Highway 50

Corridor System Management Plan

May 2009

CALTRANS DISTRICT 3

corridor system management plan

Highway 50
Corridor System Management Plan

APPROVED BY:

Jody Jones 6/3/09

JODY JONES, Date
District 3 Director
California Department of Transportation

I accept this Corridor System Management Plan for the Highway 50 Corridor as a document informing the regional transportation planning process.

ACCEPTED BY:

6/30/09

MIKE MCKEEVER, Date
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Executive Director
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CALTRANS DISTRICT 3

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stakeholder acknowledgement

District 3 wishes to acknowledge the time and contributions of many stakeholders and partner agencies. These representatives participated in project development team and focused group meetings and provided essential information, advice and feedback for the preparation of this CSMP. The stakeholders/partners include:

- California Highway Patrol;
- Sacramento Area Bicycle Advocates;
- Sacramento Area Council of Governments, El Dorado County Transportation Commission, and Sacramento Transportation Authority;
- Sacramento Metropolitan Air Quality Management District;
- Sacramento Metropolitan Chamber of Commerce;
- The Cities of West Sacramento, Sacramento, Rancho Cordova, Folsom and Placerville;
- The Counties of Yolo, Sacramento, and El Dorado;
- The Highway 50 Corridor Mobility Partnership (Partnership);
- The Ports of West Sacramento and Sacramento;
- Transit service providers: Yolo County Transportation District, Sacramento Regional Transit District, El Dorado County Transit Authority, University of California, Davis, Capital Corridor Joint Powers Authority, and Amtrak;
- Transportation Management Associations representing employers, property owners and residents of Yolo County and the 50 Corridor;

A website, **www.corridormobility.org**, has been created to support the development of the CSMPs and to provide stakeholders and the public with more information and an opportunity to provide input and review documents.

DISCLAIMER

The information, opinions, commitments, policies and strategies detailed in this document are those of Caltrans District 3 and do not necessarily represent the information, opinions, commitments, policies and strategies of partner agencies or other organizations identified in this document.

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executive summary

Caltrans and its partners are taking a dynamic turn in transportation planning and operations, with the creation of Corridor System Management Plans (CSMPs) for corridors associated with the Corridor Mobility Improvement Account (CMIA) and Highway 99 Bond Program projects. Californians rely on transportation facilities and services to get to business, recreational, and service destinations, regardless of which agency may operate or fund a facility or service. CSMPs are being developed to plan and manage transportation across modes and jurisdictional boundaries. The CSMP approach is consistent with the goals and objectives of the Governor's Strategic Growth Plan, including public accountability for bond funded projects.

The CSMP outlines a foundation to support the partnership based, integrated corridor management of all travel modes (transit, cars, trucks, bicycles) and infrastructure (rail tracks, roads, highways, information systems, bike routes), to provide mobility in the most efficient and effective manner possible. This approach brings facility operations and transportation service provision together with capital projects into a coordinated system management strategy that focuses on high demand travel corridors such as Highway 50 (US 50).

This CSMP directly supports the implementation of the three CMIA projects in the US 50 corridor: (1) High Occupancy Vehicle (HOV) Lanes on US 50 from Watt Avenue to Sunrise Boulevard, (2) White Rock Road Expansion from Grant Line Road to Prairie City Road, and (3) HOV Lanes on US 50 from El Dorado Hills Boulevard to Bass Lake Road.

The objectives of the CSMP are to improve safety on the transportation system, reduce travel time or delay on all modes, reduce traffic congestion, improve connectivity between modes and facilities, improve travel time reliability, and expand mobility options along the corridor in a cost effective manner.

CSMPs are being developed to plan and manage transportation across modes and jurisdictional boundaries.

The CSMP includes the following sections:

- Current Corridor System Management Strategies
- Major Corridor Mobility Challenges
- Performance Measures
- Planned Corridor System Management Strategies
- Congestion and Bottleneck Analysis

The US 50 CSMP Transportation Network includes US 50 from the US 50/Interstate 80 interchange in the City of West Sacramento to the US 50/Cedar Grove exit in the El Dorado County community of Camino, as well as select parallel roads, transit services, and bike routes.

Together, these facilities comprise the CSMP managed network.

Major mobility challenges along the corridor include highway and roadway traffic congestion, a lack of parallel roadway capacity, transit facilities approaching ridership capacity, inadequate transit capital and operations funding needed to grow transit ridership, an incomplete HOV network, gaps and barriers within the bicycle network, and lengthy barriers restricting cross corridor travel by all modes.

Additionally, the El Dorado County Transportation Commission (EDCTC) has identified safety and operational issues between the Smith Flat interchange and east of the Upper Carson Road/Camino intersection in the ***Camino Area Parallel Capacity/Safety Study***, including at-grade access to US 50, left turn conflicts across US 50, increasing local and interregional traffic due to area growth, a lack of alternate routes, seasonal traffic to and from Apple Hill and other local events, and seasonal access to recreation in the Lake Tahoe Region.

The bottleneck analysis identifies major bottlenecks in the eastbound direction during the AM peak period at Howe Avenue and during the PM peak period at 48th Street, Howe Avenue, Mayhew Road, Routier Road, Sunrise Boulevard, and El Dorado Hills Boulevard. Major bottlenecks in the westbound direction during the AM peak period are at El Dorado Hills Boulevard, Hazel Avenue, Zinfandel Drive, Bradshaw Road, and Howe Avenue and major bottleneck locations during the PM peak period are at Zinfandel Drive, Routier Road, Bradshaw Road, Howe Avenue, and Interstate 5. Causes range from weaving, entering and merging traffic, lane drops, poorly coordinated traffic signals, and an off-ramp queue (Sunrise Boulevard).

Existing highway operations data shows that for the US 50 corridor, almost all segments are forecasted to operate under Level of Service (LOS) “F” conditions in 20 years under the No-Build and Build scenarios. However, with the implementation of operational strategies and key capital projects, the severity and the duration of the traffic congestion can be significantly reduced.

This CSMP identifies corridor management strategies to be applied on a network wide basis. To implement some of these strategies, key capital projects are identified. The list is not meant to be inclusive of all projects in the corridor; rather, the CSMP incorporates by reference all projects contained in the Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan (MTP) and the EDCTC Regional Transportation Plan (RTP).

The system will be continuously monitored using identified performance measures and Traffic Operations Systems (TOS) data, and will be reported in an annual State of the Corridor Report and subsequent CSMP updates. This information will be used to continually improve system performance.

what is a CSMP?

A CSMP is a foundation document supporting the **partnership based, integrated management** of all **travel modes** (transit, cars, trucks, bicycles) and **infrastructure** (rail tracks, roads, highways, information systems, bike routes) in a corridor so that mobility along the corridor is provided in the most efficient and effective manner possible.

CSMP success is based on the premise of managing a selected set of transportation components within a designated corridor as a system rather than as independent units.

Caltrans has traditionally prepared a Transportation Concept Corridor Report (TCCR) that served as the long range planning document for US 50. The TCCR would identify existing route conditions and future needs, including existing and forecasted travel data, concept LOS standard, and the facility needed to maintain the concept LOS over the next 20 years. With the development of the more comprehensive CSMP, the need for a separate TCCR is eliminated. This CSMP will serve as the TCCR for the segment of US 50 within the CSMP boundaries and includes information regarding the future facility needed to maintain an acceptable LOS (Concept LOS and Concept Facility, see page 35).

The **US 50 CSMP Transportation Network** includes US 50 from the US 50/Interstate 80 interchange in the City of West Sacramento to the US 50/Cedar Grove exit in the El Dorado County community of Camino, as well as select parallel roads, transit services, and bike routes. Together, these facilities comprise the CSMP managed network, as indicated in Figure 1 and Table 1.

The parallel roadway, transit, and bike route components of the managed network were selected in consultation with the respective local agency. It is anticipated that as the CSMP concept matures, additional facilities will be added to the managed CSMP transportation network.

The CSMP focuses on strengthening institutional partnerships, gathering and analyzing data, monitoring system performance, implementing operational strategies, and identifying and implementing strategic capital investments. The CSMP will evolve with changing development patterns, travel demands, and technological innovations.

The CSMP focuses on strengthening institutional partnerships, gathering and analyzing data, monitoring system performance, implementing operational strategies, and identifying and implementing strategic capital investments.

An annual State of the Corridor Report will be produced to document system performance and track CSMP implementation progress, and the CSMP will be updated every two years.

CSMPs are being created for corridors associated with the Corridor Mobility Improvement Account (CMIA) and Highway 99 Bond Programs, supported by the ***Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006***, Proposition 1B. Figure 2 shows the general location of each of the CSMP corridors within the Caltrans District 3 area and identifies Proposition 1B projects associated with the respective CSMP.

Each CSMP identifies current system management strategies, existing travel conditions, corridor performance management, management strategies, and capital improvements.

The CSMP is consistent with the SACOG MTP, the EDCTC RTP, city and county general plans, and regional blueprint planning.

The CSMP is consistent with the SACOG MTP, the EDCTC RTP, city and county general plans, and regional blueprint planning. The CSMP, by reference, incorporates all projects listed in the current MTP and RTP. Because the CSMP is corridor focused, it highlights key locations where modes interact and land use decisions may have the greatest potential of reducing the need for travel and influencing modal choice.

CSMPs will assist in fulfilling the goals of recently enacted legislation such as Assembly Bill 32 that addressed air quality and green house gas emissions and Senate Bill 375 that addresses land use by:

- Improving mobility on the state highway system to more optimum speeds to reduce vehicle emissions, and
- Providing viable transportation alternatives and accessibility across modes to encourage transit and bicycling and decrease single occupant auto use.

The CSMP also supports Caltrans policies such as Deputy Directive (DD) 64, Complete Streets–Integrating the Transportation System, and DD 98, Integrating Bus Rapid Transit into State Facilities, by bringing many modes under the same active management effort, thereby ensuring that each mode is analyzed and optimized to work together.

The CSMP is based on technical information depicted in four supporting working papers:

- Working Paper 1 provided an overview of the corridor system management planning process and a definition of the CSMP transportation network, including a rationale for the selection of the specific corridor limits and modes to be included in the corridor planning process.
- Working Paper 2 defined current services being provided by the CSMP transportation network, proposed performance measures for the corridor, and provided baseline data regarding the current CSMP transportation network for the proposed performance measures.
- Working Paper 3 described existing corridor management activities, including all facilities and services currently in use to maximize mobility within and through the corridor, such as traffic operations systems elements, facilities such as high occupancy vehicle lanes, traveler information services, and transportation demand management programs.
- Working Paper 4 provided an assessment of current corridor performance by identifying the major problems inhibiting efficient corridor operations for each element (mode) of the CSMP transportation network.

