I-80 East Comprehensive Corridor Plan

Caltrans District 4

February 2018

I-80 East

Comprehensive Corridor Plan

APPROVED BY:

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I-80 East
Comprehensive Corridor Plan

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This Comprehensive Corridor Plan was developed in coordination between:

- Caltrans
- Solano Transportation Authority (STA)
- Metropolitan Transportation Commission (MTC)

Executive Summary

The Interstate 80 (I-80) East Comprehensive Corridor Plan (CCP) presents a holistic approach for managing congestion, improving safety and maximizing traffic flow for all modes and incorporates measures to reduce air pollution and greenhouse gases. Key strategies include the addition of managed lanes/express lanes to maximize the efficient use of the existing highway facility for motorists, and the addition of competitive transit services and bicycle lanes to encourage mode shift from single-occupant vehicles. The CCP also recommends improving safety for both bicyclists and pedestrians in and around the on-ramp and off-ramp access locations, as well as using technology to improve traffic flow reliability.

In 2010, Caltrans District 4 developed a Corridor System Management Plan (CSMP) for the I-80 East Corridor (Corridor) from the Carquinez Bridge to the Solano/Yolo County Line. Since then, significant growth in goods movement, vehicular traffic and transit ridership has occurred as a result of an increase in both population and employment within the Corridor. Meanwhile, the Road and Repair Accountability Act of 2017, also known as Senate Bill (SB) 1, was passed in April 2017 and provides the first significant, stable, and on-going increase in State-directed transportation funding in more than two decades.

Among the multiple programs established by SB 1 is the Solutions for Congested Corridor Program (SCCP). This program provides $250 million annually on a competitive basis to Caltrans and regional agencies for projects designed to achieve a balanced set of transportation, environmental, and community access improvements within highly congested travel corridors throughout the State. Eligible projects should make specific performance improvements and must be part of a CCP.

In response to the significant changes within the Corridor and the SCCP requirements, Caltrans in coordination with stakeholders along I-80, including the Metropolitan Transportation Commission (MTC) and the Solano Transportation Authority (STA), determined that the I-80 East Corridor is a priority route in the region, and that the CCP should be developed to capture all the anticipated changes, identify multimodal needs and recommend improvement projects and strategies. The I-80 East CCP is an update to the 2010 CSMP. With input from the stakeholders, the CCP includes seven Corridor Goals:

1. Provide a safe transportation system to all users within the Corridor
2. Reduce recurring freeway congestion and improve freeway efficiency in moving people and commerce
3. Improve trip time reliability within the Corridor
4. Support an accessible and inter-connected multimodal transportation system within the Corridor
5. Reduce pollutants and GHG emissions within the Corridor
6. Support economic prosperity
7. Efficiently manage transportation assets within the Corridor to protect existing and future investment

The I-80 East Corridor is a major east-west connector between the San Francisco Bay Area and Sacramento metropolitan regions and points beyond including the Sierra Nevada Mountains. These two metropolitan regions represent concentrations of great significance to the State's economy. Land uses along the Corridor include State/regional parks, agricultural lands, residential uses in urban and suburban communities, commercial uses in dense urban centers and office parks as well as industrial

uses and a number of institutional uses and sports venues. The Corridor serves local, regional, interregional and even international traffic and movement of goods.
In addition to demographics and a list of major trip generators along the Corridor, the I-80 East CCP includes a place type analysis based on Caltrans Smart Mobility Framework and recommends appropriate transportation strategies for each place type within the Corridor. The CCP also documents Priority Development Areas (PDA's) within the Corridor as identified in Plan Bay Area (PBA) 2040 (2017), the San Francisco Bay Area's Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS).

As a multimodal transportation corridor, the I-80 East Corridor serves the movement of people and goods with a variety of transportation modes. This CCP describes public transit services, Park and Ride (P&R) facilities, bicycle and pedestrian facilities, networks and major trip generators for freight movement as critical transportation modes within the Corridor. It also identifies programmed, planned and in some cases proposed projects within the Corridor as well. In addition, Chapter 4 summarizes the Transportation Systems Management and Operations (TSMO) strategies and equipment that are currently deployed within the Corridor.

The CCP includes a basic freeway performance analysis for both existing conditions and projected future conditions. Information presented in this section is derived from the I-80 East CSMP, the Solano County I-80 Ramp Metering Study and Implementation Plan, and the MTC Travel Demand Model (Travel Model One). Each item was utilized in order to provide information on existing and future traffic volumes, known bottlenecks, and measures of corridor performance based on current and future conditions.

The freeway performance analysis mainly focuses on bottleneck locations, queue length and changes in some of the network performance measures such as travel times, vehicle occupancy rate, person-throughput and vehicle-miles traveled, as a result of implementing the recommended projects and strategies in the Corridor.

Table 1 lists known bottlenecks along the I-80 East Corridor.

Figure 1 *Current Solano County Congestion*

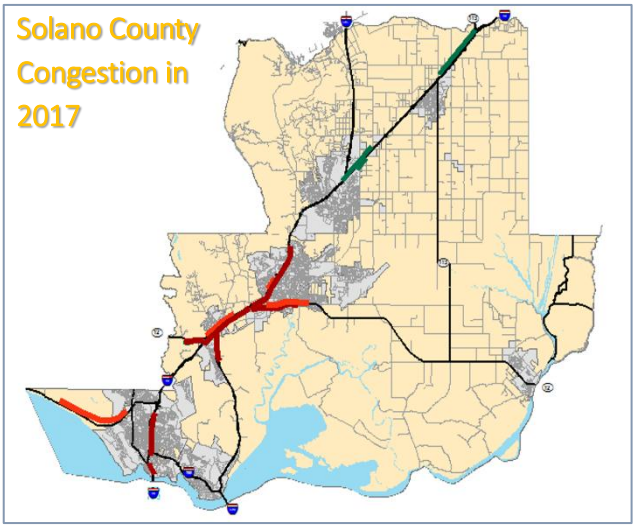
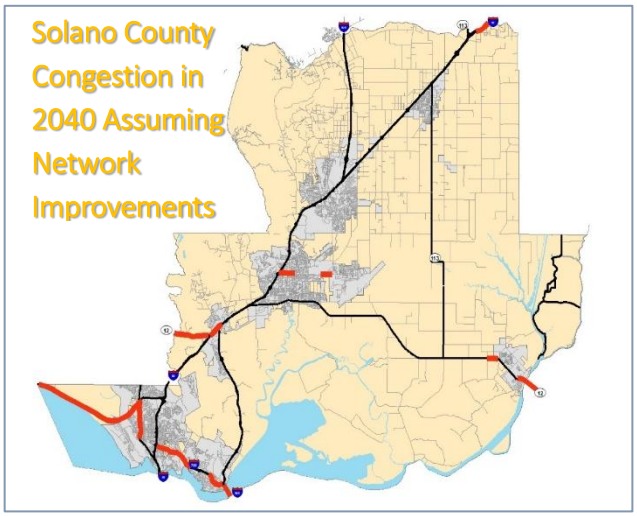


Figure 2 *2040 Solano County Congestion*



Source: Solano-Napa Activity-Based Model (SNABM)

Table 1 *2015 Bottlenecks*

Time / Direction	Location Number	Location Description	Queue Length	End of the Queue
PM / EB	1	Tennessee Street on-ramp to Redwood Street eastbound off-ramp. Peak period volumes combined with drivers entering the corridor from Tennessee Street result in a	1.0+ mi	I-780, and on occasion to I-80 Willow Ave in Contra Costa County
	2	Between the I-680 NB connector on-ramp and the Suisun Valley Road off-ramp with queues extending to Green Valley Road.	1.0+ mi	Green Valley Road
	3	Travis Boulevard on-ramp due to mainline volumes combined with high weave, merge volumes from the Travis Boulevard on-ramp and Airbase Parkway off-ramp. At times this secondary bottleneck can be hidden due to the primary bottleneck at North Texas Street.	3.0+ mi	To near EB Cordelia Commercial Vehicle Enforcement Facility (CCVEF)
	4	West of the N. Texas Street off-ramp, where the end of the eastbound HOV lane is combined with the drop of the rightmost mixed flow lane, resulting in a mainline bottleneck.	2.0+ mi	Travis Boulevard and on occasion extending to I-680 (typically during long weekends/holiday Fridays)
	5	West of Weber Road where the rightmost mixed flow lane drop results in mainline bottleneck. Queue typically extends to east of Leisure Town Road.	1.5 mi	I-80 Leisure Town Road Interchange
	6	West of Richards Boulevard rightmost mixed flow lane drop resulting in a mainline bottleneck.	3.5 mi	I-80 Kidwell Road Interchange
AM / WB	1	Redwood Street on-ramp and Tennessee Street off-ramp. Queue is a result of overlapping downstream bottlenecks.	2.4 mi	Near Broadway off-ramp
	2	Redwood Street on-ramp and Tennessee Street off-ramp. Queue is a result of overlapping downstream bottlenecks.	1.3+ mi	Secondary bottleneck to Tennessee St.
	3	Georgia Street on-ramp to I-780 off-ramp. Primary downstream bottleneck impacting Redwood and Tennessee Street secondary bottleneck.	0.75 mi	Near Woodside Road Interchange
	4	SR 12 West connector to westbound I-80/southbound I-680 connector ramp due to converging high merging, weaving volumes.	1.0 mi	Past WB CCVEF

Source: I-80 East CSMP, Solano County I-80 Ramp Metering Study and Implementation Plan

The recommended strategies include highway and transit projects, active transportation projects, maintenance and operational projects. See Chapter 6 for short, medium and long-term highway and transit projects, bicycle and pedestrian projects and State Highway Operation and Safety Program (SHOPP) projects. Chapter 6 also includes a qualitative evaluation of short-term highway and transit projects, with respect to how they would contribute to the Corridor Goals. Tables 2 and 3 list short-term recommended highway and transit projects that performed well in the evaluation. Depending on the level of impact, a project receives a high, medium or low grade under each of the seven goals.

Once approved, this CCP will help fulfill Caltrans statutory responsibility of identifying deficiencies within and proposing improvements to the I-80 East Corridor and serve the purpose of supporting funding applications for the SCCP.

Table 2 *Short-Term Highway Project Evaluation Top Performers*

Co.	Title	RTP ID	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7
SOL	I-80 Express Lanes (Red Top Rd. to I-505)	17-10-0059 17-10-0044	High	High	High	Medium	Medium	High	High
SOL	I-80 Express Lanes in both directions: Carquinez Bridge to SR 37	17-10-0053	High	High	High	Medium	Medium	High	High
SOL	I-80/I-680/SR 12 Package 2A	230326	Medium	High	Medium	Low	Low	High	Medium

Table 3 *Short-Term Transit Project Evaluation Top Performers*

Co.	Title	RTP ID	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7
SOL	Multimodal Streetscape	17-08-0005	High	High	Low	High	High	High	Medium
SOL	Construct train station building and support facilities at the new Fairfield/ Vacaville multimodal station	17-08-0014	High	Medium	Medium	High	High	Medium	Medium
SOL	Solano Express Service Expansion	N/A	High	Medium	Medium	High	High	Medium	Medium

Chapter 1 – Introduction

1.1 Comprehensive Corridor Plans

System Planning is the long-range Transportation Planning process for Caltrans. The System Planning process fulfills Caltrans statutory responsibility as owner/operator of the State Highway System (SHS) (Gov. Code §65086) by identifying deficiencies and proposing improvements to the SHS. Through System Planning, Caltrans and its partners are able to focus on developing Transportation Planning products that address integrated multimodal transportation system needs and help advance common transportation goals of safety and health, stewardship and efficiency, sustainability, livability and economy, system performance, and organizational excellence. Over the past several years, Caltrans has worked closely with local agencies such as STA, MTC, and the greater Solano Highways Partnership (SoHIP) consortium to conduct System Planning for the SHS.

With the passage of SB 1 and the introduction of the SCCP, Caltrans District 4 sees a unique opportunity to take advantage of the System Planning Program update and promote the legislatively required CCP as a critical component of the next generation System Planning products. A CCP is recommended for each of the most congested State highway corridors within the District and should include a multimodal needs analysis and identify improvement projects and strategies that will help inform project programming and funding needs.

