

Congestion Management Process

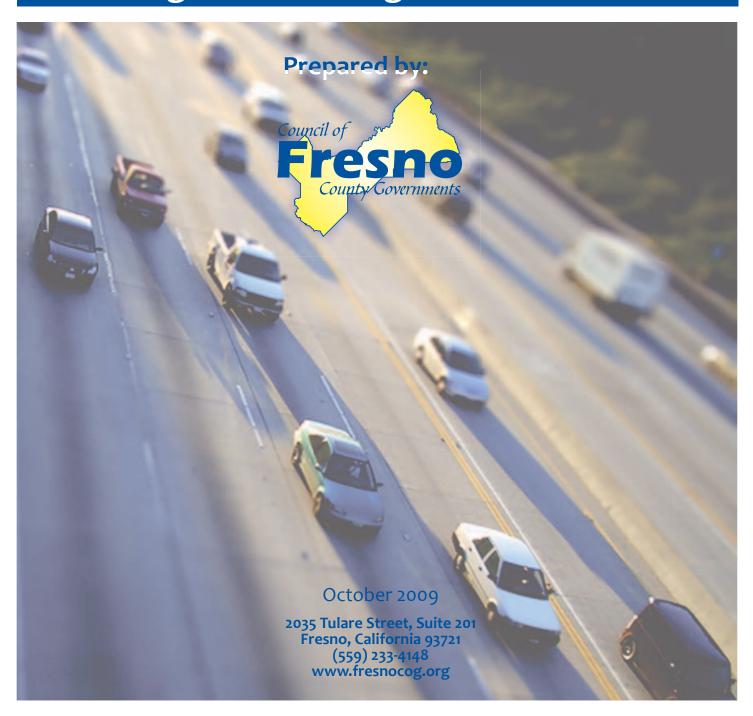
2009 Fresno County







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Council of Fresno County Governments October, 2009

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Chapter 1 Introduction

In June 1990, California voters approved legislation requiring that 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. CMS became Congestion Management Process (CMP) when the Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) was enacted in 2005. Fresno COG developed its first Congestion Management Program in November 1991, and it was updated subsequently based on legislative requirements. The passage of CA 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 The Fresno COG Policy Board rescinded the Congestion Management Program on September 25, 1997 at the request of the local member agencies.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 current Fresno County Congestion Management Process is designed to meet the federal requirement under 23 CFR 500.109 and 450.320.

The SAFETEA-LU mandates 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 requires that federal funds may not 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 based on 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 enhancing the mobility of persons and goods to levels that meet State and local needs. The congestion management process should include the 6 elements as specified in 23 CFR 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 was developed to fulfill the legislative requirement that CMP should be an integrated part of a Metropolitan Planning Organization (MPO)'s planning process. Based on the Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Process in Metropolitan Transportation Planning issued by the Federal Highway Administration (FHWA) in 2008, the Fresno County CMP is designed to be a systematic process with regional approaches, and its results are integrated and reflected in 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:

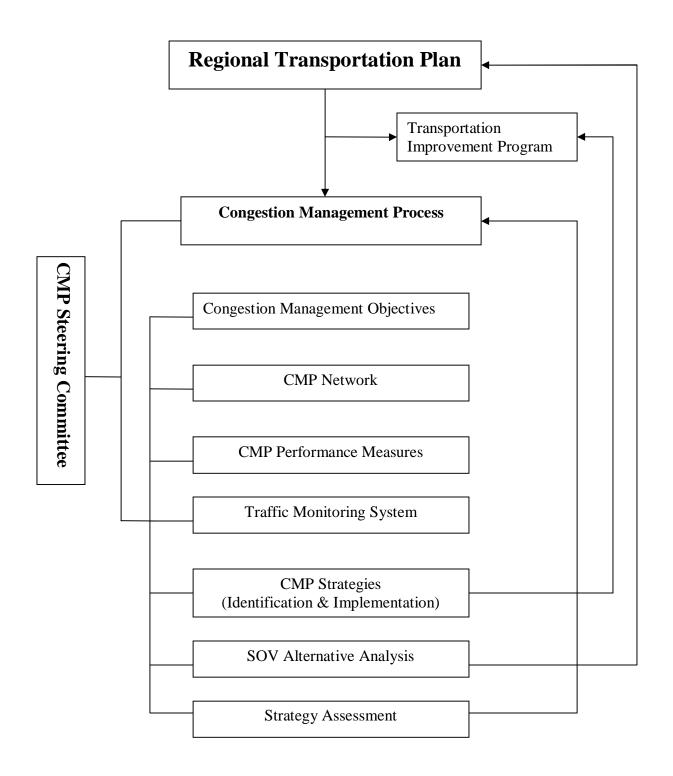


Figure 1

Chapter 2 CMP Steering Committee

Fresno County Congestion Management Process (CMP) Steering Committee was formed in January 2009 to oversee the development of the congestion management process in Fresno County. The CMP Steering Committee comprises a broad membership that includes stakeholders as well as members of the public who are interested in the process. The Steering Committee membership breaks down into the following groups:

- Land use planners
- Traffic engineers
- Transit operators
- Caltrans District 6 representatives
- Bike/Trail planners
- Vanpool/Carpool planners
- The public (Fresno Cycling Club & League of Women Voters)

Due to the fact that the current CMP is an integral component of COG's planning process, and will be implemented through its RTP and TIP programs, COG's programming staff has been involved throughout the entire CMP process to ensure successful integration of the CMP in the TIP/RTP process.

The CMP Steering Committee is instrumental in providing guidance on the establishment of CMP objectives, identification and selection of alternative strategies, SOV alternative analysis, and other CMP tasks that have been accomplished during the process. At the same time, the Congestion Management Process has also provided a forum for the members to discuss regional issues, such as sustainable development, congestion, integration of transportation and land use planning, sprawl, etc.

Chapter 3 CMP Objectives

The CMP is intended to be an integral part of the metropolitan planning process. Its objectives derive from and serve the goals of the Regional Transportation Plan.

The Fresno County Congestion Management Process Steering Committee adopted a set of objectives that were based on the goals set in Fresno COG's 2007 RTP. The adopted objectives also reflect the consensus among practitioners that although the Fresno region is far less as congested as some mega metro areas in the country, our system will be severely strained if auto-dependent growth is not managed sustainably. The objectives focus on operational improvement 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.

- Optimize the efficiency of existing transportation facilities with operational
 improvements, travel demand and Intelligent Transportation System strategies;
 promote alternative modes of transportation and travel demand reduction for
 future planned growth; and endorse the development of an integrated multi-modal
 transportation system that will encourage the efficient use of public transportation
 and other alternative modes of transportation in all of Fresno County.
- Promote the reduction of VMT by encouraging alternative modes of transportation, and supporting mixed use and transit oriented new development and the principles of the San Joaquin Valley Blueprint, which reduces VMT by preventing urban, suburban and rural sprawl.

• Improve public transportation, expand bikeway system, and promote the growth of other alternative transportation modes to facilitate the development of an integrated multi-modal transportation system in the Fresno region.

The fact that a land use element is included in the objectives shows that the region is dedicated to dealing with travel demand and travel reduction from different levels and perspectives, which led to the adoption of a series of land use strategies as part of the CMP Alternative Strategies developed later in the process.

