzed on the Dashboard, which provides instant analysis results based on the performance measures.

An application will be developed in the Dashboard to analyze system performance using the final national performance measures. As discussed in the previous session, TIMS data will be updated every other year so that the most up-to-date information can be provided to the TIP process. In the meantime, collision data will be analyzed annually as part of the safety target update process. In addition, as required by the Transportation Performance Management process, system performance will be reported every four years by MPOs in the RTP updates for all the transportation performance measures, including system performance and congestion measures. Furthermore, the effectiveness of the CMP project funding mechanism can be evaluated by the number of CMP projects submitted and funded through the FTIP process. The continuous and consistent nature of this program has provided the region with a great tool to monitor changes of traffic conditions and system performance over time.
Chapter 8  Single Occupancy Vehicle (SOV) Projects Analysis

I. Legislative Requirements

SAFETEA-LU and its subsequent legislation, MAP-21 and the FAST Act, require that “in a TMA designated as a non-attainment area for ozone or carbon monoxide, federal funds may not be programmed for any project that will result in a significant increase in the carrying capacity for single occupancy vehicles (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.”

The legislation further requires that the congestion management process shall provide an appropriate analysis of all reasonable travel demand reduction and operational improvement strategies for the corridor in which a capacity increasing project is proposed. If the analysis demonstrates that travel demand reduction and operational improvement strategies are not able to meet the demand for additional capacity, then the SOV project is warranted. In the meantime, the CMP should identify feasible alternative strategies to manage the corridors efficiently.

Fresno County is designated as a non-attainment area for ozone and is required to develop an SOV project analysis process to ensure that capacity increasing SOV projects are vetted through the CMP before they are accepted into the planning process. Since the CMP Steering Committee decided to limit the CMP network to urban freeways, the SOV analysis will be applied to the SOV projects on the CMP network.
II. Methodology

Single Occupancy Vehicle (SOV) Project Analysis

1. Project Funding Request

2. Is the project in the current RTP?
   - Yes
   - No
   - On hold until RTP is amended
     - No

3. Is the project on the CMP network?
   - Yes
   - No
   - No SOV analysis needed

4. Is the project capacity increasing?
   - Yes
   - No
   - No SOV analysis needed

5. Is the project safety or bottleneck project?
   - Yes
   - No
   - Project request denied

6. Provide capacity justification

7. Is the capacity increasing project justified?
   - Yes
   - No
   - Capacity increasing project warranted
     - TDM & TSM identified to manage the facility

Figure 9
The SOV analysis starts with the RTP process as illustrated in Figure 9, when project funding request is initiated. If the project is not in the RTP (step 2), then it is put on hold until it is amended into the RTP. If the project is in the RTP, the project proceeds to the step 3, which determines whether the proposed project is on the CMP network. Any projects outside the CMP network are not subject to the analysis.

If the project falls on the CMP network, then it moves to step 4. At step 4, the project is tested whether it is capacity increasing, i.e. a single occupancy vehicle (SOV) project that will result in a significant increase in the carrying capacities for drive-alone auto trips. A SOV/capacity increasing project is “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” 23 CFR 450.322 (e). Auxiliary lanes are not considered capacity increasing considering they are built between interchanges to facilitate speed change, turning, weaving, truck climbing, maneuvering of entering and exiting traffic and other purposes supplemental to through-traffic movement.

Once determined to be a capacity increasing SOV project, it proceeds to step 5 to decide whether it is classified as safety or bottleneck removal. According to the CMP regulation, safety or bottleneck removal projects are exempt from the SOV analysis. A safety project is designed to address a hazardous roadway conditions or to reduce/prevent fatalities and serious injuries on the roadway system. Bottleneck removal projects address recurring localized congestion points where the number of lanes decreases at ramps and interchanges and where there are roadway alignment changes. Typical bottleneck removal projects include: restriping, adding travel lanes for a short section by reducing lane widths and converting shoulders, adding lanes to accommodate entering and exiting traffic, modifying ramps, etc. If the capacity project is not considered as safety or bottleneck removal project, then the sponsoring agency is required to provide analysis to prove that other operational improvements or travel demand reduction strategies can’t meet the demand for more capacity.
The capacity justification process begins with a density analysis of the freeway/roadway segment where the capacity project is proposed. Highway Capacity Manual (HCM) methodology is applied through which factors such as volume, ramp, auxiliary lanes, truck volume, enter/exiting volume and types of drivers are included. If the density analysis demonstrates that the roadway is congested and needs extra capacity, alternative strategies such as a parallel route study, ramp metering, carpooling (increased vehicle occupancy rates) are first studied. If such operational improvements or travel demand reduction strategies can meet the demand for extra capacity, then the project is rejected; however, if the analysis shows that the alternative strategies could not solve the congestion problem, the capacity project is justified and accepted into the RTP process. The sponsoring agency then identifies all the reasonable travel demand reduction and operational improvement strategies to manage the SOV facility.
Please contact Kristine Cai at kcai@fresnocog.org or Kai Han at khan@fresnocog.org if you have any questions regarding the Fresno County Congestion Management Process.