<u>Caltrans Policy Development</u>

In response to the State Smart Transportation Initiative (2014)[1] and the subsequent Caltrans Improvement Program, Caltrans updated its Strategic Mission, Vision and Goals[2] and developed a Strategic Management Plan (SMP).[3] As part of the larger policy and institutional changes, a strategic effort was also initiated to update the System Planning Program. The primary goal of the update is to redefine the role of System Planning within Caltrans and identify System Planning products that better serve the program and its partners.

In response to Caltrans updated Strategic Mission, Vision, and Goals, the Caltrans SMP 2015-2020 was developed to link strategic goals with corresponding performance measures that the Department is responsible for achieving. The six strategic goals are safety and health, stewardship and efficiency, sustainability, livability and economy, system performance, and organizational excellence.

Caltrans also initiated the System Planning to Programming (SP2P) study and commissioned a Planning for Operations (P4Ops) Charter Team in 2015. SP2P study objectives included identifying gaps and opportunities in the planning to programming process, and recommending strategies to achieve a more efficient and integrated process for reaching decisions and implementing transportation solutions. The P4Ops Charter Team consists of statewide, multi-functional, multi-agency membership established to identify key P4Ops issues and oversee the development of the P4Ops Strategic Work Plan. The P4Ops Strategic Work Plan will analyze existing Caltrans SP2P processes to ensure an efficient and integrated

[1] http://www.dot.ca.gov/CIP/docs/SSTIReport.pdf
[2] http://www.dot.ca.gov/mission.html
[3] http://www.dot.ca.gov/perf/library/pdf/Caltrans_Strategic_Mgmt_Plan_033015.pdf

strategy for reaching decisions and implementing transportation solutions. The final report dated May 15, 2017 identified gaps and recommended strategies grouped into three categories: Enhancing Relevancy (to influence programming, the planning process will need to expand collaboration internally and externally to ensure alignment with programming processes and timelines), Adding Value (to increase the value of system planning products for programming decision makers, a realistic and achievable framework is needed for developing more collaborative, comprehensive, performance-based planning), and Preparing for the Future (to reflect new and future processes and direction, the existing planning organizational framework should be reviewed to determine what processes, skills and tools need to be developed or updated).

SB 1 Overview and the SCCP[4]

The Road and Repair Accountability Act of 2017, also known as SB 1, provides the first significant, stable, and on-going increase in State-directed transportation funding in more than two decades. SB 1 presents a balance of new resources and reasonable reforms to ensure efficiency, accountability, and performance from each dollar invested to improve California's transportation system.

Among the multiple programs established by SB 1 is the SCCP. This program provides $250 million a year on a competitive basis to Caltrans and regional agencies for projects designed to achieve a balanced set of transportation, environmental, and community access improvements within highly congested travel corridors throughout the State. Eligible projects should make specific performance improvements and must be part of a CCP designed to reduce congestion in highly-traveled corridors by providing more transportation choices for residents, commuters and visitors to the area while preserving the character of the local community and creating opportunities for neighborhood enhancements.

Projects may include improvements to State highways, local streets and roads, public transit facilities, bicycle and pedestrian facilities, and restoration or preservation work that protects critical local habitat or open space. In order to temper increases in vehicle miles traveled (VMT), greenhouse gas (GHG) emissions and air pollution, highway lane capacity-increasing projects funded by the program shall be limited to high-occupancy vehicle (HOV) lanes, managed lanes, and other non-general purpose (GP) lane improvements such as auxiliary lanes, truck-climbing lanes and dedicated bicycle lanes. Project scoring will include the following criteria:

- Safety
- Congestion
- Accessibility
- Economic development, job creation and retention
- Furtherance of State and federal ambient air quality and greenhouse gas emissions reduction standards pursuant to Assembly Bill (AB) 32 and SB 375
- Efficient land use
- Matching funds
- Project deliverability

[4] http://www.catc.ca.gov/programs/SB1.html

1.2 I-80 East CCP Overview and CSMP Summary

In 2010, Caltrans District 4, in partnership with MTC and STA, developed a CSMP for the I-80 East Corridor (Corridor) from the Carquinez Bridge (Contra Costa-Solano County line) to the junction of I-80 and State Route (SR) 113 North (Solano-Yolo County line). The 2010 I-80 CSMP was based in part on the STA's 2004 I-80, I-680, I-780 Corridor Study and Transit Corridor Study. Since then, significant growth in both vehicular traffic and transit ridership has occurred within the Corridor due to expansions in economic activity and population. Completed projects from the CSMP and funded through the 2006 Proposition 1B – Corridor Mobility Investment Account (CMIA) include the I-80 HOV lanes between Red Top Road and Air Base Parkway, Westbound (WB) I-80 to SR 12 (West) Connector, and the I-80 Green Valley Interchange project. However, additional projects and strategies to accommodate the growth in travel demand remain. SB 1 identifies the, "I-80 East and Union Pacific Railroad corridor connecting the Sacramento Valley with the San Francisco Bay Area," as an example of the kind of congested corridors meant for funding from SCCP.

In response to the significant changes within the Corridor, Caltrans in coordination with stakeholders along I-80 have determined that the I-80 East Corridor is a priority in the region, and that the CCP should be developed relative to the Corridor to capture all the changes, identify multimodal needs and recommend improvement projects. The I-80 East CCP is an update to the 2010 CSMP and Caltrans will continue to work with STA, MTC and the SoHIP to prioritize projects within the Corridor.

<u>2010 I-80 East CSMP[5]</u>

CSMP's are Transportation Planning documents that examine the mobility of an urban freeway facility in a comprehensive manner based on performance assessment. The I-80 East CSMP covers the same portion of the route as the CCP. The CSMP provides both a current description of the route as well as a future concept with congestion mitigation strategies including implementing Intelligent Transportation Systems (ITS), ramp metering, auxiliary lanes and HOV lanes. A wide range of projects are included to demonstrate how the improved mobility from previous CMIA related investments can be preserved within this Corridor. However, since a majority of the CSMP recommendations are based on the Solano I-80 Freeway Performance Initiative (FPI) Corridor Analysis, there is generally a lack of emphasis on multimodal improvements. This I-80 East CCP intends to strengthen the multimodal nature of the corridor analysis and was built upon the recommendations provided in the STA's Transit Corridor Study and SolanoExpress Service Plan.

<u>Document Structure</u>

The I-80 East CCP will include the following chapters.

- Chapter 1 – Introduction
- Chapter 2 – Corridor Goals, Objectives and Performance Measures
- Chapter 3 – Corridor Description
- Chapter 4 – Multimodal Facilities and Needs
- Chapter 5 – Freeway Performance

[5] http://www.dot.ca.gov/dist4/systemplanning/docs/i-80-east-csmp.pdf

- Chapter 6 – Recommended Strategies

Long-Term Corridor Planning

It is acknowledged among the stakeholders that one of the main goals for this CCP is to document funding needs consistent with the first round of SCCP funding in 2018 for shovel-ready projects in the Corridor. Therefore, the update is limited in scope and is primarily based on information, data, studies, and reports that are already available. This CCP, however, will also address the longer-term planning needs of the Corridor, and will be revised and updated as needed.

1.3 Stakeholders

Current CCP development and its future updates are dependent upon the close participation and cooperation of all major stakeholders along the Corridor. A Corridor Development Team (CDT) has been formed and meets regularly to collaborate on the document development, provide strategic guidance at key decision points and ensure the delivery of the I-80 East CCP. The CDT includes representatives from the following agencies:

- Caltrans
- MTC
- STA

Chapter 2 – Corridor Goals, Objectives and Performance Measures

The primary goal of the I-80 East CCP is to manage congestion in the highly-traveled corridor by providing more transportation choices for residents, commuters, visitors and others. A secondary goal is to preserve the characteristics of local communities and create opportunities for neighborhood enhancement.

With objectives to reduce the rate of increase in VMT, vehicle hours of delay (VHD), GHG, and improve travel times, reliability, safety, accessibility, and economic development, the CCP will evaluate the current and future performance of the Corridor. The CCP will also evaluate HOV lanes, P&R improvements, multi-use paths, bike/pedestrian crossings, and other non-GP lane improvements primarily designed to improve safety and mobility for all modes of travel, including ITS, traffic operations system (TOS) elements and interchange improvements.

The following corridor goals, objectives and performance measures are being used for the I-80 East CCP to evaluate current and future corridor performance. Performance measures are generally qualitative unless data is available for a quantitative assessment. These corridor goals, objectives and performance measures were developed with input from the I-80 East CDT and represent a consensus that was reached through a collaborative process. Information from a variety of sources helped inform their development. The most notable sources, among others, include:

- California Transportation Commission – SB 1 Solutions for Congested Corridors Program Guidelines (November, 2017)
- MTC – Plan Bay Area 2040 - Final Performance Assessment Report (July, 2017)
- STA – Draft 2040 Countywide Transportation Plan - Arterials, Highways and Freeways Element (In Progress)
- Caltrans – Strategic Management Plan 2015-2020 (April, 2015)
- Caltrans – California Freight Mobility Plan (April, 2014)
- STA – Solano Highways Operations Study (February, 2010)
- STA – I-80/I-680/I-780 Major Investment & Corridor Study (July 2004)

Table 4 lists the corridor goals, objectives and performance measures. While existing sources contain data on a number of metrics, including the number of accidents on freeways, VMT, VHD, person throughput, occupancy rates, transit ridership, ITS and TOS element inventories, there is not always sufficient data and resources to report on every quantifiable performance measure. This comprehensive list of metrics represents targets and measurements that can be carried into future I-80 East CCP updates and will help with illustrating how the corridor performance changes over time.

Table 4 *I-80 East CCP Goals, Objectives and Performance Measures Matrix*

Goals	Objectives	Performance Metrics
1. **Provide a safe transportation system to all users within the Corridor**	1.1 Reduce the number of incidents within the Corridor	• Change in number/severity/type accidents on freeways
		• Change in number/severity/type of bicycle accidents
		• Change in number/severity/type pedestrian accidents
	2.1 Reduce recurring delay along the I-80 East Corridor	• Change in Vehicle-Hours of Delay (VHD)
		• Change in Person-Hours of Delay (PHD)

Goals	Objectives	Performance Metrics
2. **Reduce recurring freeway congestion and improve freeway efficiency in moving people and commerce**	2.2 Improve productivity along the I-80 East Corridor	• Person Throughput
		• Commerce Throughput
	2.3 Increase vehicle occupancy by mode	• Change in vehicle occupancy rate
		• Change in percentage of non SOV compared to SOV by mode
		• Change in return on investment as result of HOT lane deployment
	2.4 Promote alternative modes of travel and reduce reliance on single occupancy vehicles	• Change in alternative mode (split)
		• Change in Transit Ridership
3. **Improve trip reliability within the Corridor**	3.1 Improve freeway travel time reliability	• Change in Buffer time index (BTI, or the amount of extra "buffer" time needed to be on-time 95 percent of the time)
		• Change in travel time reliability
	3.2 Reduce non-recurring delay along the I-80 East Corridor	• Change in response of non-recurring incidents (planned)
		• Change in clearing of non-recurrent incidents (accidents)
	3.3 Improve transit on-time performance	• Change in transit on-time performance
		• Change in transit operations access improvements
		• Change in travel time compared with current on-time performance
4. **Support an accessible and inter-connected multimodal transportation system within the Corridor**	4.1 Improved access and connections to existing or future multimodal transportation hubs	• Change in transit operations access improvements
		• Change in transit vs. vehicle travel time compared with current on-time performance
	4.2 Reduce gaps in the bicycle network	• Change in bicycle lane miles by facility classification, including bike/pedestrian overcrossings
	4.3 Reduce gaps in the pedestrian network	• Change in pedestrian walkway miles, including bike/pedestrian overcrossings
5. **Reduce pollutants and greenhouse gas emissions within the Corridor**	5.1 Reduce Vehicle-Miles Traveled (VMT) and/or Vehicle Hours of Delay (VHD)	• Change in corridor VMT / VHD
		• Change in VMT / VHD per capita
	5.2 Reduce criteria pollutants	• Emissions of criteria pollutants, including carbon monoxide (CO), lead, nitrogen dioxide (NO2), ozone (O3), particulate matter (PM), and sulfur dioxide (SO2)
	5.3 Reduce greenhouse gas emissions	• Emissions of greenhouse gas
6. **Support economic prosperity**	6.1 Increase freight efficiency	• Change in per-capita capacity by freight mode
	6.2 Promote access to jobs	• Increase share of jobs accessible in congested conditions
	6.3 Reduce per-capita delay on freight network	• Change in per-capita delay on freight network
7. **Efficiently manage transportation assets along the I-80 East Corridor to protect existing and future investment**	7.1 Close gaps in TOS elements, such as Ramp Metering, Vehicle Detection Sites, Closed-Circuit Television Cameras and Changeable Message Signs	• Change in number of TOS elements installed
	7.2 Ensure good TOS element health	• TOS elements uptime percentage
		• Percentage of TOS elements inspected or maintained within the last X number of years