Sacramento Regional Transit Bus with Bicycle Racks

Figure 1: US 50 CSMP Transportation Network

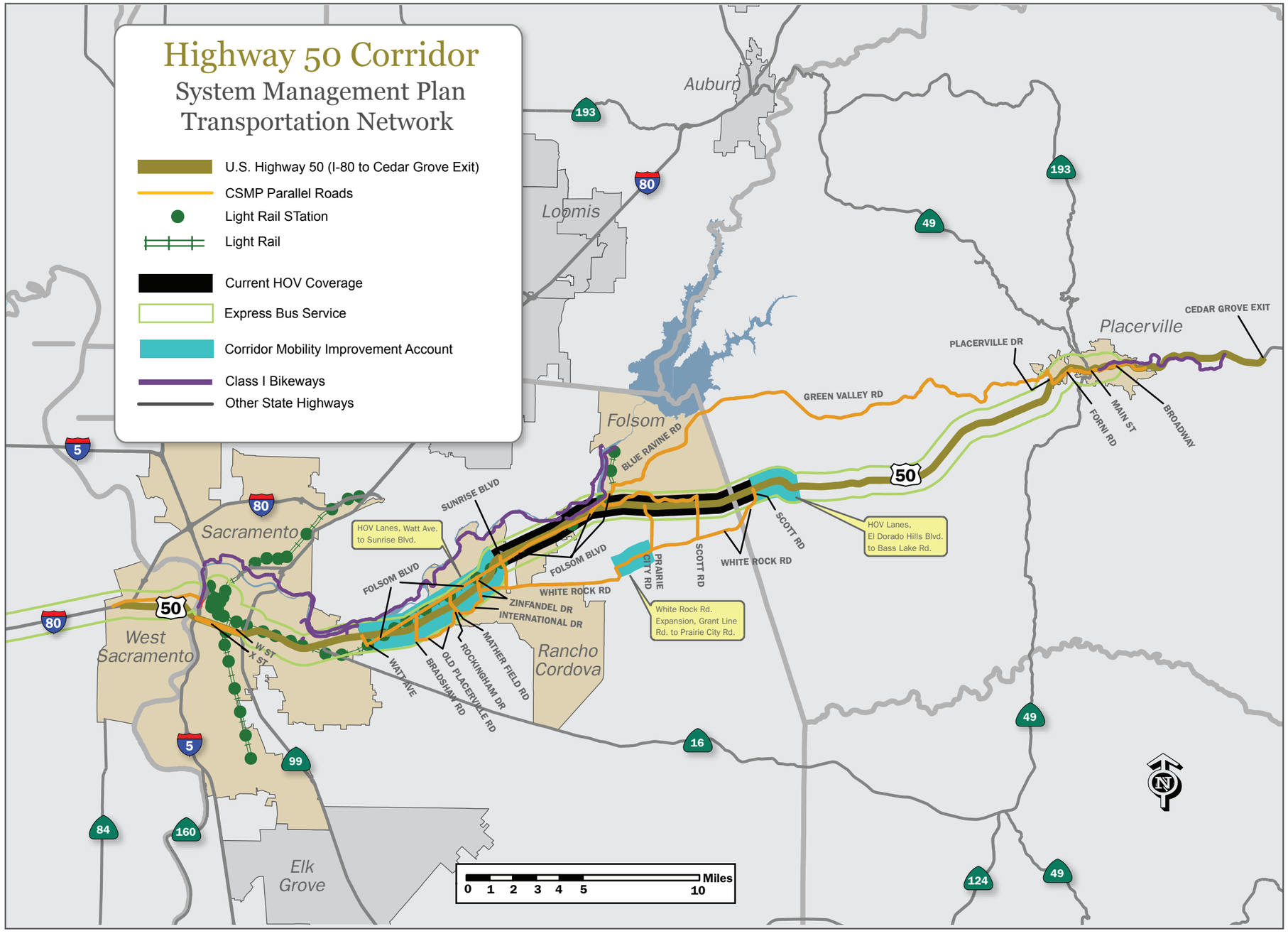


TABLE 1: US 50 CSMP TRANSPORTATION NETWORK

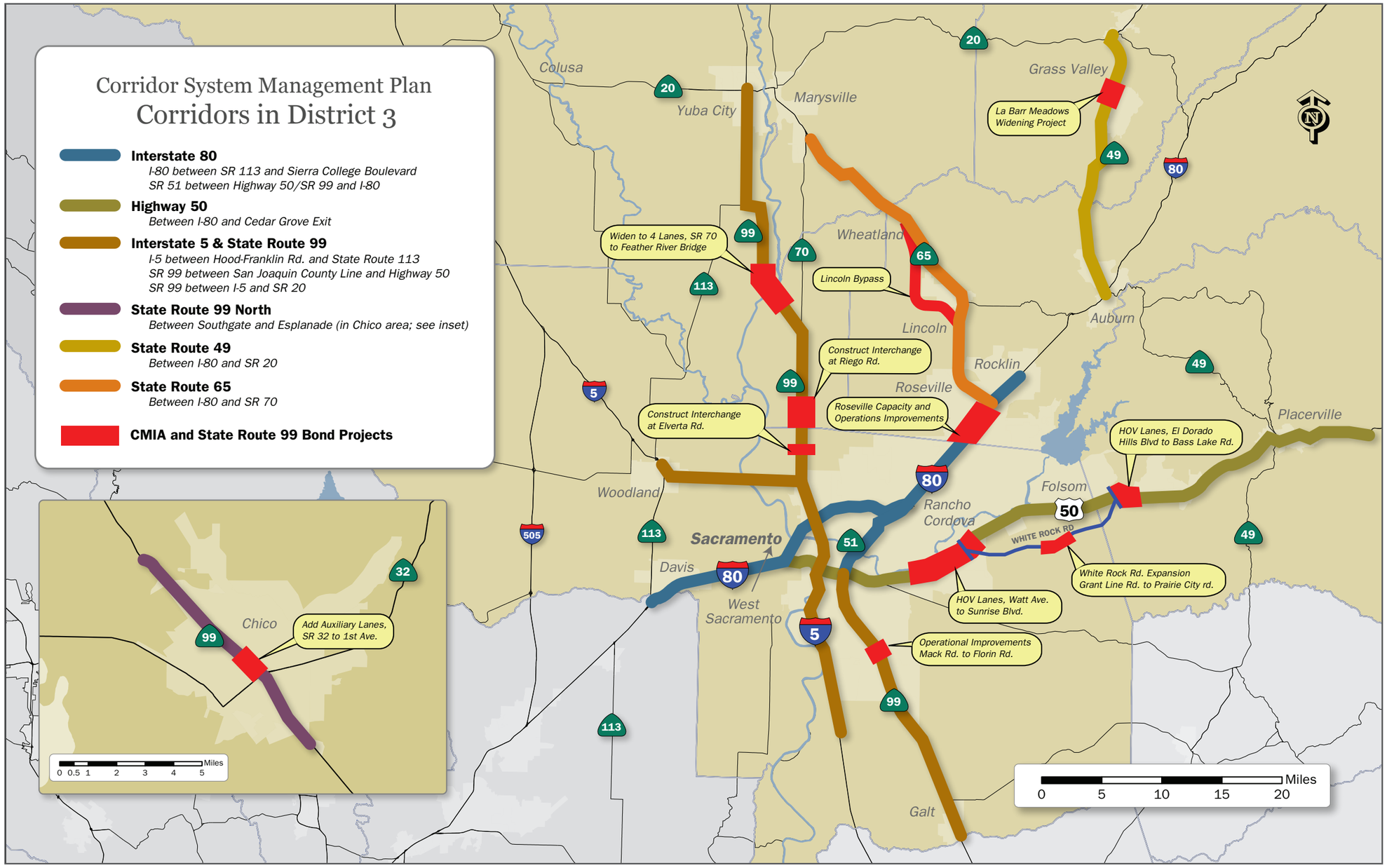
Location		US 50		Parallel/Connecting Roadways			Mass Transit						Bike Routes		
							Heavy Rail and Light Rail			Bus					
County	City	From	To	Roadway	From	To	Operator/ Services	From	To	Operator/ Services	From	To	Route	From	To
Yolo	City of West Sacramento	Interstate 80	Yolo/Sacramento County Line	West Capitol	Enterprise Boulevard	Capitol Mall				YCTD 39, Davis Express	West Sacramento/ Davis	Sacramento	West Capitol Avenue	Yolo Causeway	Tower Bridge
Sacramento	City of Sacramento	Yolo/Sacramento County Line	State Routes 99 and 51	W/X Streets	5th Street	26th Street	RT	Downtown Sacramento	Folsom	RT 109 Express	Downtown Sacramento	Hazel Ave.	Jedediah Smith Memorial Trail		
		State Routes 99 and 51	Watt Avenue	—	—	—	Amtrak Capital Corridor (Intercity Rail)	401 I Street, Sacramento	Auburn, CA/San Jose, CA						
							Amtrak Thruway Bus	401 I Street, Sacramento	Main Street, Placerville						
Sacramento	Unincorporated/City of Rancho Cordova	Watt Avenue	Zinfandel Drive	Folsom Boulevard	Watt Avenue	Sunrise Boulevard	RT	Downtown Sacramento	Folsom	RT 72	Mather Mills LRT Station	Watt-Manlove LRT Station	Jedediah Smith Memorial Trail		
				Watt Avenue	Folsom Boulevard	US 50	RT	Downtown Sacramento	Folsom	RT 21	Mather Mills LRT Station	Louis Ln./ Orlando Ave.	Jedediah Smith Memorial Trail		
				Bradshaw Road	Folsom Boulevard	Old Placerville Road									
				Old Placerville Road	Bradshaw Road	Rockingham Drive									
				Rockingham Drive	Old Placerville Road	Mather Field Road									
				Mather Field Road	Rockingham Drive	Zinfandel Drive									
				Zinfandel Drive	International Drive	Folsom Boulevard									
				White Rock Road	Zinfandel Drive	Sunrise Boulevard									
				Sunrise Boulevard	US 50	Folsom Boulevard									
		Zinfandel Drive	Sunrise Boulevard	White Rock Road	Sunrise	Prairie City	RT	Downtown Sacramento	Folsom	RT 109 Express	Downtown Sacramento	Hazel Ave.	Jedediah Smith Memorial Trail		
				Folsom Boulevard	Sunrise	Iron Point Road									

Notes: F = Freeway, E = Expressway, RT = Sacramento Regional Transit District, EDT = El Dorado Transit, and FSL = Folsom Stage Lines, LR = Light Rail, EB = Express Bus, LT = Limited, LRF = Light Rail Feeder, YCTD = Yolo County Transportation District, FTS = Fairfield/Suisun Transit System, UCD = UC Davis Medical Center Shuttle

TABLE 1: US 50 CSMP TRANSPORTATION NETWORK (CONTINUED)

Location		US 50		Parallel/Connecting Roadways			Mass Transit						Bike Routes		
							Heavy Rail and Light Rail			Bus					
County	City	From	To	Roadway	From	To	Operator/ Services	From	To	Operator/ Services	From	To	Route	From	To
Sacramento	Unincorporated/City of Folsom	Sunrise Boulevard	Folsom Boulevard	Iron Point Road	Folsom Boulevard	East Bidwell/Scott Road	RT	Downtown Sacramento	Folsom				Iron Point Road	Folsom Boulevard	Empire Ranch
				Scott Road	Iron Point Road	White Rock Road							Blue Ravine Road	Folsom Boulevard	Green Valley Road
Sacramento		Folsom Boulevard	Sacramento/ El Dorado County Line	Folsom Boulevard	Iron Point Road	Blue Ravine Road							Green Valley Road	Sacramento/El Dorado County Line	Cameron Park Drive
				Blue Ravine Road	Folsom Boulevard	Green Valley Road									
				Prairie City Road	US 50	White Rock Road				ED County Transit Authority- Iron Point Connector	Iron Point Light Rail Station	Missouri Flat Transfer Center			
				White Rock Road	ED/Sac County Line	Sacramento/ El Dorado County Line									
El Dorado	N/A	Sacramento/ El Dorado County Line	Cameron Park Drive	Green Valley Road	Blue Ravine Road	Cameron Park Drive				ED County Transit Authority- Sacramento Commuter	El Dorado County	Sac County	Green Valley Road	Cameron Park Drive	Placerville Drive
				White Rock Road	ED/Sac County Line	Latrobe Road									
				White Rock Road	Latrobe Road	Silva Valley Parkway									
				Silva Valley Parkway	White Rock Road	Serrano Parkway									
El Dorado	N/A	Cameron Park Drive	Missouri Flat Road	Green Valley Road	Cameron Park Drive	Missouri Flat Road				ED County Transit Authority	Cambridge Road	Missouri Flat Road	Ray Lawyer Drive	Placerville Drive	Forni Road
				Durock Road	Cameron Park Drive	South Shingle Road									
				Cameron Park Drive	Durock Road	US 50							Forni Road	Ray Lawyer Drive	Forni Road
				South Shingle Road	Durock Road	US 50									
El Dorado	N/A	Missouri Flat Road	End of Freeway in Placerville	Green Valley Road	Missouri Flat Road	Placerville Drive				ED County Transit Authority	Missouri Flat Road	Placerville Drive	Main Street	Forni Road	Clay Street
				Forni Road	Placerville Drive	Main Street									
				Placerville Drive	Forni Road	US 50									
El Dorado	Placerville	End of Freeway in Placerville	Bedford Avenue Start of Freeway	Main Street	Placerville Drive	Bedford Avenue				ED County Transit Authority	Placerville Drive	SR 49	ED Bike Trail	Clay Street	Los Trampas Road
El Dorado	N/A	Bedford Avenue Start of Freeway	Cedar Grove Exit	Main Street	Bedford Avenue	Broadway	Amtrak Thruway Bus	Mosquito Road, Placerville	401 I St., Sac, CA/Carson City, CA						
				Broadway	Main Street	Point View Drive									

Figure 2: CSMP Corridors in District 3



need, purpose, goal and objectives

There is a **need** for a planning approach that brings facility operations and transportation service provision together with capital projects into one coordinated system management strategy that focuses on high demand travel corridors such as US 50.

A CSMP is needed for the US 50 corridor to address severe traffic congestion that often exceeds the capacity of existing facilities, transit ridership demands that exceed the capacity of the transit system, and bicycle facilities that do not provide a fully linked network of bike routes.

The **purpose** of the CSMP is to create a partnership planning process that focuses on system management strategies and coordinated capital investments so that all the pieces of the corridor function as an efficient transportation system, and performance evaluation measures are implemented to track the effectiveness of strategies and projects.

The CSMP directly supports the implementation of the three CMIA projects on the corridor:

- **High Occupancy Vehicle (HOV) Lanes on US 50 from Watt Avenue to Sunrise Boulevard**
- **White Rock Road Expansion from Grant Line Road to Prairie City Road**
- **HOV Lanes on US 50 from El Dorado Hills Boulevard to Bass Lake Road**

The **goal** of the CSMP is to improve mobility along the US 50 corridor by focusing on the integrated management of a subset of the entire transportation network within the corridor, including select freeway and parallel roadways, transit and bicycle components of the corridor.

The CSMP directly supports the implementation of the three CMIA projects in the corridor.

The **objectives** of the CSMP are to **reduce travel time or delay** on all modes, **improve connectivity** between modes and facilities, **improve travel time reliability, improve safety** on the transportation system, and **expand mobility options** along the corridor in a cost effective manner. Implementation of the CSMP will **increase access** to jobs, housing, and commerce.

CONSISTENCY WITH OTHER STATE TRANSPORTATION PLANS AND POLICIES

The CSMP approach is consistent with the goals and objectives of the Governor's ***Strategic Growth Plan***, which among other things commits to minimizing increases in traffic congestion. Key elements of the strategy are illustrated in Figure 3.

At the base of the pyramid, and the foundation of transportation system management, is system monitoring and evaluation. It is essential to understand what is happening on the transportation system so that the best decisions can be made based on reliable data. The next few layers up the pyramid are focused on making the best use of existing resources and reducing the demand for transportation,

particularly during peak travel hours. The top layer of the pyramid is system expansion. This layer assumes that all the underlying components are being addressed and that system capacity expansion investments are necessary.

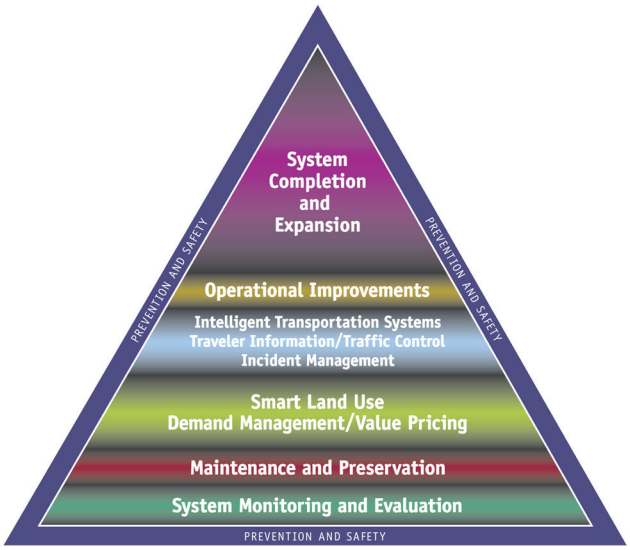
Corridor system management is consistent with the **Caltrans Mission**:

Improve Mobility Across California

Corridor system management is consistent with **Caltrans' Goals**:

- **SAFETY**: Provide the safest transportation system in the nation for users and workers.
- **MOBILITY**: Maximize transportation system performance and accessibility.
- **DELIVERY**: Efficiently deliver quality transportation projects and services.
- **STEWARDSHIP**: Preserve and enhance California's resources and assets.
- **SERVICE**: Promote quality service through an excellent workforce.

The CSMP is also consistent with the California Transportation Plan (CTP), the statewide, long-range transportation plan for meeting future mobility needs. The CTP defines goals, policies, and strategies to achieve our collective vision for California's future transportation system.



Air *Figure 3: Strategic Growth Plan Strategy*

Quality Planning

Corridor System Management seeks to create conditions where vehicle flow on highways and roads occurs at a steady pace and travelers have a range of mobility options that enable them to travel other than by single occupant vehicle. System expansion is focused only where needed when travel demand exceeds the capacity of the well managed existing system. These conditions are beneficial to attaining air quality goals and reducing green house gas emissions.

current corridor system management strategies

US 50 is a transcontinental highway that originates in West Sacramento, California and terminates in Ocean City, Maryland. It is a key transportation artery connecting Yolo County, Sacramento County, and fast growing sub regions within Sacramento and El Dorado Counties.

The corridor provides access to world renowned recreation areas in the Sierra Nevada Mountains and Lake Tahoe Basin. Peak commute and recreational travel periods are heavily congested, with demand for travel often exceeding the capacity of existing facilities and services. Severe traffic congestion is common and commute transit services often operate at maximum ridership capacity. There is extensive and expanding urban development along many parts of the corridor, which suggests increased future transportation demand.

Given the complexity of the corridor and its extensive geographic range, there are a wide variety of system management strategies and elements currently being implemented by jurisdictions and transportation service providers. Strategies and elements range from vehicle detection devices to traveler information systems to traffic flow control mechanisms. A common element among all the strategies and elements is data collection and analysis. There is presently some system management coordination and interjurisdictional partnerships among the entities such as the Sacramento Transportation Area Network (STARNET).

The STARNET web application initial release is anticipated for the late fall of 2009. Features to be included in the initial release will include: Changeable Message Sign (CMS) display, a chain control application, integration of Regional Transit data, California Highway Patrol incident data, connectivity to the 511 systems (web and telephone), Closed Circuit Television (CCTV) display and interagency messaging and coordination [Caltrans, Transportation Management Center (TMC), Kingvale Operation Center, City of Sacramento Traffic Operation Center (TOC), Sacramento County TOC, Roseville TOC, and Elk Grove TOC]. STARNET's associated management strategies can and will evolve as the application is implemented throughout the region and as additional features are added in annual releases.

There are a wide variety of system management strategies and elements currently being implemented by jurisdictions and transportation service providers.

STATE HIGHWAY SYSTEM

With the construction of California's state highway system virtually complete in the Sacramento region, Caltrans' major emphasis on highway projects has largely shifted from new construction to focused capacity expansions, reconstruction, operation, and maintenance of existing facilities.