Chapter 4 CMP Application Area and CMP Network

In Fresno County, congestion is of different magnitude in the metropolitan areas and the rest of the more rural county. Causes of congestion are also vastly different between these two areas. In addition, being one of the largest agricultural counties in the U.S., Fresno County supplies and transports its agricultural products through the transportation network mostly located in the rural county. The rural facilities ("rural" in this report refers to the non-metro area) are critical to Fresno County's economy and to its close to 30% of rural population. In order to provide a fair assessment of the transportation system in region, the CMP Steering Committee decided that traffic conditions should be studied countywide in the congestion management process.

However, due to limited resources, the facilities that were studied in this process are limited to Regionally Significant Roads that are "to maintain and improve access between cities, accommodate a high level-of-service access to and within the Fresno-Clovis Metro 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. Requests were made to the 15 cities and the Fresno County for proposed changes to the original Regionally Significant Road System which already includes all the state routes inside Fresno County. The updated Regionally Significant Road System became the CMP network. Figures 2 & 3 show the updated Regionally Significant Road System in the Fresno-Clovis Metropolitan Area and the rest of the County.

---Metro Area---Legend

Regionally Significant Road System

Figure 2

Regionally Significant Road System

--- Non-Metro Area ---

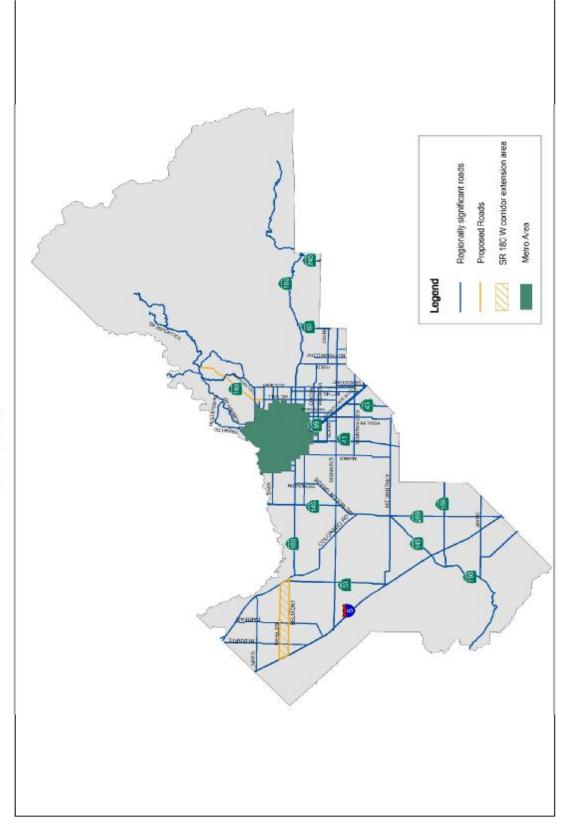


Figure 3

Chapter 5 Methodology

I. Performance Measures

There are numerous ways to measure the performance of the transportation system. The most commonly used measures are speed, travel time, Level of Service (LOS), volume-to-capacity ratio (V/C ratio), travel delay, etc. The major factors that the Fresno County CMP Steering Committee considered in selecting performance measure(s) for the CMP process are:

- Is the data needed for the measure readily available for existing conditions?
- Can the data needed for the measure be forecast into the future by Fresno COG's traffic model?
- Time of day factors: daily, peak hours (AM peak & PM peak), peak periods (AM peak period & PM peak period)
- Urban vs. rural
- System-wide, corridor level or segment

A survey was conducted on the availability of travel data among the jurisdictions in Fresno County. The result of the survey showed that, unlike traffic count data, travel time data are not regularly collected system-wide in this region. Although speed data have been taken at some corridors periodically for speed zone studies, such data have been free-flow speed. Congestion speed data is not readily available in the region for a system-wide study such as the CMP.

Based on the travel data availability survey, the CMP Steering Committee decided that, with the traffic counts data from Fresno COG's Traffic Monitoring Program, which will be discussed in detail in the next chapter, Level of Service (LOS) is the only measure that would be able to answer the above questions. Since LOS is count/volume based, it can be calculated for existing conditions using collected traffic count data, as well as future

conditions using the travel forecast model. In addition, as pointed out in the SAFETEA-LU legislation, LOS can vary by types of facilities, geographical location or even time of day, which addresses concerns among the Committee members regarding the difference between urban and rural areas. In Fresno County, the jurisdictions have adopted level of service in the general plan circulation elements. Such LOS is the minimum threshold that jurisdictions will strive for in designing and maintaining their street system. The City of Fresno and City of Clovis in the metropolitan areas set their standard at LOS D; the County and the remaining of the incorporated cities have their target at LOS C. The adopted LOS thresholds were applied by geographical area in the entire CMP process.

The LOS calculation in the CMP process is based on the latest Florida LOS Table for generalized planning analysis, which was developed based on the definition and methodology of the 2000 Highway Capacity Manual (2000HCM).

II. Traffic Model

Since the mid 1980's, Fresno COG has developed and maintained a state-of-the-art four-step travel demand forecast model. COG's model has been used in evaluating the traffic circulation system of the Fresno-Clovis metropolitan areas, as well as in the rural county areas. It has also been utilized in many corridor studies, general plan circulation element analysis, and numerous traffic impact studies.

Fresno COG's traffic model covers the entire county area, which is divided into 1575 traffic analysis zones. The model roadway network includes over 6,800 nodes and over 17,000 links. Link types include freeway, freeway ramps, other state routes, expressway, arterial, collector, and local collector. The model estimates travel demand and traffic volume for the AM peak hour, PM peak hour, AM 3-hour peak period, PM 3-hour peak period and daily forecast. The model contains a mode split component that replicates major transit services in Fresno County, including Fresno Area Express (FAX), Clovis

Transit Stageline and Fresno County Rural Transit Agency. The mode choice model is a multinomial logic model, and has the following six modes:

- Drive alone
- 2-person vehicle
- 3+ person vehicle
- Walk to Transit
- Drive to Transit
- Walk/Bike

In the CMP process, COG's model was used to forecast the demand in 2030 scenarios with and without projects from the 2007 RTP. It was also used to estimate the demand with benefits of approved CMP alternative strategies, which is discussed in detail in the last chapter of this report.

Chapter 6 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 some agencies. The traffic count data collected through the Program is often the basis on which decisions are made regarding short and long-range transportation planning issues by local, regional and state agencies. As an input to COG's traffic model, the traffic data is used to document the region's current mobility conditions, and also to forecast the future infrastructure needs. The Fresno COG Traffic Monitoring Program provides a traffic count database that serves as the basis of COG's traffic model validation and calibration efforts.

Fresno COG publishes the traffic data collected through the count program in the Regional Traffic Monitoring Report, which has been one of the most widely used documents produced by Fresno COG. In addition to the extensive uses by public agencies, the data have also been well received by the private sectors in conducting traffic analysis, determining business locations, etc.

Figures 4 and 5 show the location of existing count stations in comparison to the adopted CMP network. Since the count system was developed in the 1980's, it does not provide sufficient count coverage for the entire updated Regionally Significant Road System. In order to monitor the CMP network system performance over time, requests for more count locations on the CMP network are being developed and will be sent to the responsible jurisdictions. As part of the ongoing CMP efforts, count location coverage will be evaluated each time the CMP network is updated.