Chapter 3 – Corridor Overview

3.1 Corridor Limits

The study limits for the I-80 East CCP encompasses the entire corridor area through all of Solano County and a small portion of Napa County. This section of the transcontinental Interstate (between the San Francisco Bay Area and the East Coast) represents a critical component for the region and State. Within California, the I-80 Corridor connects the San Francisco Bay Area and Sacramento metropolitan regions and points beyond including the Sierra Nevada Mountains. The I-80 East CCP begins at the Carquinez Bridge (Solano/Contra Costa County line) and extends to the Solano/Yolo County line. It is approximately 45 miles in length and intersects with SR 29, I-780, SR 37, SR 12, I-680, I-505 and SR 113 and travels through the cities of Vallejo, Fairfield, Vacaville, Dixon and unincorporated County areas.

Employment and housing growth in Solano County has had a significant effect on transportation demand on I-80, due not only to connections to destinations outside the County but also because of a shortage of local arterial networks paralleling the route. This Interstate, as one of the two such facilities that extend east of the San Francisco Bay Area region, is vital to interregional and regional commuting, freight movement and recreational travel. Historically, daily traffic volumes on the I-80 East Corridor have been greater Friday through Sunday compared with Monday through Thursday and this CCP will examine opportunities to relieve congestion in Solano County. For the purposes of this I-80 East CCP, the corridor has been divided into 4 segments, seen in the following table.

Table 5 *I-80 East CCP Segments*

Segment #	Location Description	Begin Post Mile	End Post Mile	Configuration (# of Mixed Flow and Managed Lanes)
1	CC/SOL County line/Carquinez Bridge to I-80/SR 37 Interchange	0.00	5.77	6 – 7 lanes
2	I-80/SR 37 Interchange to I-80/I-680/SR 12 Interchange	5.77	12.84	8– 10 lanes 2 Managed lanes
3	I-80/I-680/SR 12 Interchange – I-80/I-505 Interchange	12.84	R27.90	8-10 lanes 2 Managed lanes
4	I-80/I-505 Interchange – Solano/Yolo County Line	R27.90	44.72	6 – 8 lanes

Segment 1 is a 6–7 lane freeway that begins at the midsection of the Carquinez Bridge, passes through the City of Vallejo, and continues past the Solano County Fairgrounds ending at the I-80/SR 37 Interchange.

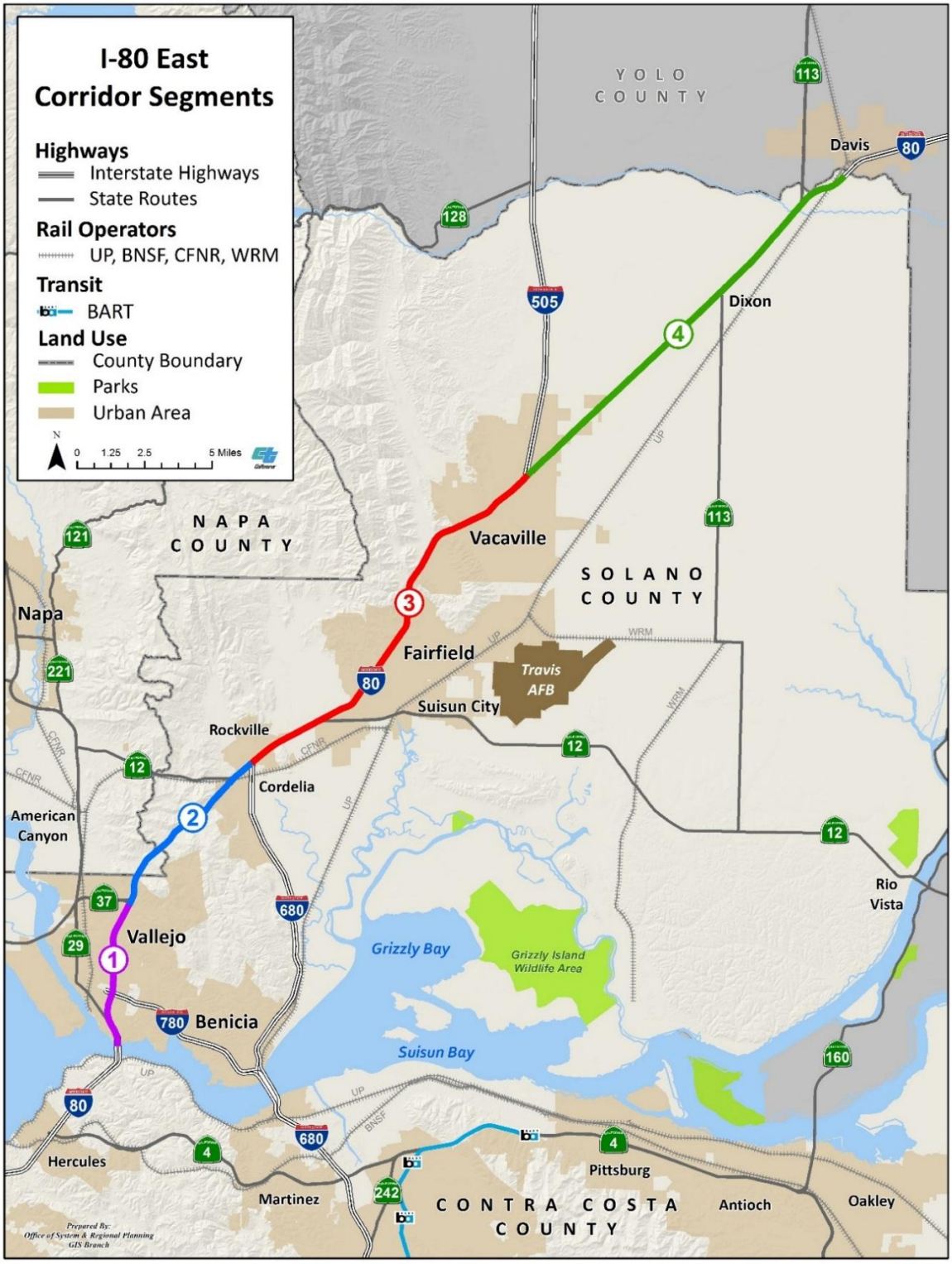
Segment 2 is an 8–10 lane freeway that begins at I-80/SR 37 Interchange. The segment continues through the Coastal range hills and a small portion of Napa County, terminating at the I-80/I-680/SR 12 Interchange.

Segment 3 is an 8–10 lane freeway that begins at the I-80/I-680/SR 12 Interchange and continues through unincorporated Cordelia and the cities of Fairfield and Vacaville and terminates at the I-80/I-505 Interchange. There is an HOV lane in both directions located in Fairfield.

Segment 4 is a 6–8 lane freeway that begins in I-80/I-505 Interchange and passes through mostly agricultural lands into Dixon and ending at the Solano/Yolo County line.

Figure 3 below depicts the segmentation of the I-80 East CCP.

Figure 3 *I-80 East Corridor Segmentation Map*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

3.2 Route Designations

I-80 is functionally classified as an Interstate highway and each of the four segments are part of the California Freeway and Expressway System. Each segment is also part of National Highway System (NHS) and the Strategic Highway Network.

I-80 has also been identified as one of the 93 statutory Interregional Road System (IRRS) routes established in 1989 by the Blueprint Legislation (a ten-year transportation funding package created by AB 471, SB 300, and AB 973). The 2015 Caltrans Interregional Transportation Strategic Plan (ITSP)[6] identifies 11 Strategic Interregional Corridors in the State which are characterized by high volumes of freight movement and significant recreational travel, while providing communities access to local and interregional markets and recreational facilities, support emergency response and disaster recovery activities, and provide access to vital medical and social services. These 11 corridors have also been identified as the most significant interregional travel corridors in California and the I-80 East Corridor through Solano County is considered part of the "San Jose/San Francisco Bay Area – Sacramento – Northern Nevada Corridor". Within these Strategic Interregional Corridors, I-80 is identified as a Priority Interregional Highway that is critical in supporting interregional transportation and is expected to be a focus of Interregional Transportation Improvement Program (ITIP) investment in the future.

I-80 serves as one of the primary east-west freight routes for the San Francisco Bay Area Region, providing direct access to other Bay Area goods movement corridors via I-680, I-780, and I-880. As part of the NHS and a designated Surface Transportation Assistance Act (STAA) route,[7] large trucks are allowed to operate throughout the I-80 corridor. The California Freight Mobility Plan defines I-80 as a Tier 1 multimodal freight route, connecting several maritime ports and airport facilities, and paralleling rail lines.

***Table** 6 I-80 East Corridor Route Designations*

Designation	I-80
California Freeway and Expressway System[8]	Yes
NHS	Yes
Strategic Highway Network	Yes
Scenic Highway[9]	No
Strategic Interregional Corridor	San Jose/SF Bay Area-Sacramento-Northern Nevada
Federal Functional Classification	Interstate
Truck Designation[10]	National Network (STAA) Route
Metropolitan Planning Organization	MTC
Congestion Management Agency	STA
Air District	Bay Area Air Quality Management District/Yolo-Solano Air Quality Management District
Native American Tribes	Yocha Dehe Wintun Nation
Terrain	Rolling to Flat
Land Use	Urbanized / Suburban / Rural / Agricultural

[6] http://www.dot.ca.gov/hq/tpp/offices/omsp/system_planning/itsp.html
[7] https://ops.fhwa.dot.gov/freight/publications/size_regs_final_rpt/
[8] California Street and Highways Code, Article 2. The California Freeway and Expressway System https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=SHC&division=1.&title=&part=&chapter=2.&article=2., Accessed Oct of 2017
[9] http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, Accessed Oct of 2017
[10] Caltrans District 4 Truck Network Map, http://www.dot.ca.gov/trafficops/trucks/truck-network-map.html

3.3 Land Uses, Major Trip Generators, and Demographics

Land Uses

Major land uses within the County and corridor include agriculture, civic, military, single and multi-family residential, industrial and commercial. In general, urbanized development is concentrated within the incorporated boundaries of the cities while natural resources, agricultural resources, and other non-urban lands are predominately located in the unincorporated portions of the County. Approximately 96 percent of the population currently resides in urban areas and the remaining four percent reside in rural areas.

Major Trip Generators

Within the I-80 East CCP Corridor, major auto and truck traffic generators include the Six Flags Marine World Theme Park, the Westfield/Solano Mall, the Vacaville Premium Outlets, the Nut Tree retail area, and the Travis Air Force Base which is home to the world's largest military airlift unit and is Solano County's largest employer. Smaller areas of commercial and industrial land use are located on the north and south sides of the interstate and can potentially generate significant amounts of traffic demand.