The State Highway System has an extensive set of system management strategies in operation. Some cities, coun-

TABLE 2: EXISTING US 50 TOS ELEMENTS

County	Location	PM	TOS Elements								
			TMS	RM	HAR	RWIS	CMS	EMS	VS	CCTV	WIM
Yolo	I-80 to Yolo/SAC County Line	0.00 - 3.16	4	–	–	1	1	–	–	2	2
SAC	Yolo/SAC County Line to SR99/SR51	L0.00 - L2.48/ R0.00	8	7	–	–	3	–	–	7	–
	SR99/SR51 – Watt Avenue	R0.00 – R5.34	5	8	–	–	1	1	–	3	–
	Watt Avenue to Zinfandel Drive	R5.34 – R10.92	8	7	1	–	–	2	–	–	–
	Zinfandel Drive to Sunrise Blvd.	R10.92 – 12.50	1	4	–	–	–	1	–	–	–
	Sunrise Blvd. to Folsom Blvd.	12.50 – 17.01	4	6	–	–	–	–	–	2	–
	Folsom Blvd. to SAC/ED County Line	17.01 – 23.14	2	8	–	–	1	–	1	–	–
ED	SAC/ED County Line to Cameron Park Dr.	0.00 – R6.57	5	–	–	–	1	–	2	–	–
	Cameron Park Dr. to Missouri Flat Rd.	R6.57 – R15.06	7	–	–	–	–	–	–	–	–
	Missouri Flat Rd. to End of Freeway	R15.06 – 17.25	1	–	–	–	–	1	–	–	–
ED	End of Freeway to Bedford Ave.	17.25 – 18.11	–	–	1	–	–	–	–	–	–
ED	Bedford Ave. to Cedar Grove Rd.	18.11 – R25.95	–	–	–	–	1	1	–	–	–
TOTAL			**45**	**40**	**2**	**1**	**8**	**6**	**3**	**14**	**2**

Notes: PM = Post Mile, TMS = Traffic Monitoring Station, RM = Ramp Meter, HAR = Highway Advisory Radio, RWIS = Roadside Weather Information System, CMS = Changeable Message Sign, EMS = Extinguishable Message Sign, VS = Visibility Sensor, CCTV = Closed Circuit Television System, WIM = Weigh In Motion
Existing TOS Elements as of April 2009.

US 50 Bus/Carpool Lanes in El Dorado County

ties, and transit operators also have robust system management elements and programs applied to their facilities or services.

There are also specific instances of system management linkages among transportation modes and services at particular locations.

Existing management strategies are depicted on Figure 4 and summarized in Table 2.

These strategies work as a system to gather, analyze, and disseminate information through the Caltrans TMC. Information about collisions, other incidents, road closures, and emergency notifications are fed into this information hub and disseminated to public and private information users. The TMC operates 24 hours a day, seven days a week.

PARALLEL AND CONNECTING ROADWAYS

City of West Sacramento has one CCTV located on West Capitol Avenue between Enterprise Boulevard and Capitol Mall.

City of Sacramento operates a TOC. Sensors in the street detect the passage of vehicles, vehicle speed, and the level of congestion.

This information is received on a second-by-second (real-time) basis and is analyzed at the TOC.

Sacramento County also operates a TOC by gathering information through CCTV cameras, CMS, HAR, and a Fiber Optics (FO) network placed along major traffic corridors throughout the county.

City of Rancho Cordova will be installing CCTV cameras and a FO network on Folsom Boulevard in 2009. Currently, one CCTV exists on Sunrise Boulevard between US 50 and Folsom Boulevard. Most major traffic corridors are on the network or will be by the end of 2009. The City contracts with the County of Sacramento to operate their systems through the County's TOC.

City of Folsom recently completed installing a FO system on all of the City's major corridors. Currently, the sole intersection that is monitored via camera is located on Iron Point Road and East Bidwell.

El Dorado County has three coordinated signals along Francisco Drive, at Green Valley Road, the Market Place entrance (east side Safeway Center/west side Lake Forest Plaza), and Village Center Drive.

City of Placerville utilizes traditional control devices; traffic signals and stop signs.

TRANSIT AND RIDESHARING

Yolo County Transit District (YCTD) uses a Global Positioning System (GPS) for locating buses in route, referred to as an Automatic Vehicle Location (AVL) system.

The AVL System allows users to see where their bus is located within the last minute.

El Dorado Transit Authority utilizes the GPS Zonar System for pre-trip inspections, maintenance, and real-time vehicle tracking.

Sacramento Regional Transit District (SacRT) has installed pre-emptive traffic signals at at-grade intersections along the Light Rail routes. SacRT has a GPS; however, it is only utilized for analysis purposes.

Computer-aided dispatch and Bus Rapid Transit are in the planning stages. In addition, SacRT has an online Trip Planning application to assist transit users. During special events such as the California State Fair, the Jazz Festival,

Changeable Message Sign on US 50 at Scott Road

65th Street Light Rail Station and Transit Oriented Development

TABLE 3: PARK AND RIDE LOTS

County	Post Mile	Facility Name Description	Lot Use			Transit Connection
			Spaces	Spaces Occupied	Occupancy Rate (%)	Provider and Route No.
SAC	7.0	Butterfield Sacramento Regional Transit Gold Line Station	406	129	31.8%	SacRT, SacRT LRT Gold Line
SAC	12.5	Sunrise Sacramento Regional Transit Gold Line Station	487	389	79.9%	RSacRT, SacRT LRT Gold Line
SAC	15.8	Hazel	432	135	30.6%	SacRT, SacRT LRT Gold Line
SAC	15.8	Hazel	33	6	24%	SacRT, Route 109
SAC	17.1	Folsom Boulevard	70	58	82.9%	ED Iron Point Connector, SacRT LRT Gold Line
ED	2	El Dorado Hills (Latrobe Road/White Rock Road)	123	138	112.2%	ED Iron Point Connector, ED Routes: 1,5,6,7,8,11,12
ED	5	Cambridge Road	59	40	67.8%	ED Iron Point Connector, ED Routes: 1,4,5,6,7,8,9,11,12
ED	8.6	Ponderosa Road Northeast	28	15	53.6%	ED Iron Point Connector, ED Routes: 2,3,6,7,9,10,11,12
ED	8.6	Ponderosa Road Northwest	111	61	55%	ED Iron Point Connector, ED Routes: 2,3,6,7,9,10,11,12
ED	8.6	Durock Road	57	21	36.8%	N/A
ED	14.9	Shingle Springs Drive	19	4	21.1%	N/A
ED	12.2	Greenstone Road	21	4	19%	N/A
ED	15	Missouri Flat Road	73	44	60.3%	ED Iron Point Connector
ED	15.8	Fairgrounds Park-and-Ride	200	40	20%	ED Iron Point Connector
ED	18.5	Placerville Station (Mosquito Park- and-Ride)	130	50	38.5%	ED Iron Point Connector ED Commuter Service
ED	23.3	Camino Heights	24	1	4.2%	N/A

SacRT = Sacramento Regional Transit District
ED = El Dorado County Transit Authority
LRT = Light Rail Train

Survey: 2007

the holiday seasons, and the Mather Field Air Show, SacRT operates additional service to connect events to light rail stations and offer free service to promote transit use during select events. The transit routes identified in the CSMP network are shown in Figure 5.

The Sacramento Valley Station in downtown Sacramento is the 7th busiest station in the national Amtrak system and serves as a multi-modal transfer facility. There are over 1.1 million passenger trips annually.

Passengers can make connections with numerous local bus services as well as the SacRT light rail system.

Try Transit Changeable Message Sign in Sacramento County

Sacramento County installed pre-emptive traffic signals to give preferential signal timing to transit buses at selected locations that serve high priority transit corridors.

SACOG manages the 511 and rideshare programs that cost approximately $1 million per year, region-wide, to foster carpooling, transit ridership, vanpooling, and bicycling in all areas and corridors. The Regional Rideshare Program covers Placer, El Dorado, Sacramento, Yolo, Yuba, and Sutter counties. It is part of a statewide network of rideshare agencies, which encourage alternative transportation modes for traveling.

Park and Ride lots are located adjacent to or nearby the US 50 corridor utilized by commuters to connect with transit, vanpool, or carpool. Of the sixteen lots, many are adjacent to the SacRT Light Rail Gold Line providing access for commuters to park their vehicles and commute the remainder of their trip via Light Rail. El Dorado County Transit Authority also uses the park and ride lots as transit stops for their Commuter Buses. The locations, capacity, and occupancy rates of the Park and Ride lots are displayed in Table 3.

BICYCLE FACILITIES

Bicycle facilities in the corridor are not actively managed in the same manner as motor vehicle facilities.

However, there are traffic operation systems that serve bicyclists such as dedicated bicycle lanes, bicycle detection loops at signalized intersections, video detection, other non-loop type detection, and bicyclist activated signal change buttons. The City of Sacramento is installing video detection at some locations.

SacRT buses and the new light rail trains are equipped with bicycle racks. There are over 170 weatherproof bicycle lockers at 23 light rail stations. YCTD has the Bikes on Buses Program that allows bicycles to travel on any YOLOBUS.

The Sacramento Area Bicycle Advocates maintain an on-line hazard reporting system to allow users to report hazardous locations for bicyclist such as potholes, inadequate signal timing, hazardous railroad crossings, insufficient shoulder, and inadequate bikeway markings. The reports are then sent to the applicable jurisdiction. SACOG is creating an on-line route planning system for bicyclists. In addition, SACOG maintains bicycle maps on their website which are currently being updated.

The bicycle routes included in the CSMP network are shown on Figures 6 and 7.

PEDESTRIAN FACILITIES

Pedestrian facilities are not included as part of the managed network because they do not directly provide corridor mobility. However, complete and safe pedestrian access to appropriate corridor modes, such as bike routes and transit services, is an important component of corridor system management. Therefore, subsequent updates of the CSMP will seek to identify key pedestrian facilities and barriers to pedestrian mobility with regard to access and modal connectivity.

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Figure 4: Existing Traffic Operations Systems Elements