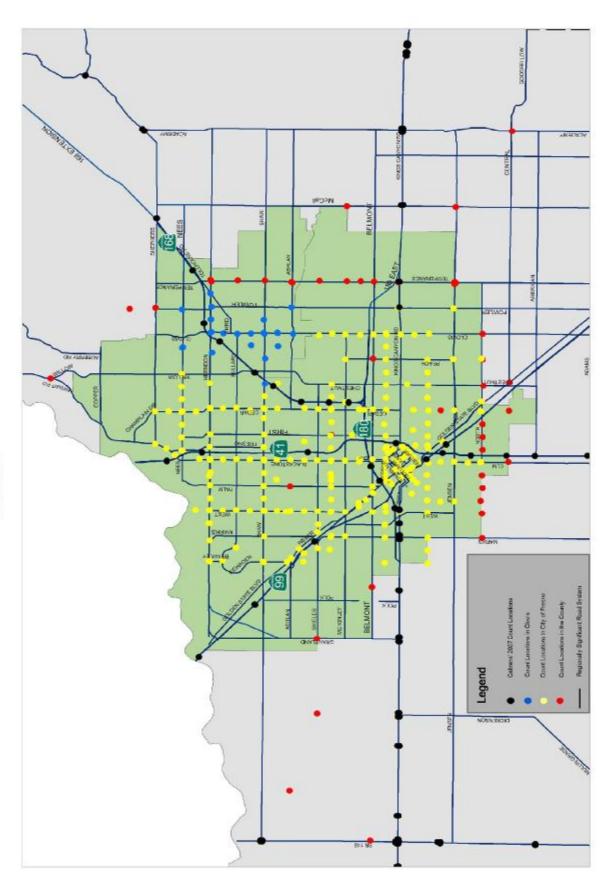


Figure 4

Existing Count Locations

--- Non-Metro Area ---

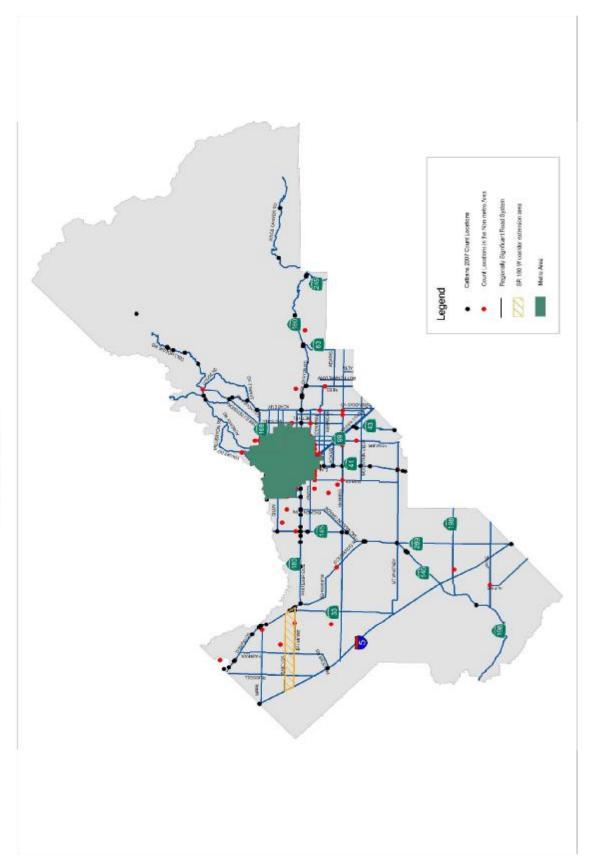


Figure 5

Chapter 7 Existing and Future System Conditions

Based on the performance measures established in Chapter 5, this section presents the analysis of the conditions of the adopted CMP network for base year 2007 and the horizon year 2030 of the 2007 RTP.

I. Existing Conditions

For the base year 2007, counts from Fresno COG's Traffic Monitoring Program and Caltrans District 6 were used to calculate the LOS at PM peak hour on the CMP network. The results shown in figures 6 & 7 confirmed the common notion about congestion in Fresno: there are some sporadic bottleneck areas at rush hours, but travelers do not experience system wide or corridor level congestion in the region. Based on the available 2007 counts on the CMP network, Tables 1 and 2 list the locations where LOS was higher than the acceptable threshold in 2007:

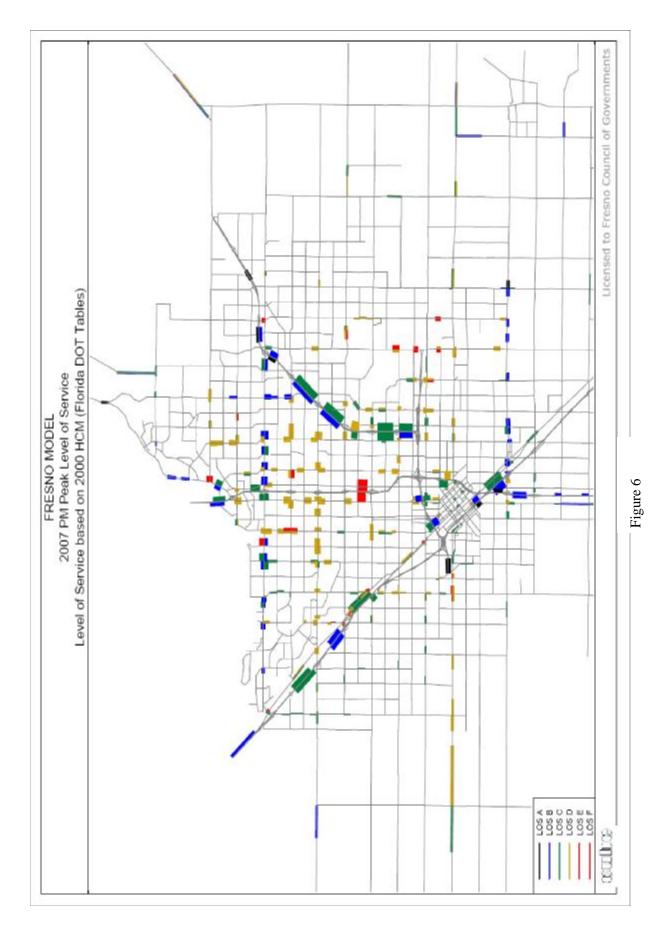
Table 1. Existing Congestion locations in the Metro Area

Street Name	Location	Direction	LOS
Shepherd	E/O Friant	Both	Е
Palm	N/O Alluvial	Both	Е
Herndon	E/O Fruit	WB	F
Herndon	E/O Golden State	EB	F
Nees	W/O Blackstone	EB	Е
Palm	N/O, & S/O Bullard	NB	Е
Bullard	W/O First	EB	F
Nees	W/O Chestnut	EB	F
Brawley	S/O Gettysburg	NB	E
SR 41	S/O Dakota	NB	F

SR 41	S/O Dakota	SB	Е
Golden State	N/O Ashlan	Both	E/F
Weber	E/O Marty	EB	Е
Weber	E/O Marks	EB	F
Fowler	N/O Herndon	Both	E/F
Fowler	N/O Tulare	Both	F
Ashlan	E/O Sunnyside	EB	Е
Clovis	N/O McKinley	NB	F
Clovis	N/O Tulare	SB	Е
Clovis	S/O Olive	Both	Е
Peach	S/O Belmont	S/B	Е
Whitesbridge	E/O Hughes	WB	Е
Whitesbridge	E/O & W/O Marks	WB	Е
SR 41	N/O Mt. Whitney	NB	Е
SR 41	N/O Kings County line	NB	Е