Demographics

Table 7 *Solano County Demographics*

Solano County	
Total Population (2016)	440,207
Hispanic or Latino (2016)	115,334 (26.2 %)
White Alone (2016)	265,004 (60.2 %)
Black or African American Alone (2016)	65,150 (14.8 %)
Asian Alone (2016)	69,112 (15.7 %)
Speak Only English (2016)	70.5%
Population Density (people/square mile) (2016)	486
Number of Households	156,826
Average Household Size (Owner) (2016)	2.8
Average Household Size (Renter) (2016)	3.0
Renter-Occupied Housing Units (2016)	60,671
Owner-Occupied Housing Units (2016)	88,501
Median Household Income (2016)	$73,900
Mean Travel Time to Work (minutes)	32.5

Source: Data compiled from the American Community Survey (2016)

As shown in Table 8, automobile travel is the dominant mode of commute in the San Francisco Bay Area, accounting for over 75 percent of all commute trips. Solano County shows an even greater reliance on automobile travel and less use of alternative modes of transportation for commuting (except for a larger percentage of carpooling and vanpooling) when compared with the entire Bay Area region.

Table 8 *Commute Choice by Mode*

Commute Mode	Solano County	Bay Area
Auto	90.1%	75.5%
Transit	3.0%	12.0%
Walk	1.0%	3.6%
*Other**	1.4%	3.3%
Work From Home	3.7%	5.6%

Source: MTC Vital Signs, 2015
* Other includes bicycle, motorcycle, taxi, and other modes of transportation.

Land Uses along I-80 East from General Plans

City of Vallejo[11]

The west end of the I-80 East CCP traverses through open space conservation areas and then continues through the highly suburbanized parts of Vallejo. Other land uses include residential, mixed residential districts, neighborhood commercial districts, public spaces, residential transit oriented districts, production, distribution, and repair districts, and industrial districts.

City of Fairfield[12]

Land uses for the City of Fairfield include intensive and extensive agriculture, medium and high density residential, parks and recreation, downtown mixed-use, business and professional office and business parks, industrial, and public facilities.

City of Vacaville[13]

Land uses for the City of Vacaville include agriculture, low and medium density residential housing, mixed use/neighborhood commercial, single family dwelling, business parks and industrial park uses, executive parks and offices, and public and private open space.

City of Dixon[14]

Land uses for the City of Dixon include agriculture, low and medium residential housing, commercial parks, general and planned industrial, neighborhood and highway commercial, professional and administrative office, and other mixed uses along the corridor.

Solano County (Unincorporated)[15]

The unincorporated area of the county includes approximately 773 square miles (494,437 acres). Approximately 81,678 acres of the county, or 14 percent of the total land area, is in cities. In 2000, only 19,322 of Solano County's 394,542 residents lived in the unincorporated area.

About 20 percent of the unincorporated land area is some type of undeveloped natural resource land. This includes marsh and watershed lands in the southern and western portions of the county comprising 101,307 acres. Over 329,000 acres of land are in agricultural use, approximately 70 percent of the

[11] http://www.ci.vallejo.ca.us/common/pages/DisplayFile.aspx?itemId=62268
[12] https://www.fairfield.ca.gov/civicax/filebank/blobdload.aspx?BlobID=14429
[13] http://www.ci.vacaville.ca.us/home/showdocument?id=5416
[14] http://ca-dixon.civicplus.com/DocumentCenter/Home/View/58
[15] http://www.co.solano.ca.us/depts/rm/planning/general_plan.asp

unincorporated land area. Agricultural land is concentrated in the eastern portion of the county and in smaller areas scattered throughout the county. Watershed lands are also in agricultural use.

3.4 Smart Mobility Framework

In 2010, Caltrans introduced the concept of Smart Mobility through establishment of the SMF[16]. The SMF is a transportation planning guide that includes the notion of "Place Types" to further integrate Smart Growth concepts into transportation and land use development. The American Planning Association (APA) identifies Smart Growth as that which supports choice and opportunity by promoting efficient and sustainable land development, incorporates redevelopment patterns that optimize prior infrastructure investments, and consumes less land that is otherwise available for agriculture, open space, natural systems, and rural lifestyles. The goals of the SMF is to serve as a guide and assessment tool for determining how well plans, programs, and projects meet the definition of "Smart Mobility" and ensure applicability of the framework for both Caltrans as well as partner agencies. The "Location Efficiency" of a place type is measured and ranked based on its Community Design characteristics and Regional Access to the transportation system. Within each place type, there are also sub-categories to further differentiate one place from another. The seven place types are:

1. Urban Centers
2. Close-in Compact Communities
3. Compact Communities
4. Suburban Communities
5. Rural and Agricultural Lands
6. Protected Lands
7. Special Use Areas

<u>Transportation Investment Strategies</u>

Place Types help planners determine transportation needs. By identifying what kind of built environment is most prevalent along a State highway corridor, the interrelated challenges of mobility and sustainability in specific areas can become clearer. Once likely transportation, development and conservation investment strategies are identified, a Place Type Location Efficiency factor can be applied and further smart mobility benefits can be realized in the future. Table 9 and Figure 4 lists the SMF Place Types along the I-80 East Corridor and associated transportation strategies.

Table 9 *Examples of Transportation Strategies for Place Types along the I-80 East Corridor*

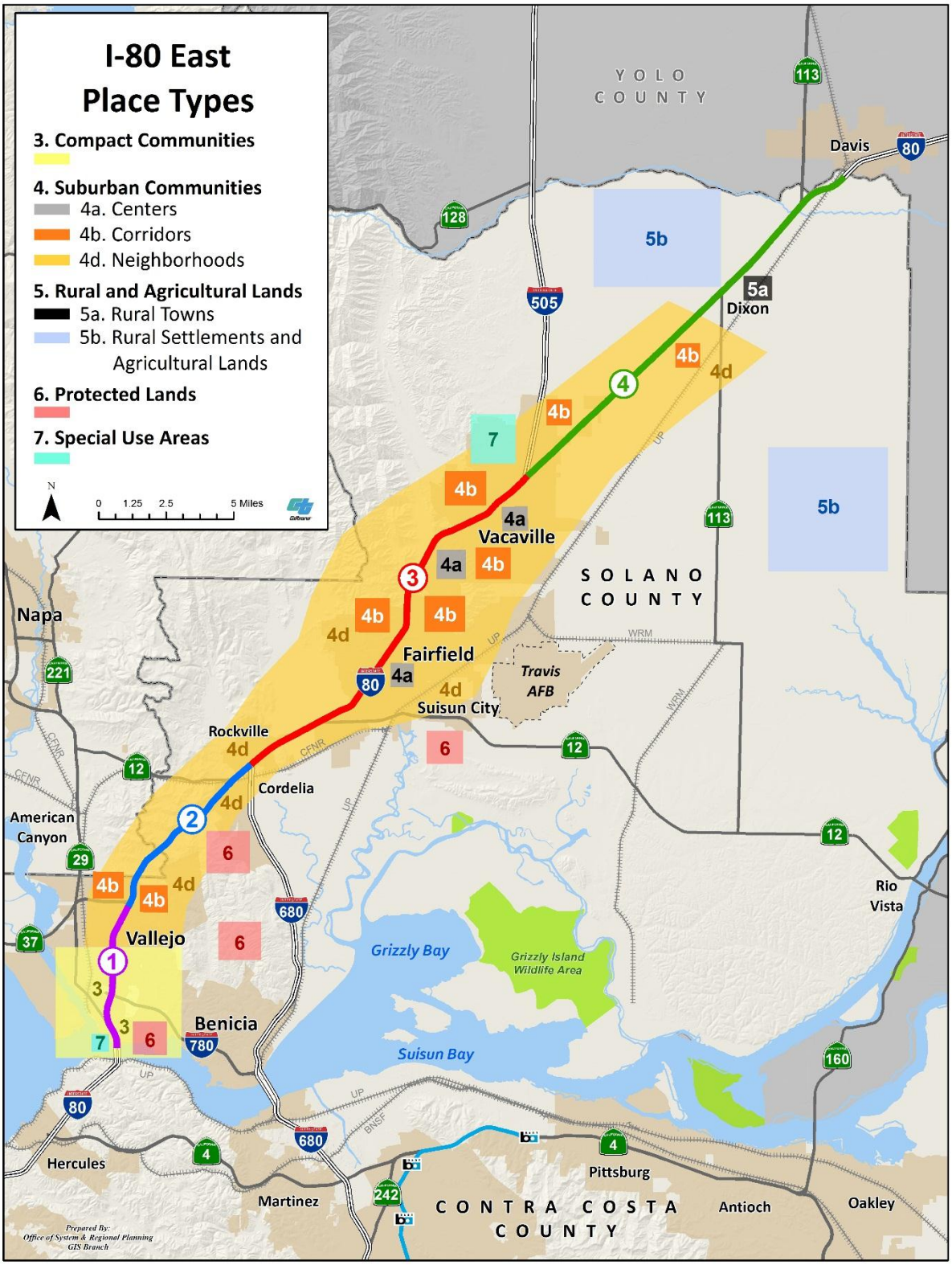
Segment	Place Type	Transportation Strategies
1	3: Compact Communities	• Dedicate street space to benefit fronting residential and commercial land uses and non-motorized modes. • Designate areas that could evolve to become more close-in centers, corridors and neighborhoods.
	7: Special Use Areas	• Provide access and connectivity improvements that are specific to use and location
2	3: Compact Communities	• Dedicate street space to benefit fronting residential and commercial land uses and non-motorized modes. • Designate areas that could evolve to become more close-in centers, corridors and neighborhoods.
	4A: Suburban Communities – Centers 4B: Suburban Communities – Corridors	• Identify centers and corridors that can be transformed into more location-efficient places

[16] http://www.dot.ca.gov/hq/tpp/offices/ocp/documents/smf_files/SMF_handbook_062210.pdf

Segment	Place Type	Transportation Strategies
	4D: Suburban Communities – Neighborhoods	• Promote transit service and rideshare programs near concentrated employment centers
	6: Protected Lands	• Where public access and recreational use is permitted, bicycle facility, and trail projects
	7: Special Use Areas	• Provide access and connectivity improvements that are specific to use and location
3	4A: Suburban Communities – Centers 4B: Suburban Communities – Corridors 4C: Suburban Communities – Dedicated Use Areas 4D: Suburban Communities – Neighborhoods	• Identify centers, dedicated use areas and corridors that can be transformed into more location-efficient places • Promote transit service and rideshare programs near concentrated employment centers
	6: Protected Lands	• Where public access and recreational use is permitted, bicycle facility, and trail projects
	7A: Special Use Areas – Commercial SMF	• Provide access and connectivity improvements that are specific to use and location
4	4A: Suburban Communities - Centers 4B: Suburban Communities – Corridors 4C: Suburban Communities – Dedicated Use Areas 4D: Suburban Communities – Neighborhoods	• Identify centers, dedicated use areas and corridors that can be transformed into more location-efficient places • Promote transit service and rideshare programs near concentrated employment centers
	5A: Rural Towns 5B: Rural Settlements and Agricultural Lands	• Safety improvements to walking and bicycling facilities focused on connectivity and comfort. • High-quality demand-responsive transit and intercity transit services
	7A: Special Use Areas – Commercial SMF	• Provide access and connectivity improvements that are specific to use and location

Figure 4 on the next page provides a high level illustration of Place Types along the I-80 East Corridor and how most SMF Place Types are represented across the corridor in Solano County.

Figure 4 *I-80 East Corridor Place Types*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

Beginning in Segment 1, the historically industrious City of Vallejo located along the Carquinez Strait is a prime example of SMF Place Type 3 – Compact Community with dense community design and regional accessibility. The location also provides arterial connections with street level services, a defined downtown with active modes of transportation access to Transit Orientated Development, park and ride facilities and regional transit centers. Also situated along the shoreline, the California State University Maritime Academy represents a SMF Place Type 7 – Special Use Area described as a large tract of single use land that is not integrated will with surrounding land uses.