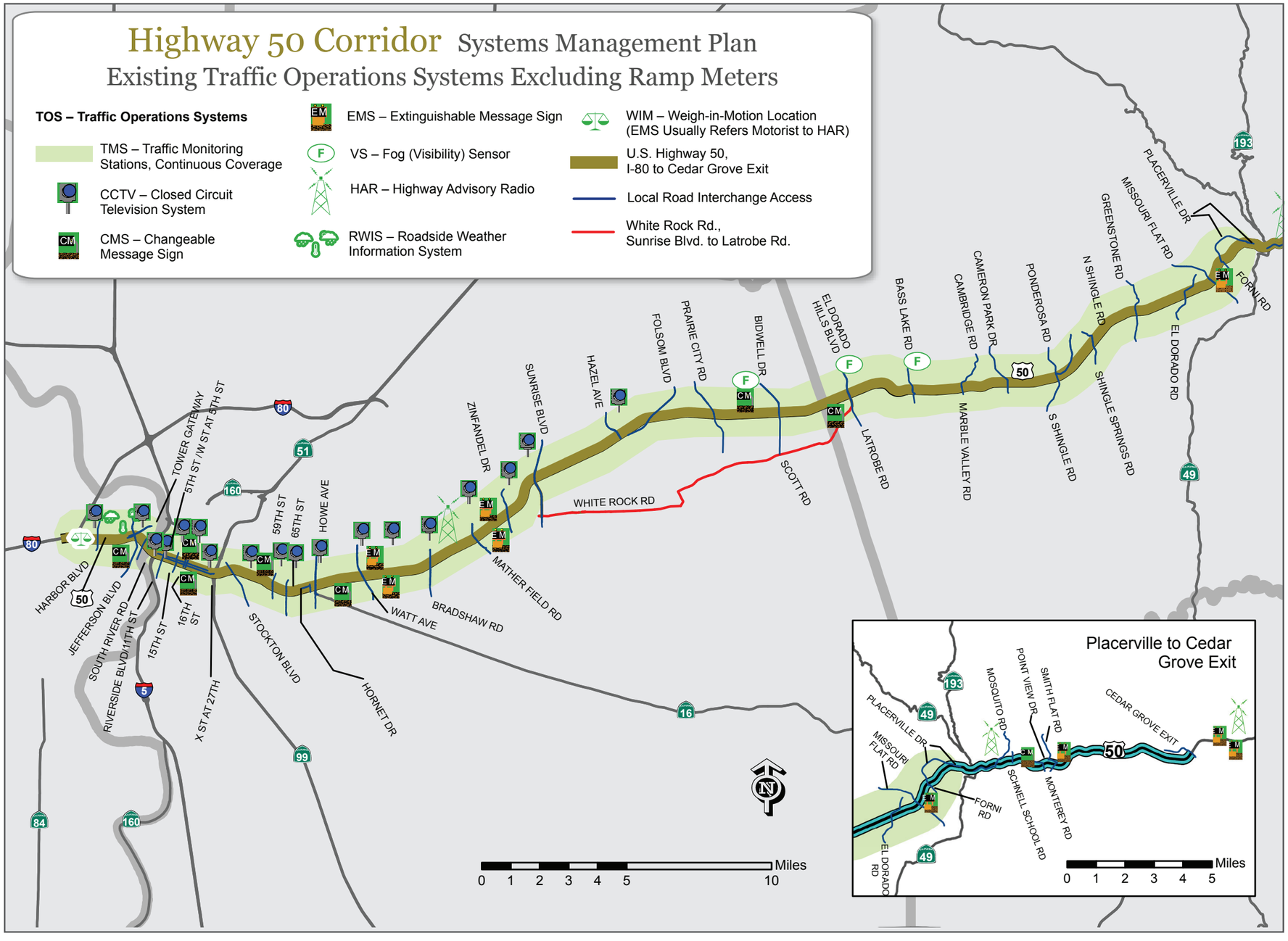


Figure 5: US 50 CSMP Network Transit Routes

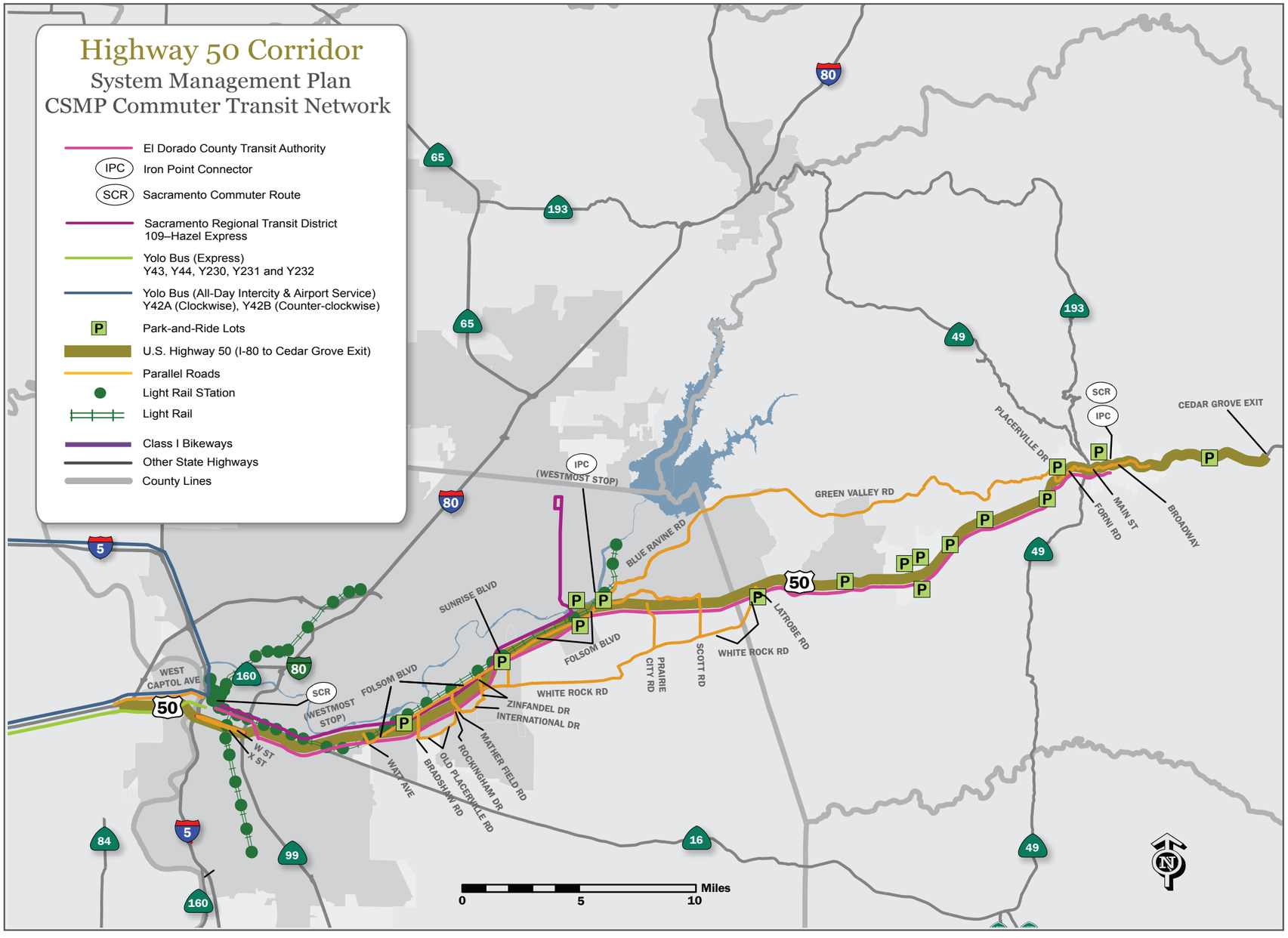


Figure 6: US 50 CSMP Network Bicycle Routes

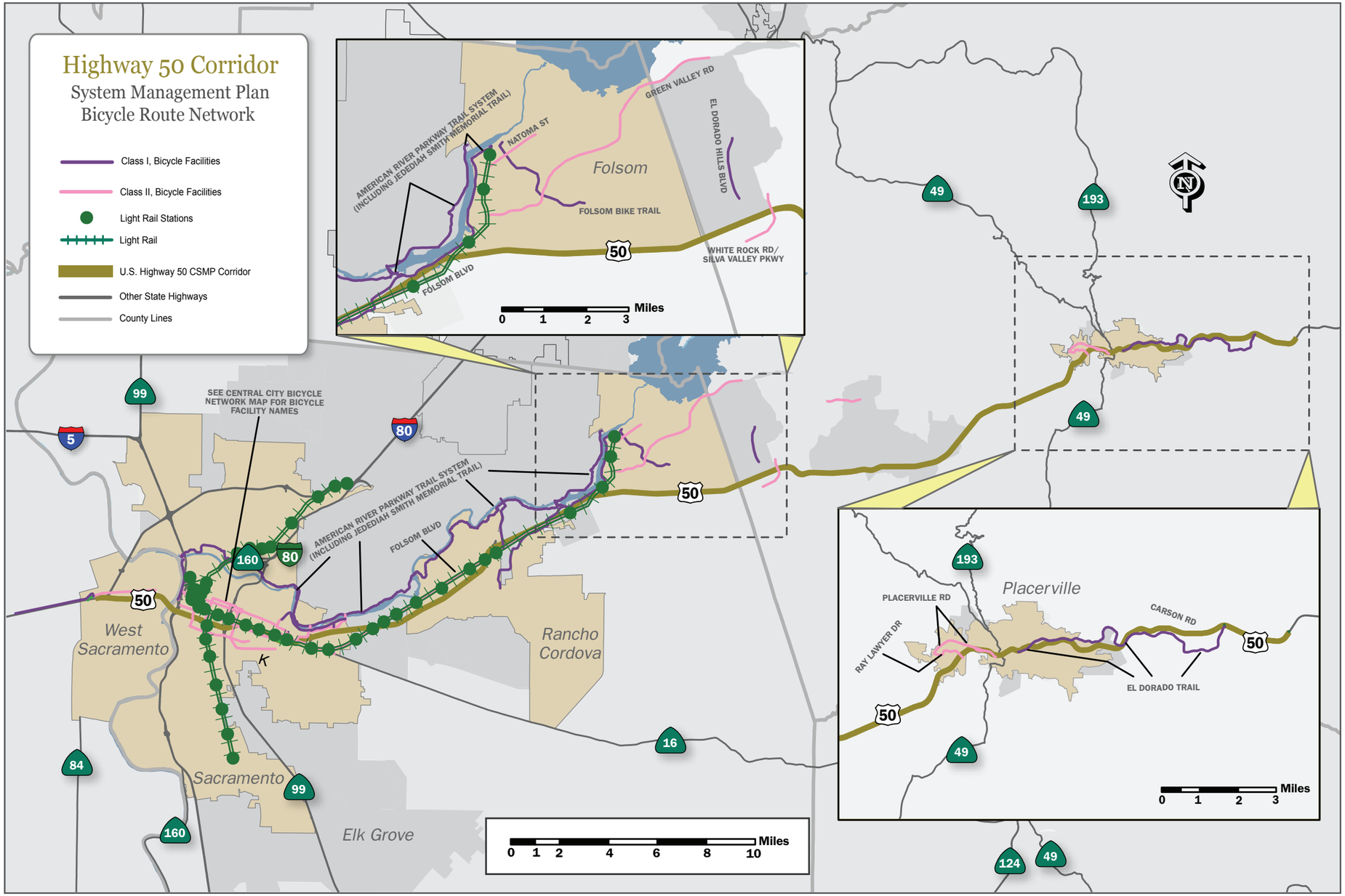
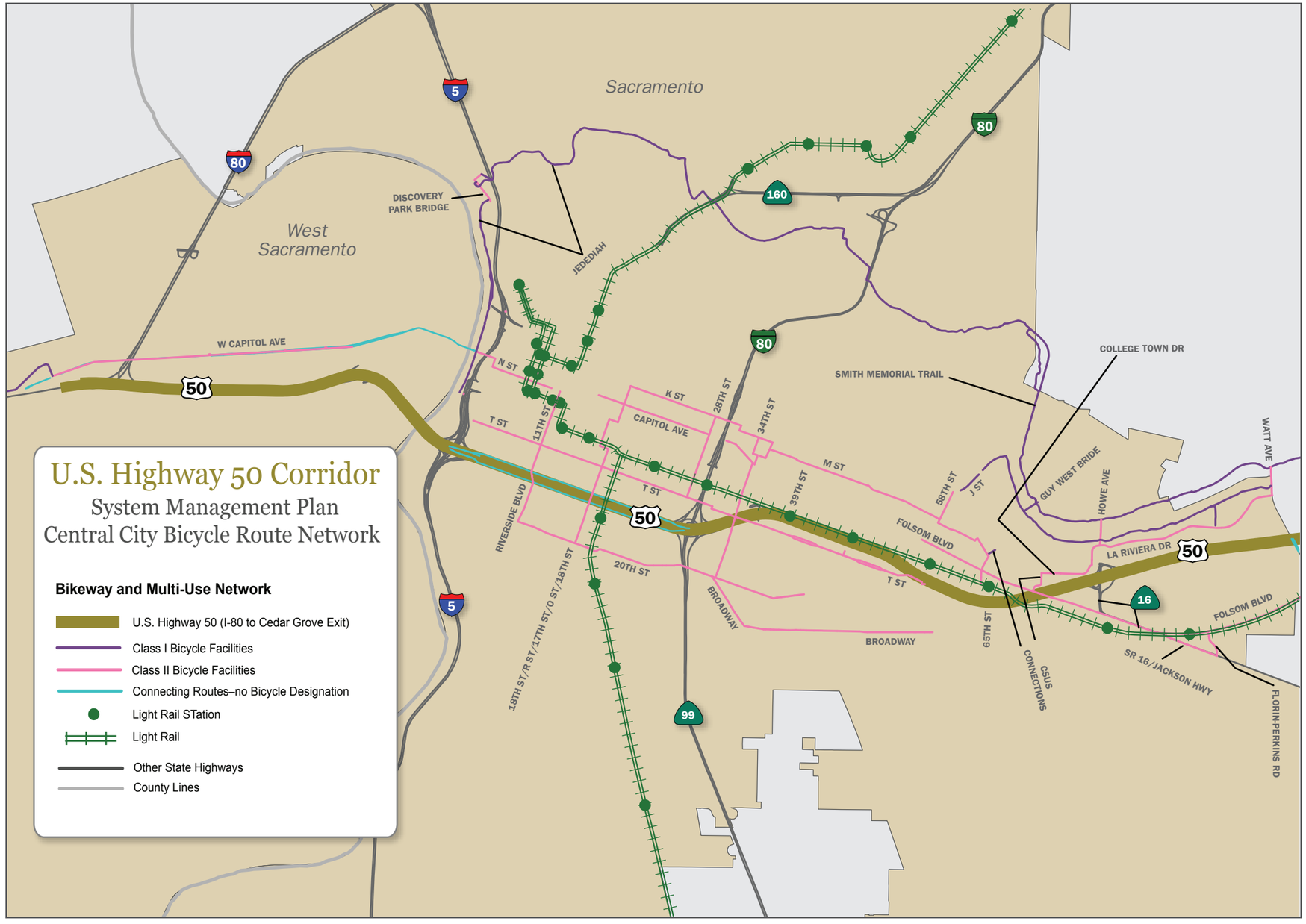


Figure 7: US 50 CSMP Network Bicycle Routes (Sacramento Insert)



major corridor mobility challenges

High demand for mobility services, especially during peak commute periods, is creating significant traffic congestion and impairing mobility in the corridor. Heavy congestion and stop-and-go traffic contributes to increased vehicle emissions and added travel costs. Many transit services are operating at maximum passenger carrying capacity, and buses often must contend with the same congestion as autos. In many locations, bicyclists have to compete for space on these same facilities.

Much of the congestion can be attributed to population growth, residential and commercial development, job/housing imbalances, work schedules that require commute trips during peak travel times, recreational trip generators, and truck traffic.

The overall amount of travel in the corridor has increased dramatically over the past ten years and is expected to continue to increase as the **region adds approximately one million new residents over the next 25 years** per the current SACOG MTP 2035. Traffic congestion per household is expected to increase 18 percent over 2005 levels by the year 2035.

In the general area of eastern Sacramento County and western El Dorado County, the Highway 50 Partnership has projected growth of 78,000 more dwelling units and 53,000 new jobs over the next 25 years. Current and forecasted data is depicted in Table 4.

The sections of US 50 with particularly severe traffic congestion are depicted in Figures 8 and 9. These are also summarized in greater detail in Tables 14 and 15 in Chapter 7. Table 14 shows a summary of the US 50 eastbound bottlenecks, while the tables that follow discuss each bottleneck, including location and possible causality. Table 15 shows a summary of the US 50 westbound bottlenecks, while the tables that follow discuss each bottleneck, including location and possible causality. Minor or hidden bottlenecks are those that are not as defined (or severe) as the major bottlenecks. Please note that the graphics accompanying the bottlenecks are not to scale.

Traffic congestion per household is expected to increase 18 percent over 2005 levels by the year 2035.

A critical component of identifying and resolving corridor mobility challenges is the need for detailed data, analysis, and communication regarding system performance. Data collection is insufficient to fully meet these needs but still provides useful information as detailed in the following pages. Improving data gathering, analysis, and dissemination of information is a major challenge for this corridor and is a component of Intelligent Transportation Systems planning.

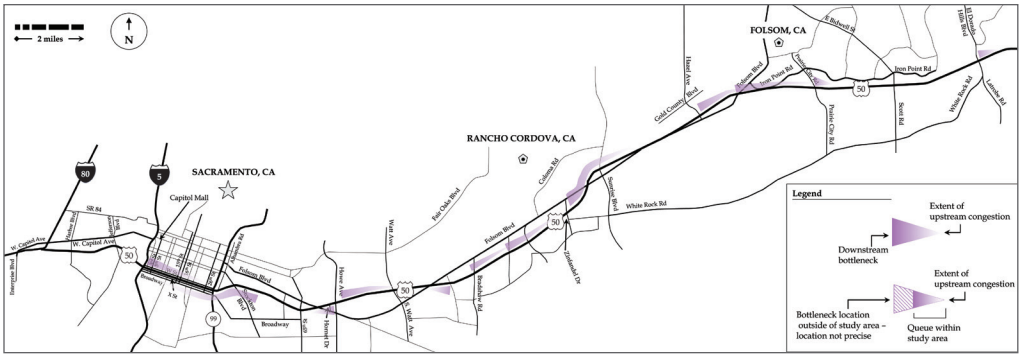


Figure 8: US 50 AM Peak Period Bottleneck Locations

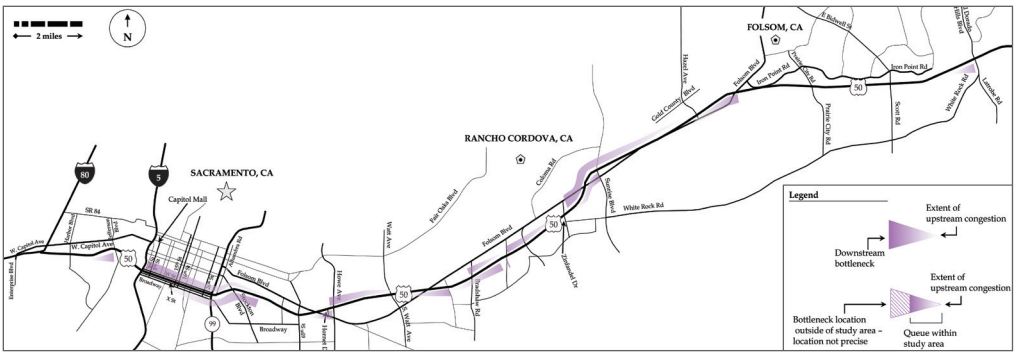


Figure 9: US 50 PM Peak Period Bottleneck Locations

Challenges along the corridor include:

- severe, recurrent highway and roadway traffic congestion;
- an incomplete bus/carpool lane system;
- an incomplete set of freeway auxiliary lanes;
- loss or dropping of freeway lanes at specific locations;
- incomplete ramp metering;
- limited parallel roadway capacity;
- lack of signal coordination on key arterials and freeway ramp intersections;
- transit facilities approaching capacity;
- inadequate transit capital and operations funding needed to grow transit ridership;
- light rail at-grade crossings;
- lack of adequate access to transit across US 50;
- lack of double tracking of the light rail Gold Line to Folsom;
- poor pavement and road and bicycle route maintenance/sweeping;
- lack of sufficient bicycle activated signal change devices;
- motorist driving behavior;
- inadequate bicycle storage,
- inadequate bicycle and pedestrian access to transit; and
- gaps and barriers within the bicycle route network.

Additionally, the EDCTC has identified safety and operational issues between the Smith Flat interchange and east of the Upper Carson Road/Camino intersection in the ***Camino Area Parallel Capacity/Safety Study***. Transportation issues include at-grade access to US 50, left turn conflicts across US 50, increasing average daily local and interregional traffic, growth in the area, lack of alternate routes, seasonal traffic to and from Apple Hill and other local events, and seasonal access to recreation in the Lake Tahoe Region.

TABLE 4: CURRENT AND FORECASTED TRAFFIC DATA

Location		Current Traffic Data – 2007					Future Traffic Data – 2027 (No Build)			Future Traffic Data – 2027 (Build)		
County	Description & Location	% of Trucks	Peak Directional Split	Peak Hour Traffic	Average Annual Daily Traffic[2]	Volume over Capacity[3]	Peak Hour Traffic	Average Annual Daily Traffic[2]	Volume over Capacity[3] (No-Build)	Peak Hour Traffic	Average Annual Daily Traffic[2]	Volume over Capacity[3] (Build)
YOL	Interstate 80 to Yolo/Sacramento County Line	6%	60%	15,500	180,000	1.09	23,911	277,032	1.69	24,070	278,880	1.36
SAC	Yolo/Sacramento County Line to State Routes 99 and 51	4%	59%	21,000	253,000	1.35	28,080	312,480	1.86	29,153	324,415	1.93
SAC	State Routes 99 and 51 to Watt Avenue	4%	59%	20,600	225,000	1.45	27,942	286,230	1.89	30,648	313,950	1.66
SAC	Watt Avenue to Zinfandel Drive	4%	59%	16,700	187,000	1.15	24,783	274,540	1.63	25,885	286,750	1.36
SAC	Zinfandel Drive to Sunrise Boulevard	4%	60%	13,500	149,000	0.93	20,331	224,394	1.33	20,925	230,950	1.10
SAC	Sunrise Boulevard to Folsom Boulevard	4%	66%	11,900	125,000	0.89	18,888	198,247	1.31	20,086	210,820	1.40
SAC	Folsom Boulevard to Sacramento/El Dorado County Line	3%	66%	8,800	95,000	0.87	13,341	151,311	1.33	13,612	154,380	1.36
ED	Sacramento/El Dorado County Line to Cameron Park Drive	4%	61%	6,900	70,000	0.95	11,454	116,200	1.65	11,834	120,050	1.14
ED	Cameron Park Drive to Missouri Flat Road	4%	62%	5,700	62,000	0.92	8,647	94,054	1.32	9,462	102,920	0.96
ED	Missouri Flat Road to End of Freeway in Placerville	4%	57%	4,850	59,000	0.69	7,101	76,245	0.98	7,363	79,050	1.02
ED	End of Freeway in Placerville to Bedford Avenue	4%	55%	4,800	52,000	N/A[4]	6,595	74,196	N/A[4]	6,648	74,790	N/A[4]
ED	Bedford Avenue to Cedar Grove Exit	4%	62%	3,800	38,500	0.77	5,474	50,782	0.99	5,520	51,205	0.99

1 Peak Directional Split: The percentage of total traffic in the heaviest traveled direction during the peak hour.
2 Average Annual Daily Traffic (AADT): The average number of vehicles per day in both directions.
3 Volume over Capacity (V/C): The volume of traffic compared to the capacity of the roadway.
4 Volume over Capacity does not determine LOS for two- or three-lane facilities, or segments with intersection delay.
5 Reported Collision Rate Index (% Compared to State Average): The percentage by which each segment's reported collisions rate (fatal, injury, and property damage only) is above or below the statewide average reported collisions rate on comparable facilities.