Table 2. Existing Congestion Locations in the Non-Metro area:

Street Name	Location	Direction	LOS
Mountain View	W/O Tulare county line	EB	D
Tollhouse	N/O Academy	NB	D
Ashlan	W/O McCall	EB	D



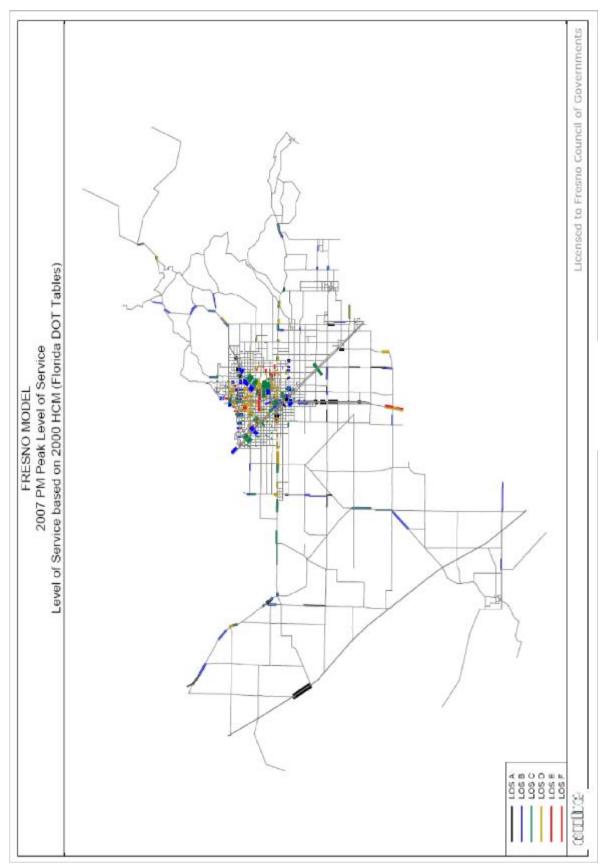


Figure 7

II. 2030 Forecast

Although there is not much congestion currently in the Fresno region, the system is forecast to be severely congested even with the planned projects in the 2007 RTP. Fresno COG's 4-step model was used in forecasting the performance of the future transportation system. It was assumed that the current level of transit ridership would continue into 2030 and general plan land use was applied in the forecast. Figures 8 and 9 show the projected performance of the CMP network by LOS. Table 3 and 4 list the corridors that are projected to exceed their acceptable LOS.

Table 3. Congestion Corridors in the Metro Area at LOS E or F in 2030

Corridor Name	From	То	Direction
Willow	Friant	Copper	Both
	Herndon	Barstow	NB
	Bullard	Barstow	SB
	Shaw	Ashlan	Both
Friant	Shepherd	SR 41	Both
Shepherd	Friant	Perrin	EB
	Cedar	Maple	EB
Nees	Ingram	Cedar	Both
	Cedar	Maple	EB
Herndon	Polk	Cedar	Both
	Cedar	Willow	EB
	Peach	Clovis	Both
Figarden	Gates	Brawley	Both
Bullard	Figarden	Cedar	Both
	Cedar	Willow	EB
	Willow	SR 168	Both
Shaw	Polk	Blythe	ЕВ

	Feland	SR 168	Both
	SR 168	Clovis	EB
Shields	West	SR 168	Both
Ashlan	Minnewawa	Sunnyside	Both
McKinley	Palm	Millbrook	Both
	Peach	Clovis	Both
Marks	Belmont	Whitesbridge	NB
	Barstow	Emerson	Both
West	Shaw	McKinley	Both
Palm	Alluvial	McKinley	Both
Blackstone	Minarets	Herndon	Both
	Bullard	McKinley	Both
SR 41	Madera County line	SR 99	Both
Fresno	Alluvial	Herndon	Both
	Bullard	Shaw	Both
First	Alluvial	Clinton	Both
Cedar	Herndon	Olive	Both
Chestnut	Ashlan	Shields	Both
Clovis	Gettysburg	McKinley	NB
Fowler	Alluvial	Herndon	Both
	Ashlan	Dakota	NB
SR 99	Veterans Boulevard	SR 180	Both
	Jensen	Central	Both
Weber	West	Belmont	NB
	Clinton	McKinley	Both
H Street	SR 180	Inyo	both
Tulare	H Street	O Street	WB
	O Street	R Street	Both
Divisadero	H Street	Fulton	Both
Ventura	SR 99	Broadway	Both
SR 180	SR 99	Clovis	Both

Hughes	Olive	Nielson	NB
Jensen	SR 99	Cedar	Both
	Maple	Fowler	EB
North	SR 99	Golden State	Both
	Chestnut	Temperance	Both
Central	Golden State	Temperance	EB

Table 4. Congestion Corridors in Non-metro areas at LOS D, E or F in 2030

Corridor	From	То	Direction
Auberry	Copper	Millerton	Both
Tollhouse	Academy	Millerton	Both
	McCall	Shepherd	Both
McCall	Shields	Jefferson	Both
	Adams	Manning	Both
Bethel	9 th	Central	Both
	SR 180	Jensen	NB
Central	Temperance	Goodfellow	Both
Academy	Herndon	Shaw	Both
SR 201	SR 99	Tulare County line	Both
SR 180	Reed	SR 63	Both
Reed	Goodfellow	South	Both
	North	Dinuba	Both
SR 43	Nebraska	Mt. Whitney	Both
Fowler	SR 99	Mt. Whitney	SB
Jensen	Dickenson	Marks	Both
SR 180	Brawley	SR 33	Both
SR 33	SR 180	Merced County line	Both
Belmont	SR 33	Douglas	WB
Nees	SR 33	Jerrold	WB

SR 145	Madera County line	SR 180	Both
	Jensen	American	Both
	McMullin G	Mt. Whitney	Both
SR 269	Mt. Whitney	SR 198	SB
	SR 198	Jayne	Both
Dickenson	Jensen	American	Both
McMullin G	Dickenson	SR 145	SB
SR 198	SR 269	I-5	Both