In Segment 2 and 3, land use densities begin to decline giving way to SMF Place Type 4 – Suburban Communities. While most prevalent in Segment 3, suburban development begins to taper off in Segment 4 as land uses become more rural and agricultural based. SMF Place Type 4 is characterized by lowered levels of integration of housing with jobs, retail, and services, poorly connected street networks, low levels of transit service, large amounts of surface parking, and inadequate walkability. Place Type 4 is divided into four Subareas: 4A – Centers (mid-size and small downtowns, lifestyle centers, or other activity centers embedded within suburban communities), 4B – Corridors (arterial streets with a variety of fronting development types, frequently characterized by inadequate walk and bike environments, low land use efficiency and poor aesthetics), 4C – Dedicated Use Area (large tracts of land used for commercial purposes such as business or industrial parks or warehousing, or for recreational purposes such as golf courses), and 4D – Neighborhoods (Residential subdivisions and complexes including housing, public facilities and local-serving commercial uses, typically separated by arterial corridors). All four of these subarea place types and activities are common near the I-80 East Corridor and major arterials that connect with the freeway facility. Also present in Segment 3 is SMF Place Type 7 – Special Use Area occupied by the United State Air Force – Travis Air Force Base in Fairfield and the California Department of Corrections and Rehabilitation - California Medical Facility in Vacaville.

In Segment 4, the SMF Place Types differ from those found in other segments along the I-80 East Corridor. There are indications, especially within the City of Dixon, that development was historically SMF Place Type 5A – Rural Towns. This place type is described as a settlement pattern with widely-spaced towns separated by farms, vineyards, orchard, or grazing lands. However, this area now, based on the expanding need for adequate and affordable housing, is transitioning into a SMF Place Type 4 – Suburban Community with employment center support from nearby locations such as Davis, Sacramento and the Northern San Francisco Bay Area. Place Type Subareas 4A, 4C and 4D are all present but not as much as in other segments in the corridor. Outside the City of Dixon but still within Segment 4, the area is mostly surrounded by SMF Place Type 5B – Rural Settlements and Agricultural Land defined as scattered dwelling units and supporting commercial uses and public facilities, no significant subdivisions and limited nonagricultural industrial or commercial land use, and lands in agricultural or grazing use. This Place Type extends east through Yolo County to the limits of the City of Davis.

3.5 PBA 2040 and PDA Discussion

PBA 2040

PBA 2040, the long-range transportation and land-use strategy, serves as the RTP for the San Francisco Bay Area Region. PBA 2040, adopted in July 2017, represents the second RTP in the district to adhere to SB 375 (2008) regulations which requires each of the State's 18 metropolitan regions to develop a SCS to accommodate future population growth while reducing greenhouse gas emissions from cars and light trucks. The MTC produced the RTP in concert with the Association of Bay Area Governments (ABAG) which is responsible for developing regional housing and employment forecasts. The plan charts a course for reducing per-capita greenhouse gas emissions through the promotion of more compact,

mixed-use residential and commercial neighborhoods near transit. PBA 2040 guides transportation investments and land-use development strategies through 2040.

The regional forecast shows that between 2010 and 2040, the San Francisco Bay Area Region is projected to grow by approximately 1.3 million from 3.4 to 4.7 million jobs, while the population is projected to increase by 2.3 million from 7.2 to 9.5 million people. As of 2015, almost half of the projected jobs have been added and nearly a quarter of the projected population growth has occurred. During the same period, only 13 percent of projected household growth has occurred, held back in part by financial conditions coming out of the Great Recession.

Priority Development Areas

The identification and establishment of local PDA's will help focus 80 percent of new housing and 66 percent of new jobs forecast for the region. PDA's are locally designated areas within existing communities that have been identified and approved by local cities or counties for future growth. These areas are typically more accessible to transit, jobs, shopping and other services.

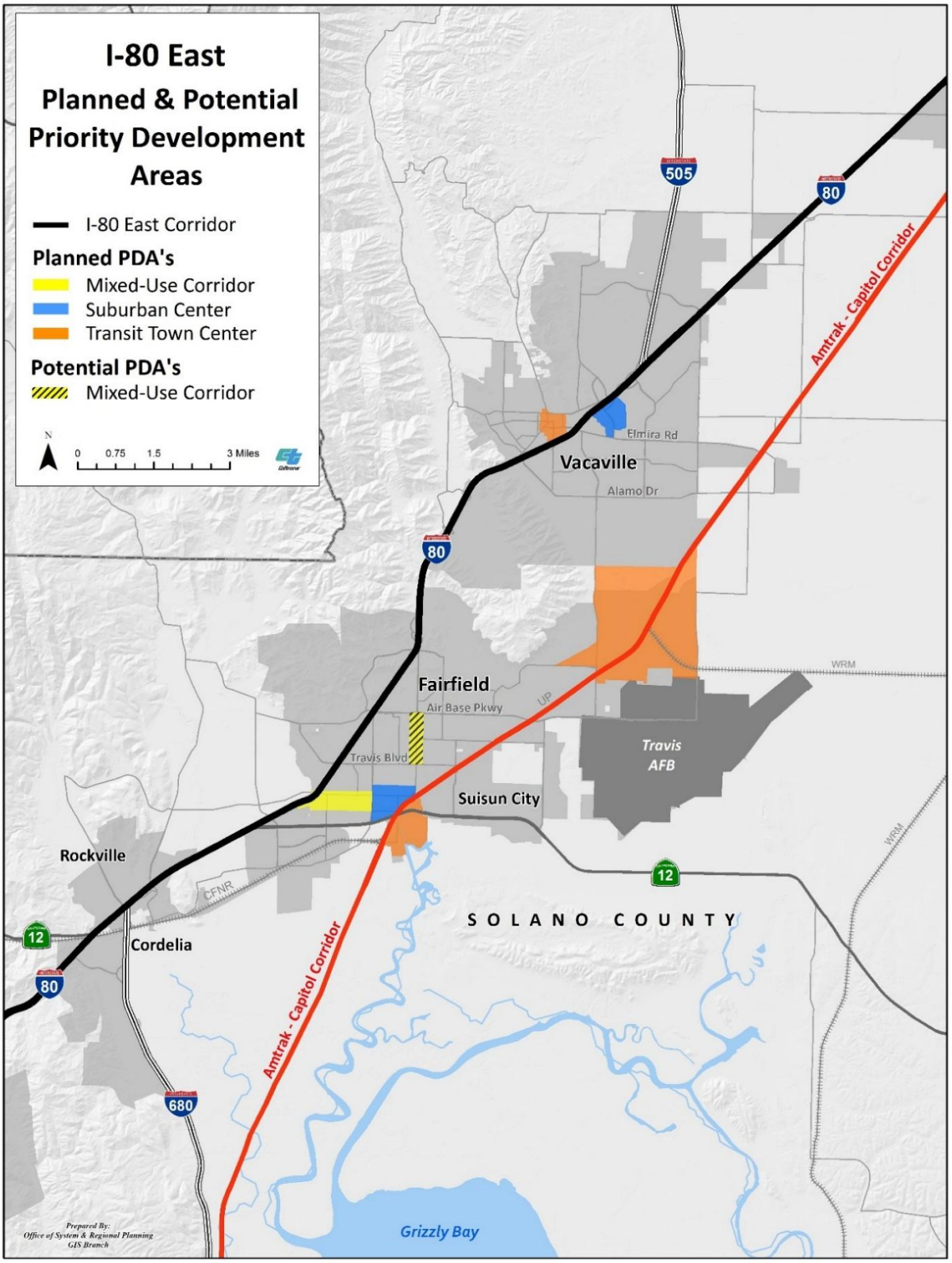
Along the corridor, PDA's (both planned and potential) exist in the cities of Vallejo and Fairfield.

- Vallejo, Waterfront and Downtown
- Fairfield, Downtown South, Jefferson Street/Union Avenue

The following represents a listing of potential PDA's within the I-80 East CCP Corridor area:

- Fairfield, Fairfield/Vacaville Train Station
- Fairfield, West Texas Street Gateway
- Fairfield, North Texas Street Core
- Vacaville, Downtown
- Dixon, Downtown

Figure 5 *I-80 East Corridor Planned and Potential PDA's*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

3.6 Environmental Considerations and Sea Level Rise

Environmental Considerations

The purpose of the environmental scan is to conduct a high-level identification of potential environmental factors that may require future analysis in the project development process. This information may not represent all environmental considerations that exist within the corridor vicinity. The factors are categorized based on a scale of Low-Medium-High probability of an environmental issue and determination was conducted by District 4 Transportation Planning staff. Table 10 shows the environmental considerations within the I-80 East Corridor.

Table 10 *Environmental Consideration for the I-80 East Corridor*

Segment			1	2	3*	4**
Section 4(f) Land[17]			*Low*	*Medium*	*Low*	*High*
BCDC Jurisdiction			*Yes*	*No*	*No*	*No*
Farm/Timberland[18]			*No*	*Yes*	*No*	*Yes*
Environmental Justice[19]			*High*	*Medium*	*Medium*	*Medium*
Cultural Resources			*Low*	*Low*	*Low*	*Low*
Visual Aesthetics[20]			*Low*	*Low*	*Low*	*Low*
Seismic[21]			*Low*	*High*	*Medium*	*Low*
Floodplain[22]			*100 year*	*100 year*	*100 Year*	*100 Year*
Climate Change/Sea Level Rise			*Low*	*Low*	*Low*	*Low*
Hazardous Materials			*Low*	*Low*	*Med*	*Low*
Naturally Occurring Asbestos[23]			*Low*	*Low*	*Low*	*Low*
Air Quality[24]	Ozone		*Non-Attainment*	*Non-Attainment*	*Non-Attainment*	*Non-Attainment*
	Particulate Matter (PM)	2.5	*Non-Attainment*	*Non-Attainment*	*Non-Attainment*	*Attainment*
		10	*Non-Attainment*	*Non-Attainment*	*Non-Attainment*	*Non-Attainment*
	CO		*Attainment*	*Attainment*	*Attainment*	*Attainment*
Waters and Wetlands			*High*	*High*	*High*	*High*
Special Status Species			*No*	*No*	*No*	*No*
Fish Passage			*Low*	*Low*	*Low*	*Low*
Habitat Connectivity[25]			*Low*	*High*	*Low*	*Low*

***** BAAQMD and Yolo-Solano AQMD (split)

** Yolo-Solano AQMD (only)

Habitat and Biological Resources

The Greater San Francisco Bay Area region, which includes Solano County, has been characterized as a biodiversity hotspot at both global and national scales. Solano County has inland, saltwater and freshwater habitats with vast watersheds feeding the Sacramento River and its Delta. There are four dominant habitat types: Grasslands Valley Floor with Vernal Pools, Coastal Marsh, Freshwater Marsh, and Open Water Habitat.

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[17] CDFW Owned & Operated Lands & Conservation Easements, https://map.dfg.ca.gov/bios/, accessed Oct of 2017

[18] ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/statewide/2012/fmmp2012_wallsize.pdf, accessed Oct of 2016.

[19] https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30, accessed Oct of 2017

[20] California Scenic Highway Mapping System, http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm

[21] Fault Activity Map of California (2010), http://maps.conservation.ca.gov/cgs/fam/

[22] NFHL 1% (100 year) Flood, https://map.dfg.ca.gov/bios/

[23] Caltrans District 4, Areas Likely to Contain Naturally Occurring Asbestos Map, 2005, https://onramp.dot.ca.gov/hq/maint/roadway_rehab/gis/District04_NOA_05.pdf

[24] https://www.arb.ca.gov/desig/adm/adm.htm

[25] Essential Connectivity Layer, https://map.dfg.ca.gov/bios/

The vicinity is rated as one out of the five highest peaks in biodiversity for the United States. In a global analysis of biodiversity hotspots, Myers et. al (2000) located 25 regions that together comprise only 1.4 percent of the earth's land surface, but hold an estimated 44 percent of all species of vascular plants and 35 percent of all species of vertebrates. Only three of those 25 locations are situated in North America (the California Floristic Province, the Mesoamerica including tropical regions in Mexico, and the Caribbean including southern Florida). Solano County, located in the California Floristic Province, is included in this global underpinning of biodiversity. Despite its extraordinary assortment of flora, fauna, and habitat, Solano County today is fundamentally a human-altered landscape.

Natural habitats have been degraded to one degree or another and are highly fragmented, with disruption of typical dispersal processes. Profound effects on the structure, composition and functionality of ecosystems have been sourced to urban development, agriculture, and roads, as well as to hydrological alterations and invasive species. In the area, a number of sensitive species have been affected by habitat loss from human activities, including the Swainson's Hawk, Burrowing Owl, Giant Garter Snake, California Red-Legged Frog, and the Callippe Silverspot Butterfly.