Source: 3-Year Caltrans Traffic Accident Surveillance and Analysis System data.

performance measures

Continuing corridor monitoring and performance measures are an integral part of corridor management and investment decision making and help identify immediate, efficient, and effective system operational strategies and capital improvements. Performance measures provide **the important dynamic daily information needed to rapidly address operational problems caused by recurrent and non-recurrent traffic congestion**. Measures are also used to identify the best improvement actions to generate the desired results.

Table 5 identifies the performance measures to be used as part of the corridor system management process.

BASELINE DATA FOR PERFORMANCE MEASURES

Tables 6, 7, and 8 display baseline data for the performance measures for the CSMP transportation network.

The performance data was primarily compiled from the *SACMET* demand based traffic model, the year 2007 edition of the *Traffic Volumes Manual*, the year 2000 edition of the *Highway Capacity Manual*, Caltrans Traffic Accident Surveillance and Analysis System (TASAS), the 2007 Caltrans Division of Maintenance *Pavement Summary Report*, and ridership records provided by the transit providers.

Performance Measures provide the important dynamic daily information needed to rapidly address operational problems caused by recurrent and non-recurrent traffic congestion.

Additional performance data was derived from the Performance Measurement System (PeMS) tool, an Internet based tool used to host, process, retrieve, and analyze road traffic conditions information from real-time and historical data. PeMS obtains 30-second loop detector data in real-time from detectors installed along the highway corridor.

It should be noted that Average Daily Traffic (ADT) and LOS for some Parallel/Connecting Roadways segment locations in Table 7 was not available. These are noted, “No Data.”

Data collection for non-auto modes is not as robust as what is needed for active system management. Subsequent updates of this CSMP will seek to expand the availability of transit and bicycle performance data collection.

TABLE 5: PERFORMANCE MEASURES — DEFINITIONS AND APPLICABILITY		
Performance Measure	**Definition of Performance Measure**	**Applicability to Corridor**
STATE HIGHWAY SYSTEM		
LOS	A "report card" measurement with "A" being the least amount of congestion and "F" being the most congestion.	LOS is a relatively simple and widely used measure, which offers comparison opportunities.
Total Vehicle Hours of Delay	The additional travel time in hours experienced by all vehicles on the highway segment per day or at peak hour due to congestion.	This measurement is used to determine the cost, in time, which congestion can add to the regular travel time that it takes to traverse a segment of road, and is useful in quantifying the performance of a particular roadway in an understandable format.
Total Person Minutes of Delay	The additional travel time in minutes experienced by all persons in vehicles on the highway segment per day or at peak hour due to congestion.	This measurement is used to determine the cost, in time, which congestion can add to the regular travel time that it takes to traverse a given segment of road, and is useful in quantifying the performance of a particular roadway in an understandable format and for comparison of improvement options.
Minutes of Delay per Vehicle	The additional travel time in minutes experienced by each vehicle on the highway segment at peak hour due to congestion.	This measurement is used to determine the cost, in time, which congestion can add to the regular travel time that it takes to traverse a given segment of road.
Minutes of Delay per Person	The additional travel time in minutes experienced by each person in vehicles on the highway segment at peak hour due to congestion.	This measurement is used to determine the cost, in time, which congestion can add to the regular travel time that it takes to traverse a given segment of road.
Vehicle Travel Time (Minutes)	The average time spent by vehicles traversing between two points on a road or highway.	Travel time is a measure used to quantify travel time deficiencies and provide a personal indicator of congestion impacts.
Distressed Pavement	Pavement that rides rougher than established maximums and/or exhibits substantial structural problems as determined by the Pavement Condition Survey.	This measurement provides a ride quality indicator and an indicator for structural roadway problems.
Reported Collision Rate	Comparison of the actual total collision rate (%) along a highway segment above, or below, the statewide average for fatal, injury, and property damage-only collisions on comparable facilities.	Comparing the total collision and rate with statewide average rate provides an opportunity to assess safety conditions through the corridor.
Reliability	Identifies day-to-day variation in travel time for the same trip at the same time of day. Focuses on the predictability of travel time, particularly for repetitive trips.	Estimates reliability by defining the extra time travelers must add to their average travel time when planning trips to ensure on-time arrival (0 percent: no day-to-day variations, 100 percent: double allotted travel time).
Lost Productivity	Measures the capacity of the corridor to accommodate vehicle or person throughput and is calculated as actual volume divided by the capacity of the highway.	As traffic volumes increase to roadway capacity, speeds decline rapidly and vehicle throughput drops dramatically, which increases traffic congestion and delay, and results in lost productivity.

TABLE 5: PERFORMANCE MEASURES — DEFINITIONS AND APPLICABILITY *(CONTINUED)*

Performance Measure	Definition of Performance Measure	Applicability to Corridor
PARALLEL AND CONNECTING ROADWAYS		
LOS	A "report card" measurement with "A" being the least amount of congestion and "F" being the most congestion.	LOS is a relatively simple and often used measure, which offers comparison opportunities.
TRANSIT		
Available Capacity	Ratio (%) of available transit capacity alternatives within the corridor.	This measure indicates the available capacity to accommodate diverted travelers from single occupant vehicles.

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TABLE 6: US 50 PERFORMANCE MEASURES

County	Location	Post Miles	Distance (Miles)	Average Annual Daily Traffic[1]	PERFORMANCE MEASURES												
					LOS[1]	Total Vehicle Hours of Delay[2]		Total Person Minutes of Delay[2]		Minutes of Delay per Vehicle[2]	Minutes of Delay per Person[2]	Vehicle Travel Time (Minutes)[2]	Distressed Pavement (Lane Miles)[4]	Reported Collision Rate Comparison (%)[5]	Reliability[6]		Lost Productivity[7]	
						Daily	Peak Hour[3]	Daily	Peak Hour[3]	Peak Hour[3]	Peak Hour[3]	Peak Hour[3]			Eastbound	Westbound	Lost Lane Miles AM Peak Period	Lost Lane Miles PM Peak Period
STATE HIGHWAY SYSTEM																		
YOL	Interstate 80 to Yolo/ Sacramento County Line	0.00 to 3.16	3.16	180,000	F	1,169	126	95,363	8,061	0.49	0.46	3.6	9	26%	62%	22%	0.1	0
SAC	Yolo/Sacramento County Line to State Routes 99 and 51	L0.00 to L2.48 / R0.00	2.48	253,000	F	4,993	653	407,455	41,746	1.86	1.75	4.3	7	20%	64%	60%	5.3	7.6
	State Routes 99 and 51 to Watt Avenue	R0.00 to R5.34	5.34	225,000	F	10,097	1,362	823,883	87,105	3.97	3.72	9.3	15	24%	60%	48%	8.1	6.8
	Watt Avenue to Zinfandel Drive	R5.34 to R10.92	5.58	187,000	F	8,075	977	658,886	62,506	3.51	3.29	9.1	19	-32%	56%	42%	4.4	2.3
	Zinfandel Drive to Sunrise Boulevard	R10.92 to 12.50	1.58	149,000	E	1,271	197	103,727	12,610	0.88	0.82	2.5	9	-33%	46%	13%	0	1.6
	Sunrise Boulevard to Folsom Boulevard	12.50 to 17.01	4.51	125,000	E	3,087	356	251,940	25,832	1.80	1.49	6.3	5	-14%	60%	46%	1	4.5
	Folsom Boulevard to Sacramento/El Dorado County Line	17.01 to 23.14	6.13	95,000	D	583	122	47,537	8,867	0.83	0.69	7.0	0	-11%	19%	55%	0	0.8
ED	Sacramento/El Dorado County Line to Cameron Park Dr	0.00 to R6.57	6.57	70,000	E	504	126	41,150	9,138	1.10	0.91	7.7	1	-35%	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable
	Cameron Park Drive to Missouri Flat Road	R6.57 to R15.06	8.49	62,000	E	302	75	24,633	4,827	0.79	0.75	9.3	2	-61%	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable
	Missouri Flat Road to End of Freeway in Placerville	R15.06 to 17.25	2.19	59,000	D	66	16	5,376	1,053	0.20	0.19	2.4	1	20%	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable
	End of Freeway in Placerville to Bedford Avenue	17.25 to 18.11	0.86	52,000	D	68	17	5,585	1,094	0.21	0.20	1.5	2	81%	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable
	Bedford Avenue to Cedar Grove Road	18.11 to R25.95	7.84	38,500	D	58	15	4,758	932	0.23	0.22	8.5	10	6%	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable	PeMS Data Unavailable
	TOTAL	–	54.73	–	–	30,273	4,042	2,470,293	263,771	15.87	14.49	71.50	80	–	–	–	–	–

1 Source: Average Annual Daily Traffic and Level of Service (LOS) calculated is based on 2007 Caltrans Traffic Volumes on California State Highways and Highway Capacity Manual and Cambridge Systematics from 2008. Reported LOS is for the typical most congested daily peak travel period.
2 Source: Delay is the average additional travel time by vehicles/persons traveling under 60 mph. Data derived from 2007 HICOMP report, SACMET Travel Demand Model, PeMSs traffic data, and Caltrans District 3 Traffic Operations Probe vehicle Tach runs.
3 Peak Hour is during PM.
4 Source: 2007 Caltrans Division of Maintenance Pavement Summary Report
5 Source: 2004 through 2007 Caltrans Traffic Accident Surveillance and Analysis System summary data of the percentage above, or below, the statewide average for fatal, injury, and property damage-only collisions on comparable facilities.
6 Reliability: The Planning Time Index, is a measure of the reliability of the travel time on a particular route. It is the ratio of the 95th percentile of travel time on a route to the median free-flow travel time. This means it's the amount of time a traveler needs to allocate for a route if they want to show up on time 19 out of 20 trips. Reliability and Planning Time data was taken from April 2007. The data covered a 24-hour period of time on each Tuesday, Wednesday, and Thursday of that month. That data was then aggregated into a single average 24-hour day. It was then analyzed to determine the highest average AM and PM travel time. That time was then compared to the best possible average travel time to determine the additional time that was spent traveling the same segment.
7 Lost Productivity: Data taken April 2007 PeMS. As traffic increases to the capacity of the highway, speeds decline, throughput drops dramatically, and the efficiency of the highway to provide mobility decreases. This decline in the potential carrying-capacity of the freeway is expressed in terms of how many equivalent lane miles of roadway are lost.

TABLE 7: PARALLEL AND CONNECTING ROADWAYS PERFORMANCE MEASURES

County	Location	Average Daily Traffic[1]	PERFORMANCE MEASURES								
			LOS[1]	Total Vehicle Hours of Delay[2]		Total Person Minutes of Delay[2]		Minutes of Delay per Vehicle[2]	Minutes of Delay per Person[2]	Vehicle Travel Time (Minutes)[2]	Distressed Pavement (Lane Miles)[4]
				Daily	Peak Hour[3]	Daily	Peak Hour[3]	Peak Hour[3]	Peak Hour[3]	Peak Hour[3]	
PARALLEL AND CONNECTING ROADWAYS											
YOL	West Capitol: Enterprise Boulevard to Capitol Mall	13,737	No Data								
SAC	W: 5th Street to 26th Street	9,194	A								
	X: 5th Street to 26th Street	9,154	A								
	Folsom Boulevard: Watt Avenue to Bradshaw Road	25,600	C								
	Watt Avenue: Folsom Boulevard to US 50	63,900	F								
	Bradshaw Road: Folsom Boulevard to US 50	22,400	A								
	Folsom Boulevard: Bradshaw Road to Sunrise Boulevard	20,400	A								
	Bradshaw Road: Old Placerville to US 50	54,405	F								
	Old Placerville Road: Bradshaw Road to Rockingham Drive	11,864–18,365	A								
	Rockingham Drive: Old Placerville Road to Mather Boulevard	16,516	E								
	Mather Boulevard: Rockingham Drive to Folsom Boulevard	21,732	C								
	International Drive: Rockingham Drive to Zinfandel Drive	12,808	A								
	Zinfandel Drive: International Drive to Folsom Boulevard	22,298–47,032	B/E								
	White Rock Road: Zinfandel Drive to Sunrise Boulevard	25,459	A								
	Sunrise Boulevard: US 50 to Folsom Boulevard	No Data	No Data								
	White Rock Road: Sunrise Boulevard to Prairie City Road	3,400	B								
	Folsom Boulevard: Sunrise Boulevard to Iron Point Road	17,200	A								
	White Rock Road: Grant Line Road to ED/SAC County Line	6,700	D								
	Iron Point Road: Folsom Boulevard to East Bidwell/Scott Road	13,984	No Data								
	Scott Road: Iron Point Road to White Rock Road	No Data	No Data								
	Folsom Boulevard: Iron Point Road to Blue Ravine Road	No Data	No Data								
	Blue Ravine Road: Folsom Boulevard to Green Valley Road	No Data	No Data								
	Prairie City Road: US 50 to White Rock Road	6,000	D								

Data is unavailable for these performance measures at this time, however will be pursued in the next phase of the CSMP.

TABLE 7: PARALLEL AND CONNECTING ROADWAYS PERFORMANCE MEASURES (CONTINUED)

County	Location	Average Daily Traffic[1]	PERFORMANCE MEASURES								
			LOS[1]	Total Vehicle Hours of Delay[2]		Total Person Minutes of Delay[2]		Minutes of Delay per Vehicle[2]	Minutes of Delay per Person[2]	Vehicle Travel Time (Minutes)[2]	Distressed Pavement (Lane Miles)[4]
				Daily	Peak Hour[3]	Daily	Peak Hour[3]	Peak Hour[3]	Peak Hour[3]	Peak Hour[3]	
PARALLEL AND CONNECTING ROADWAYS											
ED	Green Valley Road: ED/SAC County Line to Francisco Drive	22,600	D	Data is unavailable for these performance measures at this time, however will be pursued in the next phase of the CSMP.							
	Green Valley Road: Francisco Drive to Silva Valley Parkway	13.077	D								
	Green Valley Road: Silva Valley Parkway to Cameron Park	9,849	C								
	Green Valley Road: Cameron Park Drive to Deer Valley Road	5,278	C								
	Green Valley Road: Deer Valley Road (East) to Lotus Road	8,381	D								
	Green Valley Road: Lotus Road to Placerville Drive	4,669	C								
	Latrobe Road: White Rock Road to US 50	24,742	C								
	Durock Road: Cameron Park Dr to South Shingle Road	7,278	C								
	Cameron Park Drive: Durock Road to US 50 (Durock Road to Coach Lane/ Coach Lane to US 50)	9,544/ 26,603	C/D								
	South Shingle Road: Durock Road to US 50	11,390	D								
	White Rock Road: ED/SAC County Line to Latrobe	12,808	D								
	White Rock Road: Latrobe Rd to Silva Valley Pkwy (Latrobe to Post/Post to Silva Vlly Pkwy)	10,124	C/D								
	Silva Valley Parkway: White Rock Rd to Serrano Pkwy (White Rock to Entrada/ Entrada to Serrano Pkwy)	13,708/ 9,328	D/C								
	Forni Road: Placerville Drive to Main Street	9,049/ 8,379	No Data								
	Placerville Drive: Forni Road to US 50	No Data	No Data								
	Main Street: Placerville Drive to Bedford Avenue	No Data	No Data								
	Main Street: Bedford Avenue to Broadway	No Data	No Data								
	Broadway: Main Street to Point View Drive	No Data	No Data								

1 Source: Average Daily Traffic and Level of Service (LOS) calculated are based on City of Sacramento between 2001 and 2007, Sacramento County from 2007/2008, City of Rancho Cordova between 2004 and 2007, and El Dorado County from 2007.