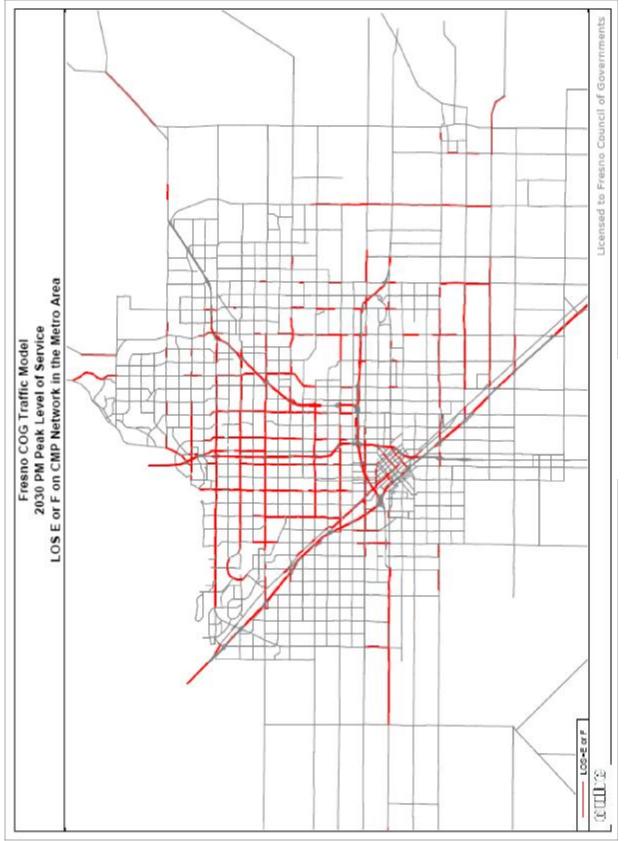


Figure 8

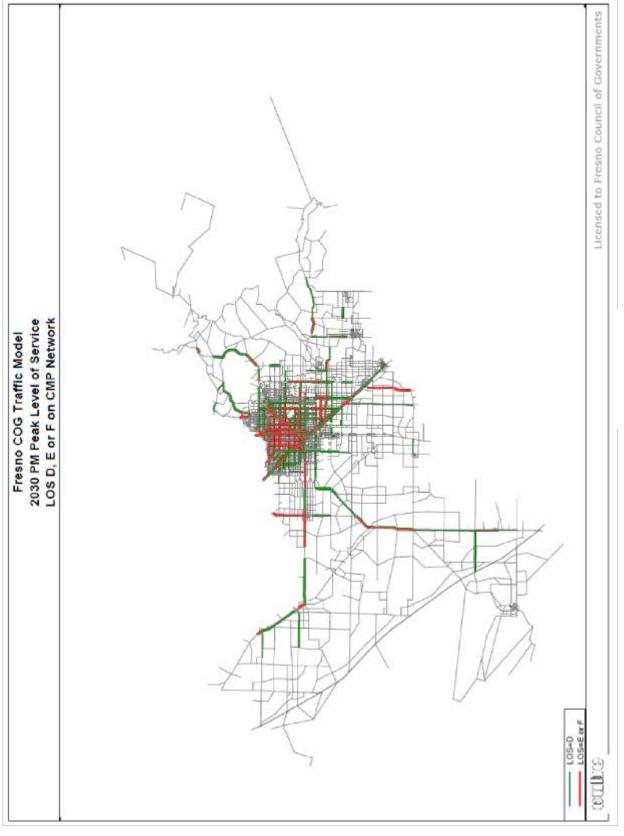


Figure 9

Chapter 8 CMP Strategies

SAFETEA-LU legislation requires 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 by themselves in Fresno County, the CMP process evaluated existing as well as potential alternative strategies, and selected strategies that are considered appropriate and feasible for the Fresno region. This chapter first provides an overview of existing CMP programs in Fresno County, and then 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 programs are designed to reduce automobile usage by changing traveling behavior and encouraging the use of alternative transportation modes other than single occupant vehicles. TDMs reduce the demand on the existing systems, and improve system efficiency, and thus the need for capacity improvement is delayed.

Fresno COG's TDM has been predominately focused on promotion of 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 over 1,200 employer worksites, and provided varieties of service/information in the 4 county regions. Valleyrides partnered with California State University Fresno's Parking & Transportation Department and developed an online ridematching database which has been in operation since 2003.

In 2006, Fresno County voters passed the Measure "C" Extension, a half cent sales tax measure. The Measure programs 0.6% of Measure "C" money to fund carpool and vanpool subsidy programs originating within Fresno County. Starting July 1, 2008, there have been 26 Measure "C" sponsored vans running on the streets; 646 people were awarded vouchers under the Farm-worker Vanpool program, and 243 vouchers were redeemed. The Measure "C" Carpool Incentive Program was officially launched on July 1, 2009. A massive outreach campaign, including road shows, radio, television, and newspaper and web ads, is being conducted and huge public interest in the carpool program has been experienced.

Public Transit

Fresno Area Express (FAX) is the transit service provider in the urban Fresno-Clovis Metropolitan Area (FCMA). 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. During the 10 year period from 1996 to 2006, total ridership has risen from 9.1 million in 1996 to 11.6 million in 2006.

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. In the two fiscal years before 2007, Stageline had experienced 44% increase in ridership and Roundup had increased by 21%.

The rural area in 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) was formed in 1979 by a joint powers agreement to address transit needs in the rural incorporated cities in Fresno County; the FCRTA and the Fresno County Economic Opportunities Commission (FCEOC) are designated as the Rural Consolidated Transportation Service Agency.

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% of the funding (\$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 Improvement & ITS

It has been one of Fresno COG's top priorities to maintain and optimize the existing street and road system. Special emphasis has been given to traffic signal improvement and operational improvements. Numerous such projects have been funded by Fresno COG to optimize the operation of the existing system. The cities of Fresno and Clovis, as well as Fresno County, have been deploying enhanced signal and traffic management capability 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:

- Ramp metering & communication gap closure
 Deployment of additional ramp metering and freeway management capabilities within the region, including an interim solution for the Caltrans Automated
 Traffic Management Systems (ATMS) software
- Multi-jurisdictional interconnects
 Deployment of the communications and enhanced signal systems necessary to further improve inter-jurisdictional signal coordination
- Integrated Smart Corridors

Deployment of enhanced surveillance and management systems along SR 41/168/180 to better manage traffic conditions and incidents

A mutually beneficial shared fiber network agreement was reached between Caltrans District 6 and the City of Fresno in providing fiber connectivity to the SR 41 ramps through the Blackstone corridor segment of the fiber network. 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, which were identified as the priority projects in Fresno County by the San Joaquin Valley Regional ITS Plan. The Champion agencies identified in the Fresno County ITS Strategic Deployment Plan such as City of Fresno has since developed their individual ITS plan to implement specific projects within their jurisdiction. Such ITS projects have been identified and mapped in the cities' plans, and funding has been aggressively pursued at the federal, state as well as local levels.

Land use/Growth Management

Segregated land uses, sprawling, and low density suburban development have been significant contributors to the automobile dependency in American families. Both land use and transportation planners have realized that congestion needs to be addressed at where traveling is generated. Mixed uses, compact development and transit oriented development are the neo-traditional land use patterns that have proved to encourage transit usage, walking, biking, and other alternative modes of transportation, which ultimately reduce vehicle miles traveled, and thus relieve congestion on the transportation system. Such land use/growth management strategies have been actively explored in the Fresno area as part of ongoing efforts to build sustainable communities.

Fresno County has been actively involved in the San Joaquin Valley Blueprint planning efforts since 2006. The Fresno COG's Blueprint Roundtable and its Policy Board adopted a preferred local scenario with features such as transit oriented development, urban

centers, high intensity transit corridors, mixed uses, etc. The preferred local scenario has a density of 8 housing units per acre compared to the existing 3.8 units per acre. This locally selected scenario was chosen as part of the Valley-wide preferred scenario by the San Joaquin Valley Policy Council in April 2009. The Valley-wide preferred scenario, which was stitched together with the 8 valley counties' locally selected scenarios, has an average density of 6.8 units/acre. With the passage of SB375, the Blueprint preferred scenario could serve as a starting point for development of the "sustainable community strategy". Sustainable communities would produce much less travel than the traditional suburban development pattern, and thus help communities reach the goal of greenhouse gas emission reduction.