The I-80 East Corridor is situated just north of the Suisun Marsh, the largest contiguous brackish water marsh remaining on the west coast of North America. Suisun Marsh is located in southern Solano County and is bordered on the east by the Sacramento-San Joaquin Delta, on the south by Suisun Bay, on the west by Interstate 680, and on the north by I-80, SR 12 and the cities of Suisun and Fairfield. The Suisun Marsh is a critical part of the San Francisco Bay-Delta estuary ecosystem. Encompassing 116,000 acres, the Suisun Marsh includes 52,000 acres of managed wetlands, 27,700 acres of upland grasses, 6,300 acres of tidal wetlands, and 30,000 acres of bays and sloughs. The Marsh encompasses more than 10 percent of California's remaining natural wetlands and serves as the resting and feeding ground for thousands of waterfowl migrating on the Pacific Flyway. In addition, the Marsh provides essential habitat for more than 221 bird species, 45 animal species, 16 different reptilian and amphibian species, and more than 40 fish species. The Marsh supports 80 percent of the state's commercial salmon fisheries by providing important tidal rearing areas for juvenile fish, allowing them to grow twice as fast as those reared in the upper watershed, and thus, greatly enhancing their survival. Two hundred and thirty miles of levees within the Marsh also provide critical protection of the drinking water for 22 million people by preventing salt water intrusion into the Delta. The Marsh is within Bay Conservation and Development Commission jurisdiction.

In addition to the Suisun Marsh, there are numerous freshwater creeks, streams, permanent and seasonal wetlands and ponds throughout the corridor that serve to support wildlife habitat. Suitable habitats can occur in a variety of natural and artificial locations including vernal pools, seasonal wetlands, alkaline pools, clay flats, vernal swales, stock ponds, railroad right-of-way pools, roadside ditches, and road rut pools resulting from vehicular activity.

Due to drainage areas and seasonal wetlands likely being present off the I-80 East Corridor, any project's proposed scope of work would have to be adjusted to avoid or minimize impacts (particularly those associated with staging of equipment and materials) to the wetlands. Potential impacts will be evaluated during the PA/ED phase of proposed projects.

Approximately 57 percent of Solano County lands are in some form of agricultural cultivation. Even when taken out of active production, agricultural land supports very few native plants; the majority of the non-cultivated species are ruderal[26], weedy grass and forb species. However, agricultural land still may provide wildlife biological opportunities such as foraging areas[27], nesting or den sites, and movement corridors. The value of agricultural lands to wildlife largely depends on the vegetation characteristics, cultivation practices, and flooding regimes of particular areas.

Urban areas occur throughout Solano County with the greatest concentration occurring along the axis of I-80, the main transportation artery that runs northeast to the southwest. Urban vegetation consists, for the most part, of non-native, horticulture plants; few native species, except some trees and shrubs, typically remain in an urban setting. Most of the vegetation in urban settings is maintained as a monoculture, such as in tree groves, street strips, and lawns. Urban vegetation consisting of large stands and/or dense stands of trees and shrubs can provide habitat for "urban adapted" wildlife and, in some areas, habitat for migrating species. A second urban category exists in Solano County: rural residential areas. These rural residential areas are typically characterized by larger lots (typically 1 to 5 acres) and in many cases, remnants of native or naturalized plant communities may remain; however, human activities, development, and ornamental vegetation typically dominate the environment.

Historic/Cultural Resources[28]

There are known historic properties from the National Register of Historic Places (NRHP) located within and around the I-80 East CCP Corridor. Native American archaeological sites are likely to be buried beneath the ground surface. Archaeological sites dating to the historic period within the corridor are typical of those found in rural settings where homesteads, ranches, or farms were once present. Architectural properties located within the corridor will most likely be associated with the agricultural history of the area. There is also the possibility of State or locally listed historic properties being located in the general vicinity of the I-80 East CCP Corridor. Studies would have to be initiated to see if any potential resources would be disturbed or affected. Historical properties could be in the sphere of influence, (within one-half mile) of the I-80 East corridor. Possible impacts to other historic architectural resources that are more distant to the corridor may also need to be evaluated. Sensitive archeological sites are known to exist along the length of the corridor. Waterway routes in the corridor are of particular interest and need to be respected.

Parks/Open Space

Section 4(f) of USC 49 Section 303 sets federal policy to preserve the natural beauty of open space and historic areas. Resources include publicly owned parks, recreation areas, wildlife or waterfowl refuges and historic sites. Environmental staff will determine the need for a Section 4(f) evaluation based on a specific project potential to impact 4 (f) resources located in a given study area. Mitigation for impacts will be developed where appropriate in corridor specific areas. Where specific projects for the CCP study

[26] https://www.collinsdictionary.com/us/dictionary/english/ruderal

[27] https://www.collinsdictionary.com/us/dictionary/english/forb

[28] Solano Multispecies Habitat Conservation Plan and Natural Community Conservation Plan (HCP/NCCP) (http://www.scwa2.com/Conservation_Habitat_Docs.aspx), and the Caltrans District 4 Geographic Information Systems Support Branch

do not involve new right-of-way acquisition, potential impacts to 4(f) resources could result due to the proximity of project related construction to these resources.

Chapter 4 – Multimodal Facilities and Needs

As a multimodal transportation corridor, the portion of I-80 within Solano County serves the movement of people and goods with a variety of transportation modes. This chapter describes the public transit services, P&R facilities, and bicycle and pedestrian facilities that operate within the I-80 East Corridor. It also identifies programmed, planned and in some cases proposed projects within the Corridor. In addition, the chapter summarizes the TSMO strategies and equipment that are currently deployed within the Corridor and examines the networks and major trip generators for freight movement.

Caltrans Deputy Directive DD-64-R2 requires Caltrans to provide for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products of the SHS. It requires Caltrans to develop integrated multimodal projects and facilitate bicycle, pedestrian, and transit travel by creating a network of "Complete Streets".[29] MTC and many local agencies have developed policy and guidance on Complete Streets as well.

[29] http://www.dot.ca.gov/hq/tpp/offices/ocp/docs/dd_64_r2.pdf

4.1 Transit Services

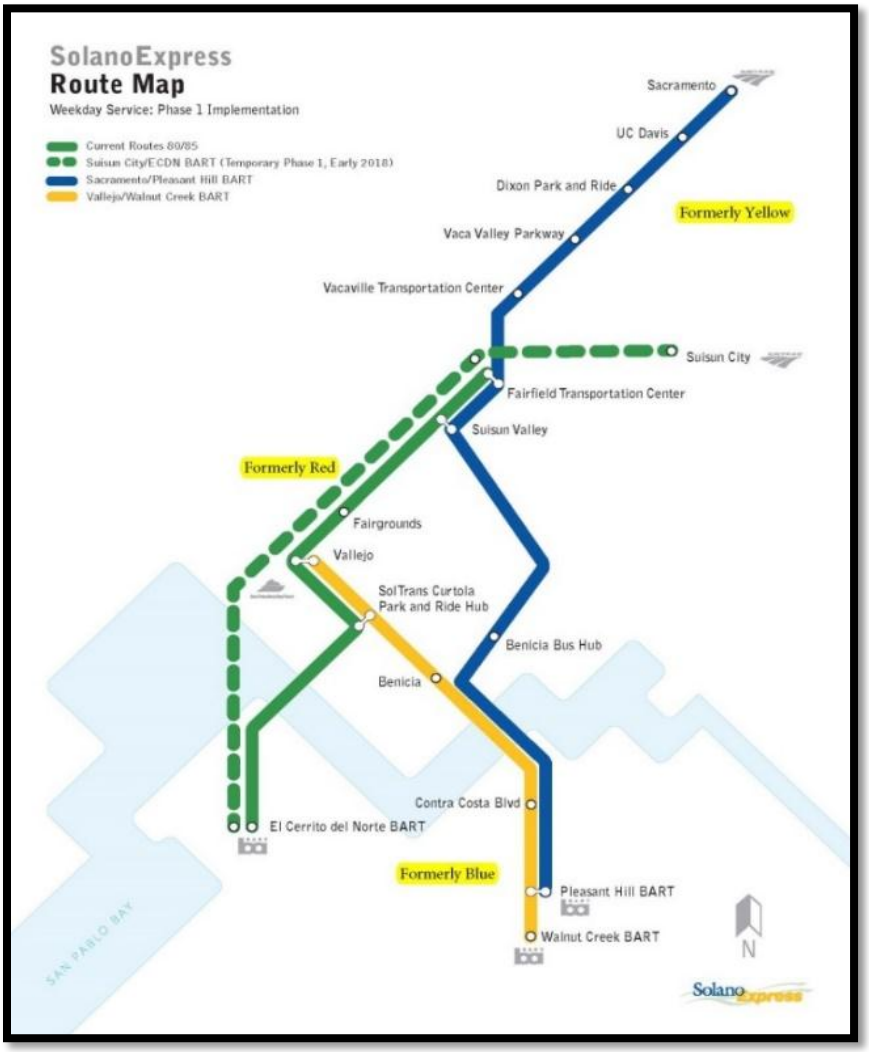
Solano Transportation Authority (STA)

STA's transportation vision encompasses seven elements of travel – six are travel modes and one is a focus on special users. The six travel modes are intercity commuter buses, local bus connections, passenger rail, passenger ferry, bicycle/pedestrian connections, and ridesharing (carpooling, vanpooling, and Transportation Network Companies). The seventh strategy encompasses specialized transportation services and programs for Seniors and people with disabilities and low-income residents, the concept often referred to as Mobility Management. STA is responsible for countywide transportation planning, programming local transportation funds, managing and administering transportation programs and services, delivering transportation projects, and setting countywide transportation priorities.

SolanoExpress Intercity Commuter Bus

SolanoExpress is a premium express bus service connecting Solano County cities along the I-80 and I-680 Corridors and with cities and activity centers in neighboring counties to the west and east. In late 2014, after extensive study and public input, STA completed the I-80/I-680/I-780 Transit Corridor Study in 2014[30].

Figure 6 *SolanoExpress Route Map*



This study reviewed the existing operation of SolanoExpress Routes 20, 30, 40, 78, 80, 85 and 90. With the goal of improving ridership and promoting mode-shift to buses, the basic recommendation was to reduce the number of individual routes from seven to three and to increase the frequency of service. In conjunction with the proposed service changes, the express lines would be given color designations.

The Phase I capital improvements provide for two new stops, both serving campuses of Solano Community College (Vacaville and Fairfield) and employment centers. The travel time reductions are each on the order of four

[30] http://www.sta.ca.gov/docManager/1000005316/Transit%20Corridor%20Study%20DRAFT-FINAL_June2014%2018%20June.pdf

minutes each way. Taken together, the schedule changes and new stops are expected to result in ridership increases on the order of 40 percent, with typical weekday boardings increasing from 4,200 to 5,900 riders. Based on growth in population and employment in Solano County cities, as well as in the neighboring counties, daily ridership is projected to increase to 6,500 by 2030.

In order to fully implement the recommended route and schedule envisioned in the I-80/I-680/I-780 Transit Corridor Study, several additional capital improvements are necessary. These additions would provide new in-line stops in three areas: Fairgrounds Drive in Vallejo, Santa Clara Street in Vallejo, and near the Fairfield Transportation Center (via a slip ramp from I-80). These improvements will provide time savings of two to seven minutes each when compared to the time required to serve the current stops in those locations.

Planned Solano I-80 Express Lanes

Express lanes will provide travel time savings and increased reliability for bus riders, making the service more attractive for new riders, while also making it more convenient and reliable for current riders. The new express lanes in the East Segment would extend for approximately 9 miles but provide congestion relief for nearly 12 miles, as backups related to the existing bottleneck often cause issues starting at Abernathy Road. Assuming free-flow conditions, the express lanes project in coordination with other planned improvements along the corridor would save approximately 17 minutes for each bus or other HOV traveling on eastbound I-80 during the PM peak period. The time savings would result from increased average speeds along the corridor, with average speeds in the express lanes being approximately 15 mph faster than in the general purpose lanes.