TABLE 8: TRANSIT PERFORMANCE MEASURE

County	Transit Provider	Route	Performance Measure
			Available *Daily* Capacity (%)[1]/ Available *Peak Hour* Capacity[1]
TRANSIT			
SAC	SacRT (Bus)	Route 21	70% / 10%
		Route 28	76% / 59%
		Route 36	83% / 74%
		Route 38	66% / 44%
		Route 72	56% / 20%
		Route 73	79% / 45%
		Route 74	82% / 43%
		Route 109	47% / 22%
	SacRT (Light Rail)	Gold Line	31% / Exceeds Capacity
ED/SAC	ED County Transit Authority	Commuter Express Bus Service	Not Applicable–Operates Peak Hour Only / 40.5%
		Iron Point Connector	76.4% / Not Available
		Reverse Commuter	Not Applicable–Operates Peak Hour Only / 98.2%
Yolo/SAC	Yolo County Transit District		Not Applicable–Operates Peak Hour Only / 49.8%
BIKE[3]			

1 Source: Average Daily and Peak Hour Available Capacity calculated from each transit provider's route ridership data.
2 The Reverse Commuter service is offered on vehicles that are returning to El Dorado County (Commuter Express Buses).
3 Bicycle performance measure(s) will be identified, applied, and included in the subsequent CSMPs.

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planned corridor system management strategies

CONCEPT LOS AND CONCEPT FACILITY

"Concept LOS" and "Concept Facility" have traditionally been used in Caltrans TCCRs to reflect the minimum level or quality of operations acceptable for each route segment within the 20-year planning period and the highway facility needed in the next 20 years to maintain the Concept LOS.

Typical Concept LOS standards in Caltrans District 3 are LOS "D" in rural areas and LOS "E" in urban areas. However, some heavily congested route segments now have a Concept LOS "F" because the improvements required to bring the LOS to "E" are not feasible due to environmental, right of way, financial, and other constraints. The application of multi-modal corridor management strategies should reduce the severity and duration of congestion and provide viable travel options and information that will enable a traveler to avoid severe freeway congestion.

The Concept LOS and Concept Facility for US 50 are shown in Table 9. Almost all US 50 segments are forecasted to operate under LOS "F" conditions in 20 years under the No-Build and Build scenarios.

CORRIDOR MANAGEMENT STRATEGIES

The US 50 CSMP also proposes specific strategies to enhance corridor mobility (see Table 10), based on the following principles:

- Manage all modes and facilities in the corridor as a single system, beginning with the transportation network defined in this CSMP.
- Implement comprehensive and dynamic multimodal monitoring and reporting for the system and for all modes.
- Develop and use micro-simulation modeling to identify mobility challenges and to evaluate proposed solutions.
- Complete the projects included in the regional transportation plans, with an emphasis on the completion of the key mobility improvement projects identified in this CSMP (see Tables 11 and 12).
- Implement the specific strategies outlined in this CSMP.

KEY CAPITAL PROJECTS

Tables 11 and 12 contain key capital projects that have been identified as the most critical to corridor mobility. These are also included in the SACOG MTP for 2035 and are either planned without any funding yet programmed, are partially programmed, or are entirely programmed. SACOG conducted significant public attitude research for the MTP for 2035 to complement comprehensive outreach efforts through community workshops; the *TALL Order: Moving the Region Forward event, the televised Town Hall Road Map for the Future*; and associated public polling. The results of the SACOG analyses and public outreach for the MTP were

The US 50 CSMP proposes specific strategies to enhance corridor mobility.

used when selecting the key projects for identification in the CSMP and to ensure consistency. Not all corridor projects in the MTP are included in the CSMP since the CSMP focuses on the managed network and the SACOG MTP considers all streets and roads, bike routes, and transit services in the corridor.

HIGHWAY 50 PARTNERSHIP

The Highway 50 Partnership is a cooperative public-private effort among the County of Sacramento, City of Rancho Cordova, City of Folsom, County of El Dorado, and several major landowners that recognize the need to consider corridor mobility needs holistically.

The Partnership has collaborated effectively to develop a Plan to improve mobility in the US 50 Corridor from Rancho Cordova to El Dorado Hills, an area identified as appropriate for growth in the SACOG Blueprint. Recognizing the need to generate private investment, the Partnership is seeking to implement a regional Highway 50 Corridor fee program to fund these projects.

In addition to the key projects indicated in Table 11, Table 12 displays the key projects identified by the Partnership.

These projects include (1) Near-Term Priority Improvement Projects and (2) Near-Term Expected Roadway Improvements.

The **Near-Term Priority Improvement Projects** would provide several new roadway connections for people to travel within and through the area to avoid congestion. They also include new transit routes and widening existing roadways viewed by the Partnership as a package that would provide system-wide travel benefits. These improvements, targeted for completion through 2012, would reduce vehicle hours of delay during commute hours by 30 percent.

The **Near-Term Expected Roadway Improvements** are considered by the Partnership to be readily expected since they are tied to expected development or are part of a near-term capital improvements program.

VISIONARY PROJECTS

Visionary projects are not yet included in the SACOG MTP or EDCTC RTP, but appear to offer considerable corridor mobility benefits and merit further analysis and consideration for inclusion in the next MTP and RTP. These are displayed in Table 13.

The "Plus 10% List" in the SACOG MTP identifies projects that are attractive from a performance standpoint, but could not be included in the Final Project Lists because of financial constraint. The "Plus 10% List" element offers the opportunity to include projects that would not be affordable without additional funding. Some projects identified in the Visionary Projects List were analyzed by SACOG during development of the
current MTP. Some of these are included in the
"Plus 10% List."

Watt Avenue Light Rail Station Improvement Project

TABLE 9: US 50 CONCEPT LOS AND FACILITY TYPE

Location				Forecasted Level of Service[1] (LOS) and Facility Type						
County	**Description and Location**	**From Post Mile**	**To Post Mile**	**Current LOS[1]**	**20-Year No Build LOS[1,2]**	**20-Year Build LOS[1,2]**	**20-Year Concept LOS[1,3]**	**Existing Facility[4]**	**Concept Facility[4,5,6]**	**Ultimate Facility[4,5,7]**
YOL	Interstate 80 to Yolo/Sacramento County Line	0.00	3.16	F	F	F	F	8F (6F between Jefferson Blvd. ramps)	8F+2HOV+Aux Lanes	8F+2HOV+Aux Lanes
SAC	Yolo/Sacramento County Line to SR 99 and 51	L0.00	L2.48 = R0.00	F	F	F	F	8F	8F+2HOV+Aux Lanes	8F+2HOV+Aux Lanes
SAC	State Routes 99 and 51 to Watt Avenue	R0.00	R5.34	F	F	F	F	8F	8F+2HOV+Aux Lanes	8F+2HOV+Aux Lanes
SAC	Watt Avenue to Zinfandel Drive	R5.34	R10.92	F	F	F	F	8F	8F+2HOV+Aux Lanes	8F+2HOV+Aux Lanes
SAC	Zinfandel Drive to Sunrise Boulevard	R10.92	12.50	E	F	F	F	8F	8F+2HOV+Aux Lanes	8F+2HOV+Aux Lanes
SAC	Sunrise Boulevard to Folsom Boulevard	12.50	17.01	E	F	F	F	6F+2HOV to Hazel Ave., 4F+2HOV to Folsom Blvd.	6F+2HOV+Aux Lanes to Hazel Ave., 4F+2HOV+Aux Lanes to Folsom Blvd.	8F+2HOV+Aux Lanes
SAC	Folsom Boulevard to SAC/ED County Line	17.01	23.14	D	F	F	F	4F+2HOV	4F+2HOV+Aux Lanes	6F+2HOV+Aux Lanes
ED	Sacramento/El Dorado County Line to Cameron Park Drive	0.00	R6.57	E	F	F	F	4F	4F+2HOV+Aux Lanes	6F+2HOV+Aux Lanes
ED	Cameron Park Drive to Missouri Flat Road	R6.57	R15.06	E	F	E	E	4F	4F+2HOV+Aux Lanes to Greenstone, 4F+Aux Lanes to Missouri Flat	6F+2HOV+Aux Lanes to Greenstone, 4F+2HOV+Aux Lanes to Missouri Flat
ED	Missouri Flat Road to End of Freeway in Placerville	R15.06	17.25	D	F	F	F	4F	4F+Aux Lanes	4F+Aux Lanes
ED	End of Freeway in Placerville to Bedford Avenue	17.25	18.11	D	E	E	E	4E	4E	4E
ED	Bedford Avenue to Cedar Grove Exit	18.11	R25.95	D	F	F	F	4F to Smith Flat, 4E to Camino	4F+Aux Lanes to Smith Flat, 4E to Camino	4F+Aux Lanes

1 Level of Service (LOS): A “report card” for evaluating traffic flow with “A” being the best and “F” being the worst.
2 20-Year LOS (No Build): The LOS that would be expected at 20 years with no improvements.
3 20-Year Concept LOS: The minimum acceptable LOS over the next 20 years.
4 Facility Type Codes: C=Conventional Highway; E=Expressway; F=Freeway; HOV=High Occupancy Vehicle Lanes; Aux=Auxiliary Lanes.
5 Operational Improvements are included in future facilities for all segments. Examples of operational improvements include TOS improvements and Auxiliary lanes.
6 Concept Facility: the future roadway with improvements needed in the next 20 years. If LOS “F,” no further degradation of service from existing “F” is acceptable, as indicated by delay performance measurement.
7 Ultimate Facility: The future roadway with improvements needed beyond a 20 year timeframe.

TABLE 10: US 50 CSMP STRATEGIES

Strategy	Description	Implementation Challenges
Maintain and operate the existing corridor multi-modal transportation infrastructure.	Maintain the existing investment in all modes of the transportation system and provide adequate resources for daily operations, including operating revenues for transit services.	Funding availability, funding competition within the region.
Fully coordinate the delivery of transportation services and facilities in the corridor, including daily operations and system planning for enhancements.	Interagency operational coordination to maximize the efficiency and effectiveness of all modes operating in the corridor with a focus on the CSMP transportation network defined in this CSMP. Use of an existing group or committee to provide initial oversight for this strategy.	Diverse interests and competing priorities and limited resources.
Construct planned and programmed corridor capital improvement projects.	Implementation of the capital improvements in the corridor included within the approved Metropolitan Transportation Plan and Regional Transportation Plan for all transportation modes within the scope, schedule, and cost specified.	Funding availability, funding competition within the region.
Comprehensive daily monitoring of the status of all modes providing service on the CSMP transportation network.	Full deployment of multimodal transportation service status detection systems for all CSMP network components.	Funding availability, funding competition within region.
Provide traveler information to the public.	Provide the public with real-time easily accessible information regarding the status of all CSMP transportation system components so as to allow travelers to make informed decisions about trip mode, time, and routing options.	Funding availability, funding competition within region.
Continually monitor and analyze the CSMP transportation network to improve system performance.	Monitor transportation performance measures and make system modifications, as appropriate, on a frequent and timely basis.	Staff resources and data availability.
Decrease the duration of non-recurrent traffic congestion.	Expand and enhance the Freeway Service Patrol to respond to automobile accidents and vehicle break-downs.	Funding availability, funding competition within the region.
Timely implementation of STARNET.	Expedite the implementation of the STARNET operators of transportation facilities and emergency responders in the Sacramento region through real-time sharing of data and live video, refinement of joint procedures pertaining to the operation of roadways and public transit, and public safety activities, as well as enhance the region's 511 web site and interactive telephone service to provide more traveler information.	Developmental time, acceptance by agencies and integration into daily use, and identification of maintenance and operations funding.
Enhance transit and rail service.	Increase transit service frequency, provide express transit services, implement bus rapid transit routes, reduce headways for light rail and buses, and construct planned light rail line extensions.	Funding availability, funding competition within the region.
Complete Bus/ Carpool lane network.	Complete the regional bus/carpool lane network, including freeway-to-freeway HOV lane connectors.	Funding availability, funding competition within the region. Public agency and public acceptance of network.

TABLE 10: US 50 CSMP STRATEGIES *(CONTINUED)*

Strategy	Description	Implementation Challenges
Enhance Transportation Demand Management strategies.	Encourage employers to provide telecommuting and flexible working hour options to employees.	Acceptance by employers and resources to participate.
Optimize the timing and synchronization of traffic signals.	Coordinate the optimization and timing of traffic signals on freeway ramps and along parallel and connecting roadways within and between jurisdictions to improve traffic flow and reduce congestion. Provide signal priority systems for transit vehicles.	Funding availability and coordination among cities, counties, and Caltrans.
Improve access management of freeways and parallel/ connecting roadways.	Develop and implement access management strategies to maintain the operational efficiency of freeways and parallel/connecting roadways.	Agreement between responsible jurisdictions as to where increased access control is needed. Increased access control on some parallel/connecting roadways may increase traffic volumes on non-corridor roads.
Develop innovative use of CMSs (e.g.; travel times).	Potential uses of CMSs to improve system efficiency include the use of CMSs along portions of all corridors near transit station to indicate travel times based on real-time existing traffic conditions on the freeway as well as on parallel roadways and express bus and light rail services. CMS can also be used to identify the number of parking spaces that are still available at the light-rail stations.	Funding availability, funding competition within the region.
Implement & expand Transit AVL/Transit status information enhancements for system users.	Expand the use of AVL systems utilizing GPS technology to track in real-time the location of transit vehicles, monitor transit schedules, dispatch transit vehicles, and provide real-time passenger information such as “next bus” or “next train” arrival times.	Funding availability, funding competition within region.
Expand Park-and-Ride lots at key locations.	Add additional capacity to existing park-and-ride lots near transit stations and other locations that are approaching capacity.	Funding availability, funding competition within the region, and available land.
Improve bike-pedestrian access in the CSMP transportation network.	Plan and program for construction of additional bicycle paths / lanes, and related improvements for access and connectivity to transit, park and ride lots, and destination points.	Funding availability, funding competition within the region.
Provide “Bike-Sharing”/”Car-Sharing” to/from transit (“Carlink”), and from neighborhoods.	Expand the Regional Rideshare and Spare-the-Air programs to include bicycle and car sharing opportunities.	Funding availability and coordination between SACOG, TMA, Air Districts, employers, developers, property managers, and local government officials.
Provide parking management strategies in interested jurisdictions, where applicable, to discourage use of single-occupant vehicles.	In higher-density areas, provide preferential parking for carpools and vanpools, require residential parking permits, remove on-street parking, and/ or provide graduated parking fees for metered on-street parking based on vehicle type and time of day for SOV spaces to encourage transit use.	Acceptance by businesses, local officials, and the general public.
Expand bicycle commute & transit fare strategies/subsidies.	Increase participation by large employers in programs that subsidize transit fares for employees during peak-hour commute times and provide bicycling to work incentives.	Voluntary participation by large employers to pay subsidy to transit providers.