The City of Fresno's South East Growth Area Specific Plan, which has been incorporated as part of the Fresno County Blueprint preferred scenario, is a plan designed with average density of 20 housing units per acre, and with communities that are walkable, bikable and transit friendly. Other smart growth development planned in the Fresno region includes the Loma Vista Community, activity centers in the city of Fresno, etc.

The multi-million dollar Fresno County Public Transportation Infrastructure Study (PTIS) assesses the future of public transit in Fresno County in combination with land use planning. The study will identify potential high capacity transit corridors for Bus Rapid Transit (BRT), Light Rail, streetcars, etc. in the Fresno region. In addition, it would model different land use scenarios and identify transit-supportive land use typologies along the transit corridors, and recommend land use planning guidelines for implementation of transit-friendly development strategies.

II. Adopted CMP Alternative Strategies

Based on the adopted CMP objectives, the CMP Steering Committee endorsed a list of alternative strategies that the jurisdictions in Fresno County are encouraged to use to deal with congestion reduction, mobility and growth management issues beyond the traditional way of widening the roadways. The adopted CMP 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

		Equipment update & maintenance
		Timing Plan Improvement
		Interconnected & synchronized
Intersection Operational	Existing Traffic Signals	signals
Improvement		Transit Signal Priority
	Other Traffic Control	Roundabouts
		Traffic Signal Removal
	Re-striping	
	Installation of turning lanes	
Geometric changes and bottleneck alleviation	Adding lanes (bottleneck	
bottleneck uneviation	removal only)	
	Realignment of	
	intersecting streets	
	Left turn restrictions; curb cut and driveway restrictions	
Arterial Access management	Reduce conflict points	
9	Eliminate parking	
	Consolidate access points	

Table 6. Intelligent Transportation System Strategies

	Ramp metering and communication Gap Closure			
	Multi-jurisdictional interconnects			
	Integrated Smart Corridors (SR41/168/180)			
	Railroad/highway interface technology for			
Traffic/Freeway Management	railroad crossing			
Systems	Communications interties			
	Integrated Surveillance stations/callbox			
	deployment			
	Regional Intersection Safety and enhancement			
	program			
	Weather Sensing/ATMS integration			
	weather sensing/ATMS integration			
	Variable speed system/smart or intelligent			
	roadway studs			
	Remote surveillance and incident scene			
Incident Management/Emergency	management			
Services	Computer Aided Dispatch Integration			
	Integration of Communications channels			
	Incident Management/Response Coordination			
	Task force			
	Form a Regional Transit District			
	Transit Operations/Dispatch centers integration			
Tuongit System	Transit Information System			
Transit System	Transit Management System			
	Completion/Expansion			
	Implement Regional Farebox System			

Intelligent Transportation System Strategies –continued

	Regional transportation user information
	system
Transportation User Information Systems	Regional transit user information system
Systems	Coordination with Valleywide/statewide
	information system
Regional ITS Configuration	Valleywide/statewide communications
Management /Coordination/Planning	linkages
	Regional Configuration Management
	Common/Standard regional/county map

Table 7. Public Transit Strategies

Modify bus routes & service modification	Add new routes Extend bus and feeder bus routes Increase bus frequency Limit stop or express bus routes
Provide exclusive bus lanes	
Construct bus shelters & improve passenger amenities	
Improve bicycle routes to transit facilities	
Park & Ride lots for transit & rideshare	

Table 8. Travel Demand Management Strategies

Didasharina	Carpool
Ridesharing	Vanpool
Telecommuting	
Alternative Work Hours	

Table 9. Bicycle & Pedestrian Strategies

Provide walking infrastructure such as sidewalks and crosswalks
Improve bicycle facilities at transit stations and other trip destinations
Improve safety of existing bicycle and pedestrian facilities
Provide biking infrastructure to eliminate existing gaps and expand and enhance
the existing bicycle network
Link bicycle and pedestrian improvements to schools and retail developments

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 complement existing land uses, and with residential uses within ¼ mile of other land uses.
- Projects that provide pedestrian linkage between 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 hotel with residential 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 currently 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 that are adjacent to and between currently developed areas.

3. Transit-Oriented Development

- Projects within a half mile of a major transit stop or other COG-defined major transit corridors (such as a BRT line).
- Projects that contain a mix of uses such as housing, jobs, shops, restaurants and entertainment.
- Projects that provide a range of housing choices, with average density of 15 units per acre and above.
- 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 impacts of traffic

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 Improvements Program (TIP) process.

In order to encourage the jurisdictions to consider alternative strategies for managing congestions/mobility issues, a point system is set up in the competitive funding program in the TIP process to provide incentives for members to submit CMP projects. The CMP projects are then scored based on how well such projects meet the objectives established for the congestion management process. The CMP strategy implementation system is an iterative process. An analysis will be conducted to evaluate the effectiveness of the point system after projects are submitted from member agencies. The number of CMP projects submitted when the CMP implementation system is in place will be compared to the number before the system is in place; the amount of funding CMP projects receive will also be analyzed before and after the CMP implementation system. Based on the result of the analysis, the point system will be adjusted to ensure that CMP projects are given point preferences so that member agencies are encouraged to submit CMP projects over capacity increasing projects.

The details of the CMP strategy implementation system are documented with the TIP scoring process in the TIP documentation.

The implementation of land use strategies through the congestion management process is one of COG's first endeavors in its support of materializing the smart growth efforts in Fresno County. Infrastructure projects, including capacity increasing projects, in the developments that meet the criteria of CMP land use strategies, will be eligible for CMP credits in the TIP project selection process. The capacity increasing projects in such developments are considered to bring more benefits of travel reduction than inducing single occupancy driving because of the nature of the entire development.

As smart growth efforts evolve in Fresno County, the CMP Steering Committee is committed to revisiting the CMP strategies, especially the land use strategies, on an asneeded-basis. The land use strategies should be revised to support "Sustainable Community Strategies" or "Alternative Planning Strategies" when the SB 375 targets are set, and communities are provided with clearer goals to achieve in terms of greenhouse gas reduction. The \$3 million Fresno County Public Infrastructure Study will identify potential high-capacity transit corridors and supportive land use typology along the corridors when concluded. If the communities in Fresno County reach consensus on investing resources on the recommended corridors, CMP strategies should be reviewed and the identified transit corridor(s) and transit supportive land uses shall be incorporated in the strategies.

As discussed in the earlier chapters, since there is little congestion currently in Fresno County, the efforts of Fresno County congestion management are focused on optimizing existing and planned infrastructure and reducing travel in the future. Therefore, every jurisdiction should be involved in striving to achieve such objectives. The Fresno County CMP Steering Committee decided that the CMP program should be applied countywide, either urban or rural. The CMP strategy implementation credit is not limited to corridors or jurisdictions that have or will have congestion problems. The credit is available to any projects that will help the region achieve the CMP objectives as one community.

IV. Strategy Assessment

The SAFETEA-LU legislation requires periodic assessment of the effectiveness and efficiency of the implemented strategies in term of adopted performance measures. Such evaluation will be conducted every 4 years when the CMP is updated. As mentioned in chapter 6, Fresno COG's Traffic Monitoring Program collects traffic counts every other year, and such counts will be used to analyze the system performance over time after the CMP strategies are implemented. The continuous and consistent nature of this program has provided the public as well as the private sector with a great tool to monitor changes

of traffic conditions over time. The effectiveness and efficiency of the CMP strategies can thus be evaluated and monitored at the locations/corridors where such strategies are implemented.