These improvements will result in an immediate reduction in average travel times for transit and HOV users, and improve reliability by reducing the variability of travel times. The express lanes are projected to result in ridership increases on the order of 3%, with typical weekday boardings increasing to 6,100 for SolanoExpress (STA's I-80/I-680/I-780/SR 12 Transit Corridor Final Study, June 2014). The average SolanoExpress passenger trip length would increase to 19.4 miles, due to improved connectivity. Based on growth in population and employment, daily ridership is projected to increase to 6,600 in 2030 (assuming the continuation of current transportation options).

Ridesharing (Carpooling and Vanpooling)

STA currently runs a vanpool program for Solano and Napa counties that provides startup assistance and support for vanpools to/from Solano, Sacramento, Napa, and Yolo Counties. Solano County has the most active vanpool fleet in the San Francisco Bay Area, with 42 percent of all Bay Area vanpools originating in the County. There are 218 vanpools currently active in Solano County in 2018. Travel-time savings are a key component in deciding to choose carpooling and vanpooling over driving alone. Express lane implementation, along with other planned improvements in the I-80 East Corridor and the significant time savings, should have a positive impact on carpooling and vanpooling rates.

<u>Ferry Service</u>

The San Francisco Bay Ferry has a terminal in Vallejo. Known as the Vallejo Ferry, it transports passengers to and from San Francisco. The ferry is the busiest ferry in the entire system, regularly reaching 97 percent occupancy. SolanoExpress, and the local bus service provided by Solano County Transit (SolTrans), connect directly with the Vallejo Ferry. There are plans to increase service for SolanoExpress and the Vallejo Ferry as part of SB 1 funding and potential future bridge toll funding increases from Regional Measure 3.

Passenger Rail

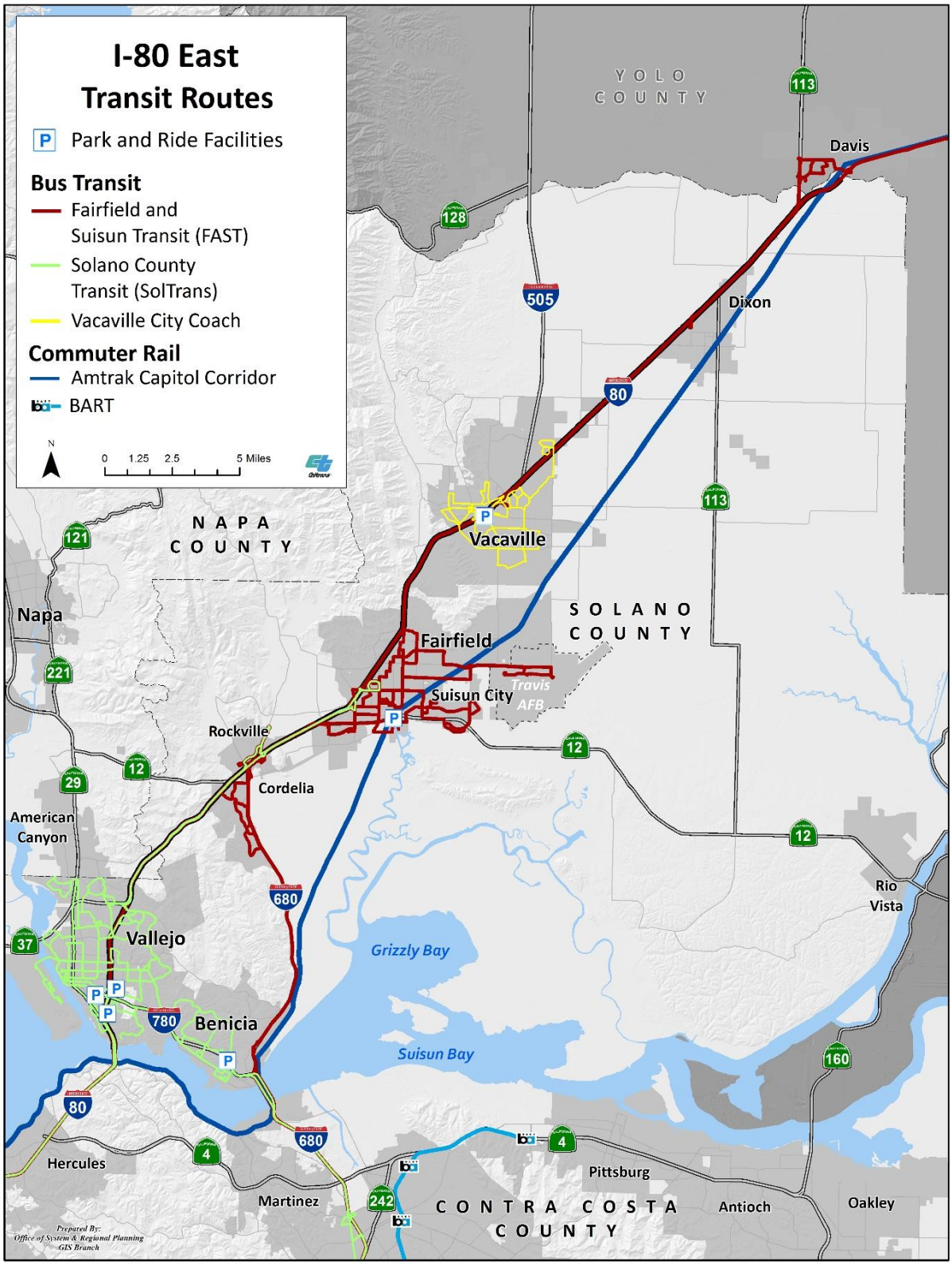
Amtrak's Capitol Corridor is the intercity passenger rail service that serves Solano County. This service runs between Sacramento (with limited service to Auburn) and San Jose with two Solano County stations, Suisun-Fairfield and Fairfield-Vacaville providing frequent daily service.

Figure 7 *Amtrak's Capitol Corridor*

Source: Capitol Corridor Joint Powers Authority

Figure 8 on the following page illustrates transit service providers and general routes.

Figure 8 *I-80 East Corridor Transit Routes*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

4.2 Park and Ride Facilities

The Caltrans P&R Program facilitates access to transit and ride-sharing services along freeway corridors with the goal to reduce congestion and vehicle miles traveled. A mode shift away from single-occupancy vehicles (SOV) helps reduce congestion, improves air quality, and helps Caltrans meet its sustainability goals. Due to the ineligibility of P&R projects for ITIP funds and more pressing demands for safety and operational improvements under the SHOPP, there is little funding available to build or improve P&R facilities. Therefore, Caltrans is focusing on collaboration with local jurisdictions, regional and transit agencies to develop partnership opportunities to enhance, expand, and/or construct P&R facilities.

Existing P&R Inventory along I-80 East Corridor

The San Francisco Bay Area has 150 public P&R facilities available to commuters. Caltrans has fifty P&R facilities with a capacity of 5,606 spaces. Along the I-80 East Corridor, there are five locations owned and maintained by Caltrans, totaling 577 parking spaces[31]. More information about the current P&R inventory can be seen below in Table 11.

Table 11 *Caltrans Owned Park and Ride Facilities*

Lot Name	County	Route	Post Mile	Location	Parking Spaces
Magazine	SOL	80	1.68	Northwest corner of Magazine Street Interchange at I-80	19
Lemon Street (SW)	SOL	80	7.19	Southwest corner of Curtola Parkway and Lemon Street at I-80 (relinquished to SolTrans in 2017)	64
Lemon Street (NW)	SOL	80	7.19	Northwest corner of Curtola Parkway and Lemon Street at I-80 (relinquished to SolTrans in 2017)	355
Benicia Road	SOL	80	2.43	Southeast corner of Benicia Road overpass at I-80	14
Mason Street	SOL	80	R26.31	Northwest corner of Peabody Road/Cliffside Drive at I-80	125

Planned P&R Facilities in I-80 East Corridor

There are currently phased plans for the expansion of the Curtola facilities:

- Phase 1A: Add 110 parking spaces (completed in 2015)
- Phase 1B: Add 450 parking spaces
- Phase 2: Add 450 parking spaces
- Phase 3: Add 300 parking spaces

[31] http://www.dot.ca.gov/d4/parkandride/

4.3 Bicycle and Pedestrian Facilities

Policy Overview: District and Countywide Plans

In addition to the State and regional policies on Complete Streets, Solano County has adopted their own Bicycle and Pedestrian Transportation Plans, outlining the policy goals as well as identifying bicycle and pedestrian needs within the County. The following information represents a brief summary of bicycle and pedestrian planning efforts along the I-80 East Corridor and beyond.

Caltrans District 4 Bike Plan

The Caltrans District 4 Bicycle Plan (D4BP), to be initiated in 2018, will identify and prioritize investments to improve bicycling on and across the State-owned transportation network. This Plan will complement and build on statewide, regional, and local planning efforts to help create a connected, comfortable, and safer bicycle network for the Bay Area.

Solano Countywide Bicycle Transportation Plan (2012)[32]

The Countywide Bicycle Plan is a planning tool for the countywide bikeway network in Solano County. It serves as a guide to planning and engineering professionals in Solano County's jurisdictions. The main purpose of the plan is to encourage the development of a unified bicycle system throughout Solano County. The Plan focuses on a bikeway network that will provide connections within Solano County as well as to surrounding counties. Additionally, policies are designed to support and encourage bicycle transportation, flexible design standards for use in implementation, and promotional strategies.

Solano Countywide Pedestrian Transportation Plan (2012)[33]

The Countywide Pedestrian Plan is an STA document for planning and supporting pedestrian system improvements and investments in seven cities (Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo) and Solano County. The main purpose of the Plan is to encourage the development of a unified regional pedestrian system throughout Solano County.

Additionally, STA's *Safe Routes to Transit Plan (2011)*[34] contains Class I bicycle facilities connecting to each train station. STA also has plans to help fund the extension of the Ulatis Creek path under I-80, connect Linear Park to the Fairfield Transportation Center, and close gaps in the bicycle network to help connect the Curtola P&R center with surrounding area neighborhoods.

Solano Active Transportation Plan

STA currently has three separate plans that address active transportation: the Countywide Bicycle Transportation Plan, the Countywide Pedestrian Transportation Plan, and the Safe Routes to Transit (SR2T) Plan. STA will update and combine all three plans into one Solano Active Transportation Plan, to be initiated in 2018.

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[32] http://www.sta.ca.gov/docManager/1000002942/Solano_BikeTransPlan_Final%2012-14-11.pdf

[33] http://www.sta.ca.gov/docManager/1000003176/Final%20Ped%20Transportation%20Plan%2001-11-12.pdf

[34] http://www.sta.ca.gov/docManager/1000003400/SolanoSafeRoutesFinal_1_07%2019%2012%20%28small%29.pdf

Bicycle and Pedestrian Facility Needs and Projects

A bicycle needs assessment was developed utilizing a variety of sources, including:

- A high-level geo-photographic survey (via Google Maps) conducted by Caltrans District 4 Planning
- Solano County's Bicycle and Pedestrian Plans
- Stakeholder and public input for the D4BP development efforts

Existing Conditions

A high-level geo-photographic survey was conducted via Google Maps to determine the existing conditions of the bicycle and pedestrian facilities along the I-80 East Corridor. Due to time and resource constraints, this CCP only focuses on freeway overcrossings for bicycles and pedestrians within the Corridor. An inventory of nearby intersections and interchanges including crossings on I-80 within the corridor limits was created and is included in Appendix A. A total of 42 crossings were identified. In addition to the physical description of the active transportation facilities, the inventory incorporates nearby transit facilities and posted speed limits of each vehicle crossing. Crossings at interchange locations are highlighted as they are often obstacles due to conflicts with vehicular traffic. Freeways can act as a barriers to bicycling and walking and there are often few opportunities to cross freeways. See Figure 9 for bicycle facilities within the I-80 East Corridor.

Needs Assessment and Project List

In addition to the bicycle projects identified in the Countywide Bicycle and Pedestrian Plans and the updated project list from each Congestion Management Agency as part of the District 4 Bike Plan, staff conducted additional analysis to identify bicycle needs along the Corridor.