TABLE 11: KEY CAPITAL PROJECTS

County/Lead Agency	Route/ Roadway	From	To	Project Description	Programmed Funds	Additional Funding Needed	Total Cost Estimate (x $1,000)	Comp Year (FFY)
US 50								
Sacramento/ Caltrans District 3	US 50	Downtown	Watt Avenue	HOV Lanes	$0	$75,000	$75,000	2020
Sacramento/ Caltrans District 3	US 50	Watt Avenue	Sunrise Blvd	HOV Lanes	$165,000	$0	$165,000	2013
Sacramento/ Caltrans District 3	US 50	Bradshaw Road	Mather Field Road	Eastbound and Westbound Auxiliary Lanes	$0	$3,700	$3,700	2016
Sacramento/ Caltrans District 3	US 50	State Route 99 (Oak Park Interchange)		Interchange Improvements including bus/carpool lane connectors	$0	$150,000	$150,000	2014
Sacramento/ Caltrans District 3	US 50	Interstate 5 (Riverfront Interchange)		Riverfront Interchange Improvements including bus/ carpool lane connectors	$30,000	$170,000	$200,000	2016
ED / Caltrans District 3	US 50	Camino		Operational/ Safety Improvements: Construct an undercrossing, median barrier, modify local road connections and/or associated operational improvements on and adjacent to US 50	$15,000	$0	$15,000	2012
ED / ED County DOT	US 50	West of Latrobe Road	West of Bass Lake Grade	HOV Lanes (Ph.1)	$47,141	$0	$47,141	2010
ED / Caltrans District 3	US 50	West of Bass Lake Road	Ponderosa Road	HOV Lanes (Ph.2)	$55,000	$0	$55,000	2011
ED / Caltrans District 3	US 50	Ponderosa Road	Greenstone Road	HOV Lanes (Ph.3)	$22,357	$0	$22,357	2013
ED / ED County DOT	US 50	Future Silva Valley IC	Future Empire Ranch IC	Mainline Widening ; construct new WB lane within the median from proposed Silva Valley IC to proposed Empire Ranch IC	$2,950	$0	$2,950	2013

TABLE 11: KEY CAPITAL PROJECTS *(CONTINUED)*

County/Lead Agency	Route/ Roadway	From	To	Project Description	Programmed Funds	Additional Funding Needed	Total Cost Estimate (x $1,000)	Comp Year (FFY)
PARALLEL AND CONNECTING ROADWAYS								
ED / ED County DOT	Silva Valley Parkway	Entrada Drive	Future US 50/ Silva Valley Parkway IC	Widen Silva Valley Road from 2 lanes to 4 lanes. Includes Class II bike lanes and left turn storage pockets.	$2,921	$0	$2,921	2010
ED / ED County DOT	Silva Valley Parkway	US 50		US/50 Silva Valley Parkway (Phase 2): Includes construct-ing overcrossing and ramps, signalization at EB and WB on/ off ramps	$57,817	$0	$57,817	2016
ED / ED County DOT	Headington Road	Missouri Flat Road	El Dorado Road	Extend 2 lanes with median	$9,878	$0	$9,878	2012
ED / ED County DOT	Durock Road	Robin Lane	South Shingle Road	Extend 2 lanes with median	$1,239	$9,214	$10,453	2015
ED / ED County DOT	Durock Road	Business Center Drive		Intersection signalization: Includes adding turn pockets on Durock Road	$4,333	$0	$4,333	2009
ED/ City of Placerville	Point View Drive	Broadway	Smith Flat Road	Extend: 2 lanes	$1,300	$0	$1,300	2020
ED/ City of Placerville	Western Placerville/ US 50 Interchange	Forni Road/ Ray Lawyer Drive	Placerville Drive	Interchange Reconstruction; convert Ray Lawyer Dr Overcrossing to full IC; Auxiliary Lanes	$5,059	$34,741	$39,800	2020
Sacramento/ City of Rancho Cordova	Mather Boulevard	Rockingham Road	Zinfandel Drive	Widen to 4 lanes	$0	$8,617	$8,617	2020
Sacramento	Rancho Cordova Parkway II	Grant Line Road	White Rock Road	New 6-lane expressway, includ-ing intersection improvements at Kiefer Blvd. & White Rock Road	$0	$44,518	$44,518	2020
Sacramento/ City of Folsom	Scott Road	US 50	White Rock Rd	Widen from 2 to 6 lanes	$16,000	$0	$16,000	2020
Sacramento/ Sacramento County DOT	White Rock Road	Grant Line Rd	Prairie City Rd	Widen from 2 to 4 lanes; realign near Nike and Nimbus Roads and connect with exist-ing alignment west of Prairie City Rd; Realign Grant Line Rd to intersect with realigned White Rock Rd.	$26,600	$0	$26,600	2020
Sacramento/ Sacramento County DOT	Hazel Avenue	US 50 / Hazel	Madison	Widen American River Bridge and approaches from 4 to 6 lanes; Widen Hazel Avenue from A.R. Bridge to Madison from 4 to 6 lanes with Bike Lanes/Signals	$83,530	$0	$83,530	2020

TABLE 11: KEY CAPITAL PROJECTS *(CONTINUED)*

County/Lead Agency	Route/ Roadway	From	To	Project Description	Programmed Funds	Additional Funding Needed	Total Cost Estimate (x $1,000)	Comp Year (FFY)
PARALLEL AND CONNECTING ROADWAYS								
ED/ ED County DOT	Green Valley Road	Salmon Falls Road east	Deer Valley Road	Widen from 2 to 4 lanes	$0	$14,576	$14,576	2025
ED/ ED County DOT	Green Valley Road	Deer Valley Road east	Lotus Road	Widen	$958	$4,513	$5,471	2015
ED/ ED County DOT	Green Valley Road	Francisco Drive	Salmon Falls Road	Widen from 2 to 4 lanes, divided	$412	$3,491	$3,903	2015
ED/ ED County DOT	Latrobe Road	Investment Boulevard	Golden Foothill Parkway	Widen from 2 lanes undivided to 4 lanes divided	$1,076	$8,792	$9,868	2015
ED/ ED County DOT	Latrobe Road	Carson Creek	White Rock Road	Widen from 4 to 6 lanes	$0	$23,755	$23,755	2025
ED/ ED County DOT	White Rock Road	ED/Sac County Line	Manchester Drive	Widen 2 to 4 lanes, divided. Includes signal interconnect and coordination.	$0	$23,755	$23,755	2025
Sacramento/ City of Rancho Cordova	Easton Valley Parkway	Prairie City Road	Empire Ranch Road extension south of US 50	Construct new 4 lane road	$0	$45,000	$45,000	2020
Sacramento/ Sacramento County DOT	Hazel Avenue	Easton Valley Parkway	Grant Line Road/White Rock Road	New road extension: 4 lane limited access through Aerojet property	$0	$18,000	$18,000	2018
Sacramento/ Sacramento County DOT	White Rock Road	Prairie City Road	ED County Line	Widen to 4 lanes	$8,330	$64,773	$73,103	2018
Sacramento/ Sacramento County DOT	Green Valley Road	East Natoma	Sacramento/ ED County line	Widen to 4 lanes	$0	$3,000	$3,000	2018
Sacramento/ City of Rancho Cordova	Zinfandel Drive	International Drive	Folsom Boulevard	Widen to 4 lanes	$0	$12,000	$12,000	2020

TABLE 11: KEY CAPITAL PROJECTS *(CONTINUED)*

County/Lead Agency	Route/ Roadway	From	To	Project Description	Pro-grammed Funds	Addi-tional Funding Needed	Total Cost Estimate (x $1,000)	Comp Year (FFY)
TRANSIT								
Yolo & Sacramento/ City of West Sacramento, & City of Sacramento	Sacramento River Crossing	15th Street in the City of West Sacramento	Broadway in the City of Sacramento	New all-modal river crossing (Auto, Transit, Bike & Pedestrian) from Sacramento across the Sacramento River to West Sacramento. The crossing was modeled between Broadway in Sacramento & 15th Street in West Sacramento, but final alignment options will be studied in subsequent planning efforts.	$800	$99,200	$100,000	2019
Sacramento/ Cal State University Sacramento	CSUS Campus	—	—	Sac State Tram adjoining City streets and SRTD 65th Street light rail/bus transfer station: Bus Rapid Transit System	$23,574	$0	$23,574	2013
Sacramento/ City of Rancho Cordova	Rancho Cordova	Various	Various	New Service: Rancho Cordova Pilot Transit Shuttle System; new transit service for connection to RT's Gold Line	$2,380	$1,500	$38,880	2014
Yolo & Sacramento/ City of West Sacramento	TBD	West Sacramento	Sacramento	Streetcar Service between West Sacramento and Downtown Sacramento	$17,400	$54,700	$72,100	2014
Sacramento/ City of Rancho Cordova	RT Gold Line	RT Gold Line Tracks	Mather Field Road	Light Rail Grade Separations	$0	$52,888	$52,888	2025
Sacramento/ City of Rancho Cordova	RT Gold Line	RT Gold Line Tracks	Zinfandel Drive	Light Rail Grade Separations	$0	$52,888	$52,888	2025
Sacramento/ City of Rancho Cordova	RT Gold Line	RT Gold Line Tracks	Bradshaw Road	Light Rail Grade Separations	$0	$35,260	$35,260	2025
Sacramento City of Rancho Cordova	RT Gold Line	RT Gold Line Tracks	Routier Road	Light Rail Grade Separations	$0	$35,260	$35,260	2025
Sacramento/ City of Sacramento	Sacramento Valley Station			Sacramento Intermodal Transportation Facility (Phase 1) - Develop intermodal transportation terminal for heavy rail, light rail and bus service	$77,799	$0	$77,799	2010
Sacramento City of Sacramento	Sacramento Valley Station			Sacramento Intermodal Transportation Facility (Phase 2) - Develop intermodal transportation terminal for heavy rail, light rail and bus service	$24,101	$1,000	$25,101	2014

TABLE 11: KEY CAPITAL PROJECTS *(CONTINUED)*

County/Lead Agency	Route/ Roadway	From	To	Project Description	Programmed Funds	Additional Funding Needed	Total Cost Estimate (x $1,000)	Comp Year (FFY)
BICYCLE ROUTES								
Sacramento/ City of Rancho Cordova	US 50/Mather Field Road IC	US 50	Mather Field Road	US 50/Mather Field Road Pedestrian/Bike Crossing along the Mather Airport RR Spur alignment	$0	$820	$1,055	2015
ED / ED County DOT	Sacramento/ Placerville Transportation Corridor	Forni Rd	Missouri Flat Rd	Class I Bike Trail	$1,423	$111	$1,534	2009
ED/ City of Placerville	El Dorado Trail Western Extension	Canal Street/ Main Street	Ray Lawyer Drive/Forni Road	Class 1 Bike Trail	$1,850	$0	$1,850	2010
ED/ ED County DOT	US 50/ED Hills Blvd. IC	US 50	El Dorado Hills Blvd/ Latrobe Road	US 50/El Dorado Hills Blvd Pedestrian Overcrossing	$5,508	$66	$5,574	2014

TABLE 12: 50 MOBILITY PARTNERSHIP KEY CAPITAL PROJECTS

Route/Roadway	From	To	Project Description
NEAR TERM PRIORITY IMPROVEMENT PROJECTS			
US 50	Sunrise	Scott Road	Auxiliary Lane
US 50	Hazel Avenue		Interchange Improvements
Hazel Avenue	Folsom Boulevard	Easton Valley Parkway	New 4 Lane Road
Easton Valley Parkway	Hazel Avenue	Rancho Cordova Parkway	New 6 Lane Road
Rancho Cordova Parkway	Easton Valley Parkway	White Rock Road	New 4 Lane Road
White Rock Road	Sunrise Boulevard	Silva Valley Parkway	Widen to 4 Lanes
RT Gold Line	Hazel	Iron Point Station	Passing Tracks
US 50	Rancho Cordova Parkway		New Interchange
Zinfandel Drive	South of International	Douglas Road	New 4 Lane Road
International Drive	Kilgore Road	Rancho Cordova Parkway	New 6 Lane Road
Douglas Road	Zinfandel Extension	Sunrise Boulevard	Widen to 4 Lanes
Sunrise LRT, Citrus Road, Sunrise Mall			Bus Rapid Transit/Express Bus

TABLE 12: 50 MOBILITY PARTNERSHIP KEY CAPITAL PROJECTS (CONTINUED)			
Route/Roadway	**From**	**To**	**Project Description**
US 50: NEAR TERM PRIORITY IMPROVEMENT PROJECTS			
US 50	Empire Ranch Road		New Interchange
US 50	Silva Valley		New Interchange
US 50	Scott Road	Empire Ranch Road	Aux Lanes
US 50	Empire Ranch Road	El Dorado Hills Boulevard	Aux lanes and climbing lanes
US 50	El Dorado Hills Boulevard	Silva Valley Parkway	Aux lanes and climbing lanes
US 50	Silva Valley Parkway	Bass Lake Road	Aux lanes
Sunrise Boulevard	White Rock Road	Douglas Boulevard	Widen to 6 lanes
Sunrise Boulevard	Douglas Boulevard	Jackson Road	Widen to 4 lanes
White Rock Road	Sunrise Boulevard	Future Rancho Cordova Parkway and El Dorado County Line to Latrobe Road	Widen to 4 lanes
Douglas Boulevard	Sunrise Boulevard	Grant Line Road	Widen to 4 lanes
Rancho Cordova Parkway	Douglas Boulevard	Rio del Oro Parkway	New 2 lane road
Rancho Cordova Parkway	Rio del Oro Parkway	White Rock Road	New 6 lane road
Jaeger Road	Douglas Road	Kiefer Boulevard	New 4 lane road
Chrysanthy	Sunrise Boulevard	Americanos Boulevard	New 4 lane road
Kiefer Boulevard	Sunrise Boulevard	Jaeger Road	New 4 lane road
Grant Line Road	Douglas Road	Chrysanthy Road	Widen to 4 lanes
Hazel Avenue	Gold Country Boulevard	Madison Avenue	Widen to 6 lanes
Latrobe Road	South of White Rock Road		Widen to 4 lanes

TABLE 13: VISIONARY PROJECTS				
County	**Route/Roadway**	**From**	**To**	**Project Description**
Sac / Yolo	US 50	Enterprise	Downtown Sacramento	HOV Lanes
ED	TBD	Folsom	Placerville	Transit – Type TBD
ED	New Road	Latrobe Road	White Rock Road (potentially US 50)	New 2-lane road

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congestion and bottleneck analysis

The 2000 Highway Capacity Manual defines a bottleneck as "a road element on which demand exceeds capacity."

The bottleneck analysis evaluates specific causes of existing recurrent traffic congestion in the corridor. Freeway bottleneck locations that create mobility constraints are identified and documented, and their relative contribution to corridor-wide congestion is reported. The bottleneck locations were determined based on a combination of the use of 2006 PeMS data, HICOMP report, probe vehicle tach runs, and field observations.

Traffic congestion can be categorized as either recurrent or non-recurrent.

Recurrent congestion occurs repeatedly at the same place and time of day in a predictable pattern. Recurrent congestion is often associated with facility capacity limitations, changes in capacity, conflicting vehicle movements such as lane merges, inadequate number of transit vehicles to handle passenger loads, or other persistent physical conditions of the transportation facility.

Non-recurrent congestion is usually attributed to collisions, equipment malfunction, community events, weather, construction projects and other occasional occurrences. When transportation systems are close to their maximum carrying capacity, non-recurrent congestion is more likely to occur as there is little excess capacity in the system.

The location and extent of the bottlenecks on US 50 found in the AM and PM peak periods are summarized in Tables 14 and 15. These depictions should be considered a snapshot view and not a comprehensive analysis of all bottlenecks in the corridor. Further work is being conducted to refine the identification and causality of bottlenecks within the corridor. Table 14 shows a summary of the US 50 eastbound bottlenecks, while the tables that follow discuss each bottleneck, including location and possible causality. Table 15 shows a summary of the US 50 westbound bottlenecks, while the tables that follow discuss each bottleneck, including location and possible causality. Minor or hidden bottlenecks are those that are not as defined (or severe) as the major bottlenecks. Please note that the graphics accompanying the bottlenecks are not to scale.