Chapter 9 Single Occupancy Vehicle (SOV) Projects Analysis

I. Legislative Requirements

The SAFETEA-LU legislation mandates 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 SOVs, (i.e., a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvement 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 SOV project is warranted, then the CMP should identify the strategies to manage the corridors efficiently.

Fresno County is designated as a non-attainment area for ozone. The Fresno County CMP includes a process to analyze the capacity increasing projects from the 2007 RTP on the identified CMP network. In the analysis, reasonable CMP strategies were applied to the project corridors and analysis was conducted to determine whether the alternative strategies can meet the demand for capacity without widening roadways.

II. Methodology

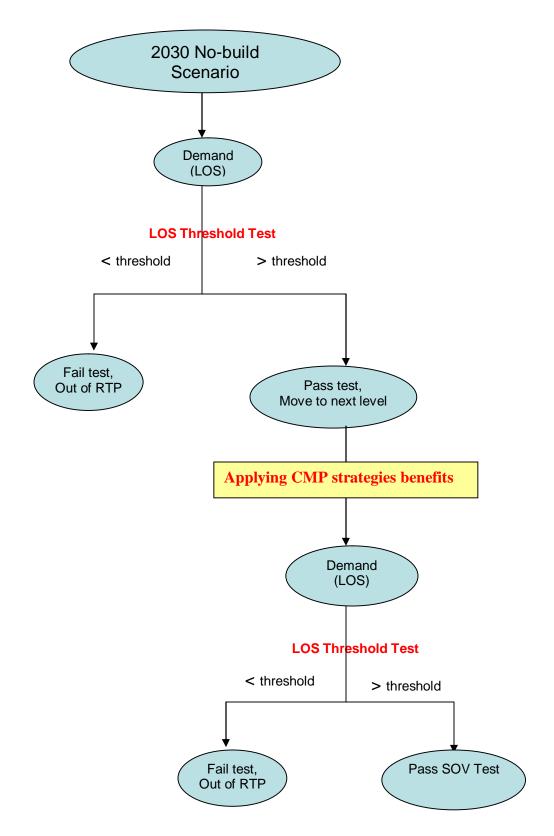
The SOV alternative analysis was conducted using Fresno COG's 4-step traffic model. Sources of information include ITS Deployment Analysis System (IDAS), a software developed by the Federal Highway Administration (FHWA) that can be used in planning for ITS projects, and the Caltrans 2001 Household Travel Survey. Projects subject to this analysis are financially constrained capacity increasing projects in the 2007 RTP that are on the identified CMP network. The analysis was conducted largely at corridor level rather than at individual project locations because the forecast congestion in 2030 as shown in figure 8 is corridor and system-wide and most of the alternative strategies would only be implementable in corridors and system-wide.

Level of Service as adopted by the local jurisdictions is again used as thresholds in measuring the demand for capacity. The Fresno-Clovis Metro area has adopted a threshold of LOS D as the target for their system performance, while the rest of the county has LOS C. ITS, public transit, travel demand management as well as bike/pedestrian strategies were tested in the SOV analysis. Different levels of ITS (traffic signal synchronization/improvement) were applied in future ITS corridors in the Metro area as well as in the small urban communities. Public transit, travel demand management and bike/pedestrian strategies were applied system wide.

Although the direct output from the travel forecast model was used in the analysis, model performance was checked on the project corridor location by comparing the forecast volume in the base year (2007) and the collected counts on the location. Where the model was found to perform unsatisfactorily, the incremental method was used to adjust the 2030 forecast volume.

The following flowchart illustrates how the SOV analysis was conducted in the Fresno County CMP process:

Figure 10 Fresno County CMP SOV Alternative Analysis



There are 2 levels of tests in the SOV project analysis.

The first test is designed to screen out projects that are not warranted for additional capacity. It starts with a 2030 no-build scenario, which assumes no capacity increasing projects are constructed by 2030. The 2030 general plan growth assumptions were applied in the no-build scenario. LOS analysis is then performed to look at the demand and congestion conditions at no-build scenario. LOS is calculated at the corridor level for the RTP capacity projects that are subject to the SOV analysis. If the project is located in the Metro area, and the corridor LOS at no-build scenario exceeds LOS D, the project location is considered to be in need of capacity expansion. Such projects can then proceed to the next test. If the project corridor in the Metro area shows LOS C or lower, it is considered to not have enough demand for capacity at the location. Therefore the project fails the CMP SOV test, and should not be included in the RTP. The same applies to projects in the non-metro area, except that LOS at the project corridor needs to be higher than C in order to proceed to the second level test.

The second test is designed as required by the CMP legislation to determine whether the CMP strategies can meet the demand for additional capacity at the project corridor with construction project. If yes, CMP alternative strategies should be implemented; if no, viable CMP strategies should also be implemented along with the construction project so that the corridor can be managed more efficiently. After the first screening test, ITS, public transit, travel demand management and bike/pedestrian strategies are applied to the 2030 no-build scenario. The combined benefits of such alternative strategies were reflected in the network. LOS analysis is then performed again. The threshold test is applied to qualifying project in the Metro and non-Metro areas. After the application of the benefits of the alternative strategies, if the project corridor LOS in the Metro area still exceeds LOS D, the project is justified; if not, the project fails the test, and can not be included in the RTP. The same applies to projects in the non-Metro area.

The SOV projects analysis described above applies only to the local SOV projects. Although all the state routes in Fresno County are included in the Fresno County CMP network, the capacity projects on state routes have already gone through the State Department of Transportation (Caltrans) typical route adoption process before a capacity increasing highway project is constructed. The Project Study Report (PSR) and the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) are the first two components of the process. The PSR is conducted to define the scope and identify alternative corridors. Then, as part of CEQA/NEPA requirement, alternative analysis is conducted in the environmental document in the EIR/EIS process. Alternatives such as high occupancy vehicle (HOV) lanes, ramp metering, mass transit, ridesharing, signal progression, etc. are analyzed at this point. Should the alternatives alone or in combination not meet the purpose and need identified for the capacity project, some of the viable alternatives are recommended to be implemented along with the construction of the capacity increasing project. The development of a Corridor System Management Plan (CSMP) on some state highway corridors, such as SR 99 in the Fresno region, emphasizes the importance of maintaining the mobility gains from the capacity increasing project by identifying the best mix of strategies to manage the corridor and optimize the corridor performance. Fresno COG has signed a Memorandum of Understanding (MOU) with Caltrans District 6, committing to manage the SR 99 corridor through applying the principle and practice of system and corridor management for sustained corridor performance. The SOV analysis for capacity expansion projects on state routes will be demonstrated in this report with environmental reports/studies completed for such projects.

III. Analysis Results

Table 10 Capacity Increasing Projects subject to CMP SOV Analysis – Metro Area (Adopted threshold: LOS D)

Project Corridor	From	То	Alternatives	PM Peak LOS	PM Peak LOS	Did the project
			routes for future	(no-built)	(no-built, with	pass the test?
			projects		benefits of CMP	
					strategies)	
Herndon	Marks	SR 99		F/F	F/F	Yes
	Cedar	McCall		F/F	F/F	Yes
Grantland	Herndon	Belmont		E/E	E/E	Yes
Veterans	South Shaw	Herndon	Grantland	E/E	E/E	Yes
Boulevard			Shaw	F/F	F/F	Yes
Shaw	Garfield	Brawley		F/F	F/F	Yes
	Armstrong	McCall		F/F	F/F	Yes
Ashlan	Grantland	SR 99		F/E	E/E	Yes
	Fowler	Del Rey		F/F	F/F	Yes
Shields	Grantland	SR 99		E/F	E/F	Yes
McKinley	Grantland	SR 99		F/E	F/E	Yes
Belmont	Grantland	Marks		F/F	F/F	Yes
Whitesbridge	Brawley	Hughes		F/F	F/E	Yes

Brawley	Herndon	FigGarden	F/F	F/F	Yes
	Shaw	SR 99	F/F	F/F	Yes
Polk	Shaw	Olive	E/E	E/E	Yes
Marks	SR 99	North	F/F	E/E	Yes
Hughes	McKinley	SR 180	F/F	F/F	Yes
Cedar	SR 180	Belmont	D/F	D/F	Yes
West	SR 180	Jensen	E/F	D/F	Yes
Golden State	Herndon	Belmont	F/F	F/F	Yes
Bullard	Blackstone	First	F/F	F/F	Yes
Friant	Shepherd	Willow	E/E	E/E	Yes
Copper	Friant	Auberry	E/F	E/F	Yes
Shepherd	Cedar	SR 168	E/E	E/E	Yes
Nees	Maple	SR 168	F/F	F/F	Yes
Willow	Copper	Herndon	F/F	F/F	Yes
Fowler	Shepherd	Alluvial	F/F	F/F	Yes
	Ashlan	Jensen	F/F	E/F	Yes
Temperance	Shepherd	Jensen	F/F	F/F	Yes
Clovis	Shields	Kings Canyon	F/E	F/E	Yes
	Teague	Nees	E/F	D/E	Yes
Peach	Belmont	Jensen	F/F	F/F	Yes

Kings Canyon	SR 41	SR 180	F/F	F/F	Yes
Jensen	Marks	McCall	F/F	F/F	Yes
Elm	North	Central	D/D	D/D	No
North	SR 99	Chestnut	F/F	F/F	Yes
	Elm	SR 41	F/F	F/F	Yes
Tollhouse	SR 168	McCall	F/F	E/F	Yes
	Third	Herndon	D/E	D/E	Yes

Table 11 Capacity Increasing Projects subject to CMP SOV Analysis – Non-metro Area (Adopted threshold: LOS C)

Project Corridor	From	То	Alternatives	PM Peak LOS	PM Peak LOS	Did the
			routes for	(no-built)	(no-built, with	project pass
			future projects		benefits of CMP	the test?
					strategies)	
Friant	Willow	North Fork		F/F	E/E	Yes
Academy	Kings Canyon	Manning		E/F	E/D	Yes
Reed	South	Tulare County Line		E/F	E/F	Yes
Mendocino	Mountain View	Tulare County Line		B/E	B/D	Yes
Academy	Mountain View	SR 99	Academy	E/D	E/D	Yes
Parkway			SR 201	F/F	E/E	Yes
Mountain View	Bethel	Tulare County Line		D/D	D/D	Yes
Manning	Reed	Alta		E/E	E/E	Yes
Buttonwillow	Parlier	Huntsman		E/E	E/D	Yes
Whitesbridge	James	Yuba		E/D	E/D	Yes
McCall	Herndon	Dakota		F/F	E/F	Yes
Tollhouse	Shepherd	Academy		C/D	C/D	Yes

Table 11 Capacity Increasing Projects subject to CMP SOV Analysis – State Routes

Freeway	From	То	Existing	With	Environmental	Corridor Study/Project	Other Related Report/Study
				Improvement	Review	Report	
SR 99	0.2 miles S.	0.6 miles	4F	6F	ND/FONSI	Corridor System	San Joaquin Valley High
	of Grantland	N. of Ave.			Approved	Management Plan	Occupancy Vehicle Land
	Ave U/C	7 O/C			04/01/2010	05/2009	Study & Ramp Metering
							Plan; State Route 99
							Transportation Concept
							Report, 11/2003
SR 99	Ashlan	0.2 miles	4F	6F	ND/FONSI	Corridor System	San Joaquin Valley High
		N. of			Approved	Management Plan	Occupancy Vehicle Land
		Grantland			04/01/2010	05/2009	Study & Ramp Metering
							Plan; State Route 99
							Transportation Concept
							Report, 11/2003

SR 99	SR 201	Tulare	4F	6F	ND/FONSI	Corridor System	San Joaquin Valley High
		County			Approved	Management Plan	Occupancy Vehicle Lane
		Line			10/23/2006	11/2008	Study & Ramp Metering
							Plan; State Route 99
							Transportation Concept
							Report, 11/2003
SR 41	Bullard	Herndon	6F	6F with NB	ND/CE	State Route 41 Corridor	Route 41 Concept Report-
				Aux. lane	Approved	Study	Kern, Kings, Fresno &
					5/15/2007		Madera Counties, 8/1989
SR 41	Kings	Elkhorn	2E	4E	ND/CE	State Route 41 Corridor	Route 41 Concept Report-
	County Line				Approved	Study	Kern, Kings, Fresno &
					12/15/2005		Madera Counties, 8/1989
SR 41	El Paso	Friant	5F	5F with SB	ND/CE	State Route 41 Corridor	Route 41 Concept Report-
				Aux. lane	Approved	Study	Kern, Kings, Fresno &
					11/19/2007		Madera Counties, 8/1989
SR 41	Ashlan	Shaw	6F	6F with NB	10 Year SHOPP	State Route 41 Corridor	Route 41 Concept Report-
				Aux. lane	Candidate -	Study	Kern, Kings, Fresno &
					Scheduled		Madera Counties, 8/1989
					Completion 2018		

SR 41	O Street	Shields	6F	6F with NB	10 Year SHOPP	State Route 41 Corridor	Route 41 Concept Report-
				Aux. lane	Candidate -	Study	Kern, Kings, Fresno &
					Scheduled		Madera Counties, 8/1989
					Completion 2018		
SR 180 E	Temperance	Quality	2E	4E	EIS/EIR	Southeast Area	State Route 180
					Approved	Community Plan (in	Transportation Concept
					12/20/2005	progress)	Report, 4/2004
SR 180 E	Quality	Trimmer	2E	4E	EIS/EIR	Southeast Area	State Route 180
		Springs			Approved	Community Plan (in	Transportation Concept
					12/20/2005	progress)	Report, 4/2004
SR 180 E	Trimmer	Frankwood	2E	4E	EIS/EIR	Southeast Area	State Route 180
	Springs				Approved	Community Plan (in	Transportation Concept
					12/20/2005	progress)	Report, 4/2004
SR 180W	I-5	Junction		2E	Complete Tier 1	PA&ED Only –	Measure C Extension
		SR 33/SR			NEPA Doc -	Scheduled Completion	Expenditure Plan – 06/2009
		180			Scheduled	07/2011	
					Completion		
					07/2011		

Please contact Kristine Cai at kcai@fresnocog.org or 559-233-4148 ext. 215 if you have any questions regarding the Fresno County Congestion Management Process.