Freeway bottleneck locations that create mobility constraints are identified and documented, and their relative contribution to corridor-wide congestion is reported.

Major bottlenecks in the eastbound direction during the AM peak period are at Howe Avenue, and during the PM peak period are at 48th Street, Howe Avenue, Mayhew Road, Routier Road, Sunrise Boulevard, and El Dorado Hills Boulevard. Major bottlenecks in the westbound direction during the AM peak period are at El Dorado Hills Boulevard, Hazel Avenue, Zinfandel Drive,

Bradshaw Road, and Howe Avenue and major bottleneck locations during the PM peak period are at Zinfandel Drive, Routier Road, Bradshaw Road, Howe Avenue, and Interstate 5.

Causalities for these bottlenecks range from high-traffic demand (congestion), heavy weaving/merging areas, or physical constraints such as lane drops, lack of ramp meters, incomplete HOV network, incomplete Auxiliary Lane network, poorly coordinated traffic signals and an off-ramp queue (Sunrise Boulevard).

US 50 Westbound Onramp

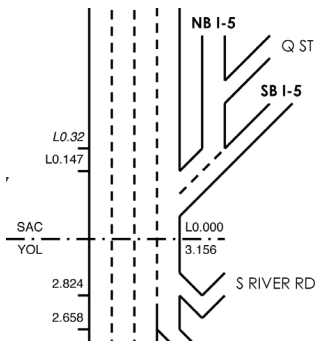
TABLE 14: US 50 EASTBOUND BOTTLENECK SUMMARY

Source: PeMS, Caltrans tach runs, and Cambridge Systematics field observations.

Bottleneck Location	PeMS Speed Contours		Caltrans Probe Vehicle Runs		Cause
	AM	PM	AM	PM	
A. Jefferson Blvd PM 2.5		Minor		Minor	Traffic weaving, truck volumes and grade
B. 48th St PM 7	Minor	Major	Minor	Minor	Merge from SR 51 and SR 99
C. Howe Ave PM 9	Major	Major	Major		Weave between Howe and Watt
D. Mayhew Rd PM 12.		Major	Minor	Major	Weaving before Bradshaw Exit
E. Routier Rd PM 14		Minor		Major	Weaving before Mather Field Rd Exit
F. Sunrise Blvd PM 18.5		Minor		Major	Lane drop, HOV add, off-ramp queue
G. Folsom Blvd PM 22		Minor		Minor	Lane drop 4 to 3
H. El Dorado Hills Blvd PM 27.5				Major	Poorly coordinated traffic signal on arterial causes spillback onto freeway

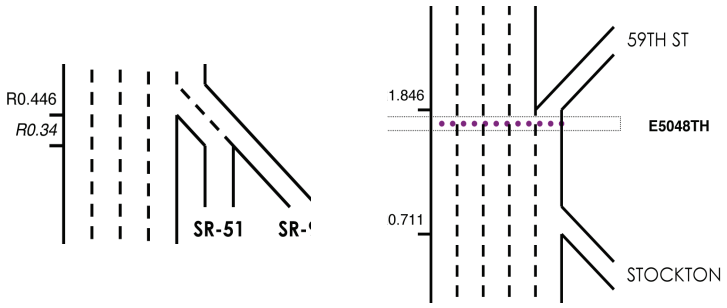
A. Jefferson Blvd Bottleneck

The bottleneck approximately located at Jefferson Blvd is due to weaving traffic as those entering the freeway from Jefferson Blvd must cross those attempting to exit the freeway to I 5. There is a large number of trucks in the stream which struggle with the grade at this location exacerbating the bottleneck.



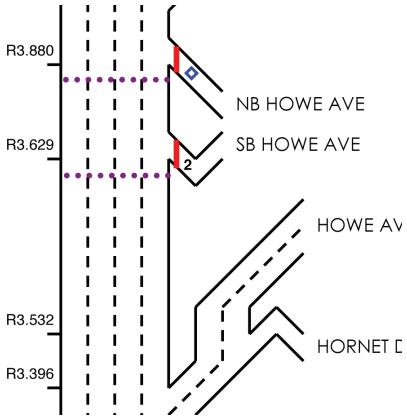
B. 48th St Bottleneck

The bottleneck approximately located at 48th St is due to the additional traffic merging from SR 51 and SR 99, combined with the eventual lane drop at 59th St. This queue extends upstream past the off-ramp to SR 51/99. These off-ramps are bottlenecks in themselves, which spill back and choke the US 50 mainline.



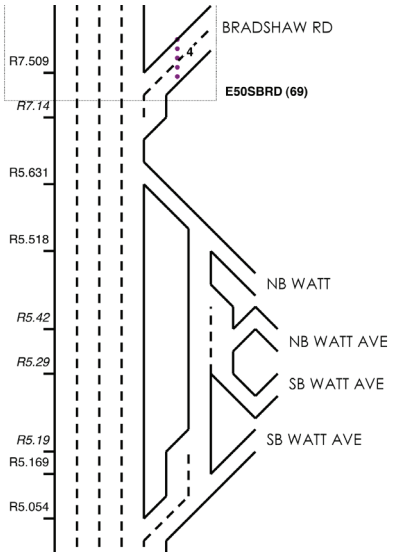
C. Howe Ave Bottleneck

The bottleneck at Howe Ave is due to the entering traffic from Howe Ave. Two Howe Ave on-ramps feed into US 50 eastbound: southbound Howe Ave loop on-ramp and northbound Howe Ave direct ramp, approximately 300 feet apart. The Watt Avenue off-ramp is just down stream with heavy exiting volumes; therefore the segment between Howe and Watt is characterized by heavy weaving.



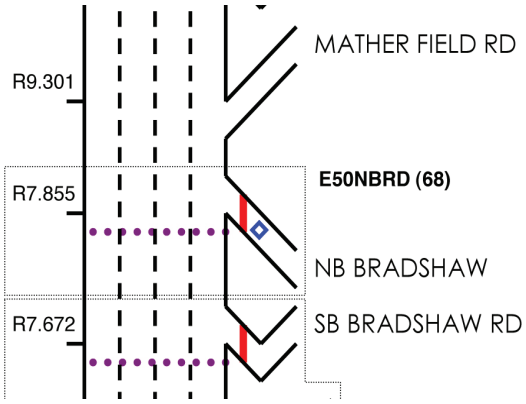
D. Mayhew Rd Bottleneck

The bottleneck approximately located at Mayhew Rd most likely begins with the additional traffic entering from Watt Ave and ends with the exiting traffic at Bradshaw Rd. It is possible that there is a high proportion of weaving traffic with in this section (Watt Ave traffic moving to the left lane and those exiting at Bradshaw Rd moving to the right lane).



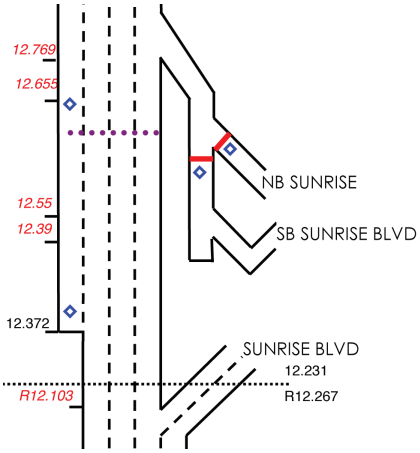
E. Routier Rd Bottleneck

It is likely that the bottleneck at Routier Rd is due to the same merging conditions associated with Mayhew Rd. The area is comprised of both residential and light industrial/office land uses; therefore, during the PM peak period, there are large volumes of vehicles entering at Bradshaw Rd moving to the left lanes and large volumes of vehicles moving to the right lane to exit at Mather Field Rd.



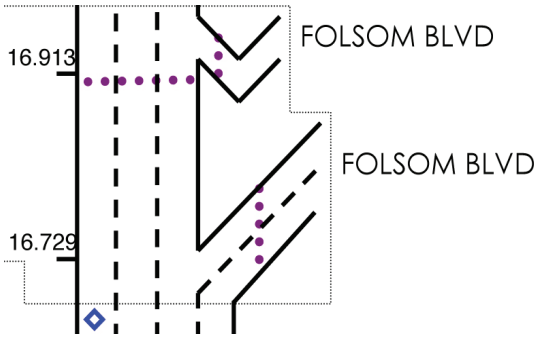
F. Sunrise Blvd Bottleneck

At Sunrise Blvd, the right-most lane exits, while an HOV lane is added as the median lane. The bottleneck is formed from vehicles shifting left to avoid exiting at Sunrise Blvd and to enter the HOV lane. There is a large volume of vehicles queued at the Sunrise off-ramp which spills back and negatively affects the US 50 mainline.



G. Folsom Blvd Bottleneck

The right-most lane exits to Folsom Blvd, leaving one HOV lane and two regular lanes along the US 50. The bottleneck is caused by this lane drop as well as the quick merge at the Folsom on-ramp.



H. The eastbound US 50 at El Dorado Hills Blvd Bottleneck

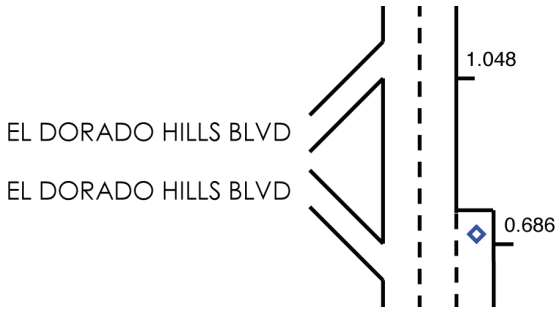
The eastbound El Dorado Hills Blvd bottleneck is caused by a traffic signal on the arterial that often causes spillbacks on the EB loop offramp onto the freeway mainlines.

TABLE 15: US 50 WESTBOUND BOTTLENECK SUMMARY

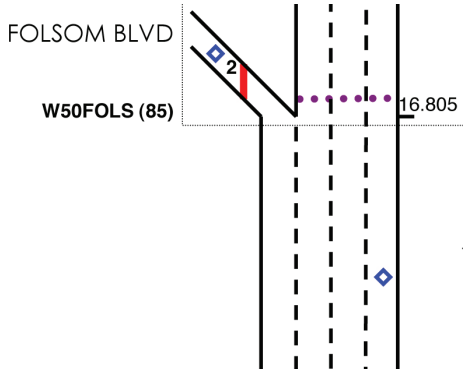
Source: PeMS, Caltrans tach runs, and Cambridge Systematics field observations.

Bottleneck Location	PeMS Speed Contours		Caltrans Probe Vehicle Runs		Cause
	AM	PM	AM	PM	
A. El Dorado Hills Blvd PM 27.5			Major		Poorly coordinated traffic signal on El Dorado Hills Blvd
B. Hazel Ave PM 21	Major				Entering traffic
C. Zinfandel Dr PM 16	Minor	Major	Major	Major	Entering traffic
D. Routier Rd PM 14.	Minor	Major	Minor		Weaving traffic
E. Bradshaw PM 13	Major	Major	Major		Merging traffic and curve
F. Howe Ave PM 9	Minor	Major	Major	Major	Weaving traffic and grade
G. SR 51/SR 99 PM 6	Minor				Lane drop, weaving traffic
H. I-5 PM 3		Major			Weaving traffic

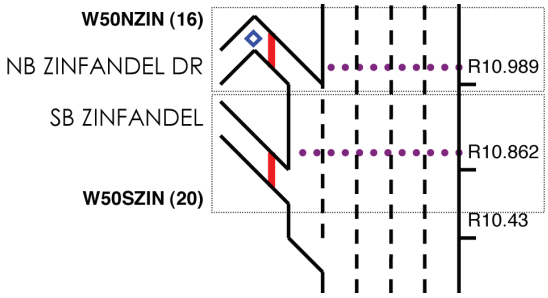
A. El Dorado Hills Blvd Bottleneck
The minor bottleneck at El Dorado Hills Boulevard is caused by the traffic signal on El Dorado Hills Blvd that causes spillback on the westbound offramp onto the freeway mainlines.



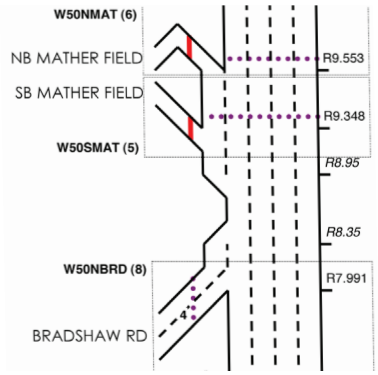
B. Hazel Avenue Bottleneck
In 2006, the Hazel Ave Bottleneck is caused by the traffic entering at both Hazel Ave and Folsom Blvd (the two on-ramps are separated by about one mile). The bottleneck that would appear at Folsom Blvd combines with the bottleneck at Hazel Ave to form a large bottleneck that does not clear until after Hazel Ave. Sometimes causing spillbacks as far as Prairies City Road, this bottleneck was mitigated in 2007 as part of the GO CALIFORNIA program.



C. Zinfandel Dr Bottleneck
There is heavy traffic coming from Sunrise Blvd, but the lane addition immediately after the westbound on-ramp prevents a bottleneck from forming; but, as traffic flows westward, the heavy traffic entering from Zinfandel Dr causes a bottleneck here.

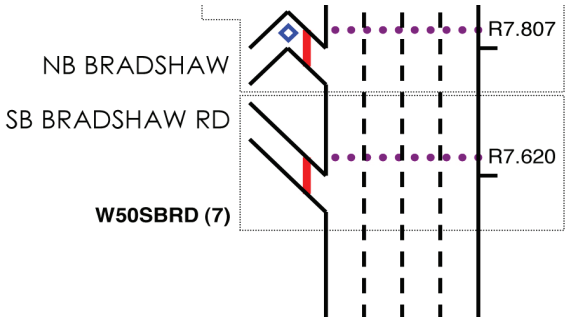


D. Routier Rd Bottleneck
The bottleneck at Routier Rd is caused by weaving traffic between Mather Field Rd and Bradshaw Rd. This highway segment represents a transition area where vehicles that have been traveling in the left lanes begin to shift to the right lanes to exit, while the entering traffic tries to shift to the left lanes.



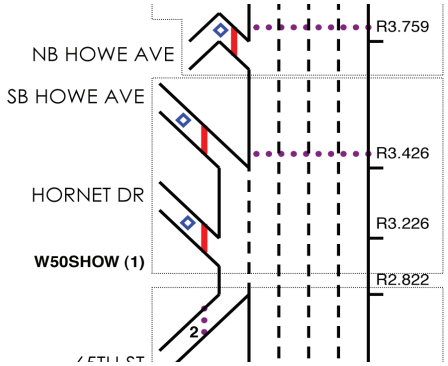
E. Bradshaw Rd Bottleneck

The Bradshaw Rd bottleneck is caused by the entering traffic from Bradshaw Road, the high truck volumes and the curve west of Bradshaw. Two Bradshaw Rd on-ramps feed into US 50 westbound: southbound Bradshaw Rd direct on-ramp and northbound Bradshaw Rd loop on-ramp, approximately 400 feet apart.



F. Howe Ave Bottleneck

The Howe Ave bottleneck is caused by a grade change and the weaving traffic entering from Howe Ave and Hornet Dr, competing for the right-most lane with those wanting to exit at 65th Street.



G & H. SR 51/SR 99 & I-5 Bottleneck

The bottleneck at I 5 is caused by the conflict between entering SR 99 and SR 51 traffic and exiting I-5 traffic as well as the queues formed on the ramps to I-5, which spill back onto US 50. The number of lanes in this section reaches a maximum of 6, and then drops to 4 as two lanes exit at the I-5 freeway. This bottleneck is exacerbated during the peak periods when it stretches upstream to the lane drop before SR 99.