For pedestrian facilities, the project list is mainly based on the current Countywide Pedestrian Plan as well as data from the existing conditions inventory where challenges to pedestrian travel have been identified.

The combined bicycle and pedestrian project list is included in Chapter 6: Recommended Strategies as Table 19. Caltrans has endorsed bicycle and pedestrian-oriented design such as Design Information Bulletin 84[35], the Highway Design Manual[36], the Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians (2010)[37] and National Association of City Transportation Officials Urban Bikeway Design and Urban Street Design Guides.[38] In general, the following strategies should be implemented where appropriate to ensure the safety of bicyclists and pedestrians and provide connections for multi-modal travel.[39, 40]

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[35] http://www.dot.ca.gov/design/stp/dib/dib84-01.html
[36] http://www.dot.ca.gov/design/manuals/hdm.html
[37] https://nacto.org/docs/usdg/complete_intersections_caltrans.pdf
[38] https://nacto.org/2014/04/11/california-officially-endorses-nacto-urban-street-design-guide-and-urban-bikeway-design-guide/
[39] https://altaplanning.com/wp-content/uploads/Complete-Intersections-A-Guide-to-Reconstructing-Intersections-and-Interchanges-for-Bicyclists-and-Pedestrians.pdf
[40] http://www.divergingdiamond.com/

- Complete Streets Strategies:
    - Reconstruct ramps to intersect crossroad at ninety-degree angle with as small a radius as possible and install a stop or signal control
    - Encourage slower vehicle speeds until past ramp entry
    - Limit on-ramps to a single entry lane, where feasible
    - Provide single, rather than dual, right-turn only lanes, or minimize conflicts where dual right turn lanes are required
    - If a dual right-turn only lane is required, channelize it and split into two separate movements
    - Widen sidewalks and shoulders to standard widths, in general, a minimum of four feet.

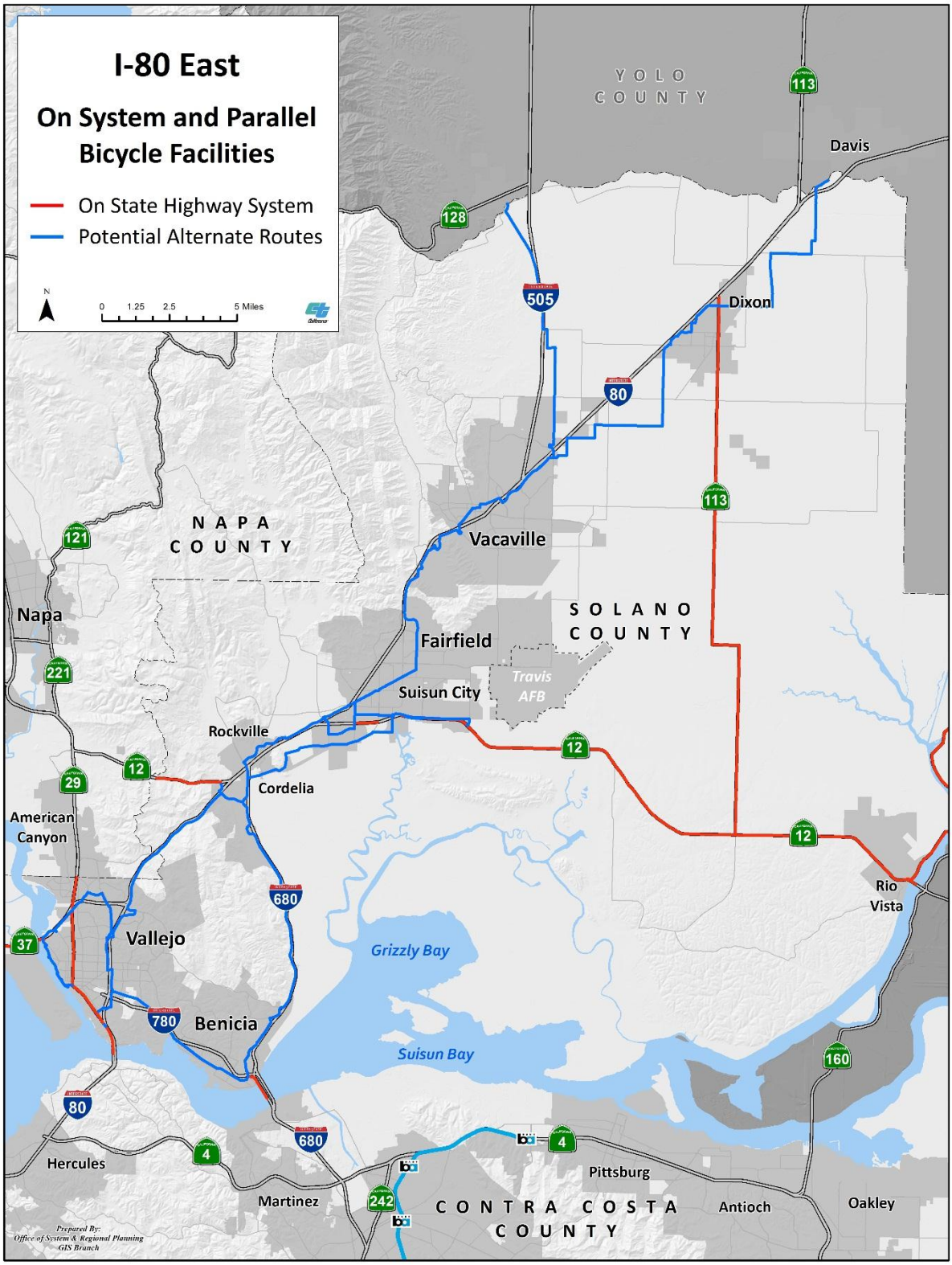
- Pedestrian-Specific Strategies:
    - Locate crosswalks appropriately, considering speed, sight lines, and crossing distance
    - Leading Pedestrian Interval to give pedestrians an extra three to five seconds to begin crossing the street before cars get a green light
    - Shorten crossing- distances
    - Install pedestrian warning signs, yield signs, pedestrian-actuated beacons, and high-visibility crosswalks where crossings are uncontrolled or yield-controlled
    - Provide sidewalks on both sides of overcrossings and undercrossings, where feasible
    - For ramp crossings, add pedestrian signals coordinated with adjacent traffic signals
    - Install accessible pedestrian signals to indicate whether pedestrians should cross or not
    - Lighting at uncontrolled crossings, pedestrian scaled lighting
    - Provide "no right-turn on red" signs where there are two right turn-lanes and a pedestrian crossing

- Bicycle-Specific Strategies:
    - Provide context sensitive bicycle facilities (such as Class I, II, III, or IV bike lanes) on all roads crossing the Corridor, including those through interchanges
    - Ensure the quality of the bicycle facility is maintained or improved through the interchange
    - Provide a bicycle pocket or bike lane to the left of dedicated right turn lanes or a Class IV separated bikeway to the right with a protected crossing
    - Widen/add buffers to existing and proposed bike lanes

Figure 9 on the following page show bicycle facilities, both on-system and on parallel facilities, along the I-80 East Corridor in Solano County.

Disclaimer: This map was developed for informational purposes only. While the data has been examined for general accuracy, Caltrans disclaims any responsibility for the accuracy or correctness of the data. In no event shall Caltrans become liable to users of this map, or to any other party, for any loss or damages consequential or otherwise arising from the use of this map product. This map is for informational purposes only and should not be used for bicycling directions. For bicycle facilities off the SHS or bicycling directions, visit http://511.org/biking/commute/work, refer to the STA's *Solano Countywide Bicycle Transportation Plan*, or search an online map service that provides bicycling directions.

Figure 9 *I-80 East Corridor Bicycle Facilities 2017*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

4.4 Transportation Systems Management and Operations

Caltrans is committed to effective TSMO strategies to optimize the performance of California's transportation systems for all users and modes of travel. Successful TSMO strategies requires proactive integration of the transportation systems to efficiently move people and goods along highly-congested urban corridors. Examples of TSMO strategies include, but are not limited to: ramp metering, traffic signal synchronization, ITS/TOS, and managed lanes. Efficiency can often be achieved by operational improvements through ITS deployment. These include four types of management for improving throughput:

- System management for recurring localized congestion (ramp metering, managed lanes, traveler information, dynamic speed limits, traffic signals and transit priority, parking management system, automated vehicles).
- Incident management for non-recurrent congestion (detection-verification-response, closed-circuit television (CCTV), changeable message signs (CMS), highway advisory radio (HAR), weather detection, traveler information system).
- Event management for emergencies, disasters and other occurrences (through system monitoring, evacuation management, route selection).
- Asset Management for managing existing infrastructure and other assets to deliver an agreed standard of service. One of the first steps in the efficient management of the transportation system will be the completion and implementation of a Transportation Asset Management Plan.

As TSMO strategies are developed and implemented, additional ITS/TOS elements within the corridor are often required. The Caltrans SMP 2015–2020[41] has a Strategic Objective to "effectively manage transportation assets by implementing the asset management plan and embracing a fix-it-first philosophy." The Plan specifies a target of maintaining 90 percent or better ITS/TOS element health by 2020. Operations and maintenance (O&M) resources are essential to achieve this fix-it-first target. As more ITS/TOS elements are implemented, O&M resource needs will continue to grow.

Solano Highways Operation Study[42]

An example of TSMO strategy implementation within Solano County is the completion of the 2009 Solano Highways Operations Study. This transportation planning effort was developed through the formation of SoHIP which includes representatives from STA, MTC, Caltrans (Districts 3 and 4), and the cities of Benicia, Dixon, Fairfield, Vacaville and Vallejo. The study was funded by a Caltrans Partnership Planning Grant with the goal of updating the 2004 I-80/I-680/I-780 Major Investment and Corridor Study. The study's scope included identifying and analyzing operational improvements to enhance safety and performance on the County's Interstates as well as developing aesthetic landscape and hardscape guidelines. It created long-range ITS elements including ramp metering, CCTV's, and HAR's. While the Solano Highways Operations Study was adopted by the STA board in 2009, the SoHIP continues to oversee the integration of ramp metering and ITS architecture in Solano County.

[41] http://www.dot.ca.gov/perf/library/pdf/Caltrans_Strategic_Mgmt_Plan_033015.pdf

[42] http://www.sta.ca.gov/docManager/1000005821/Solano%20Highways%20Operations%20Study%20-%20Executive%20Summary%20-%20Final%20Draft%20with%20cover%20WEB.pdf

Caltrans Ramp Metering Development Plan[43]

As required by Deputy Directive DD 35-R1, each Caltrans District that currently operates, or expects to operate ramp meters within the next ten years, shall prepare a District Ramp Metering Development Plan (RMDP). The district RMDP contains a list of ramp metering locations currently in operation or planned for operation in the next ten years. Each District works in partnership with its Metropolitan Planning Organizations (MPO) and Regional Transportation Planning Agencies (RTPA) to program ramp metering projects and implement the District RMDP. Districts are required to update their RMDP every two years. While the RMDP does not commit Caltrans to install or operate ramp meters at listed location, early coordination and consultation with RTPA's, MPO's, and other local agencies ensure a collaborative effort when planning and implementing ramp meters on the State Highway System (SHS). According to the Draft 2017 RMDP, District 4 has 734 existing and/or programmed ramp meters and another 561 planned ramp meter projects as of October 2017. I-80 in Solano County is identified as a top priority corridor to have metering implemented and activated in the RMDP.

Solano I-80 Ramp Metering Study and Implementation Plan[44]

This effort began after the STA Board adoption of the Solano I-80 East Ramp Metering Study in February 2009. The study purpose was to evaluate whether ramp metering would become a successful strategy to address existing and future congestion as travel demand on I-80 increases. The overreaching goals of the implementation plan focused on improving safety, productivity, reliability and mobility while reducing travel times. An operational analysis was conducted to assess baseline 2015 traffic volumes and forecast 2030 travel demand. The study concluded that ramp metering should be deployed in phases with each ramp meter corresponding to increases in peak hour directional flow by matching mainline volume rates at specific ramp locations along I-80.

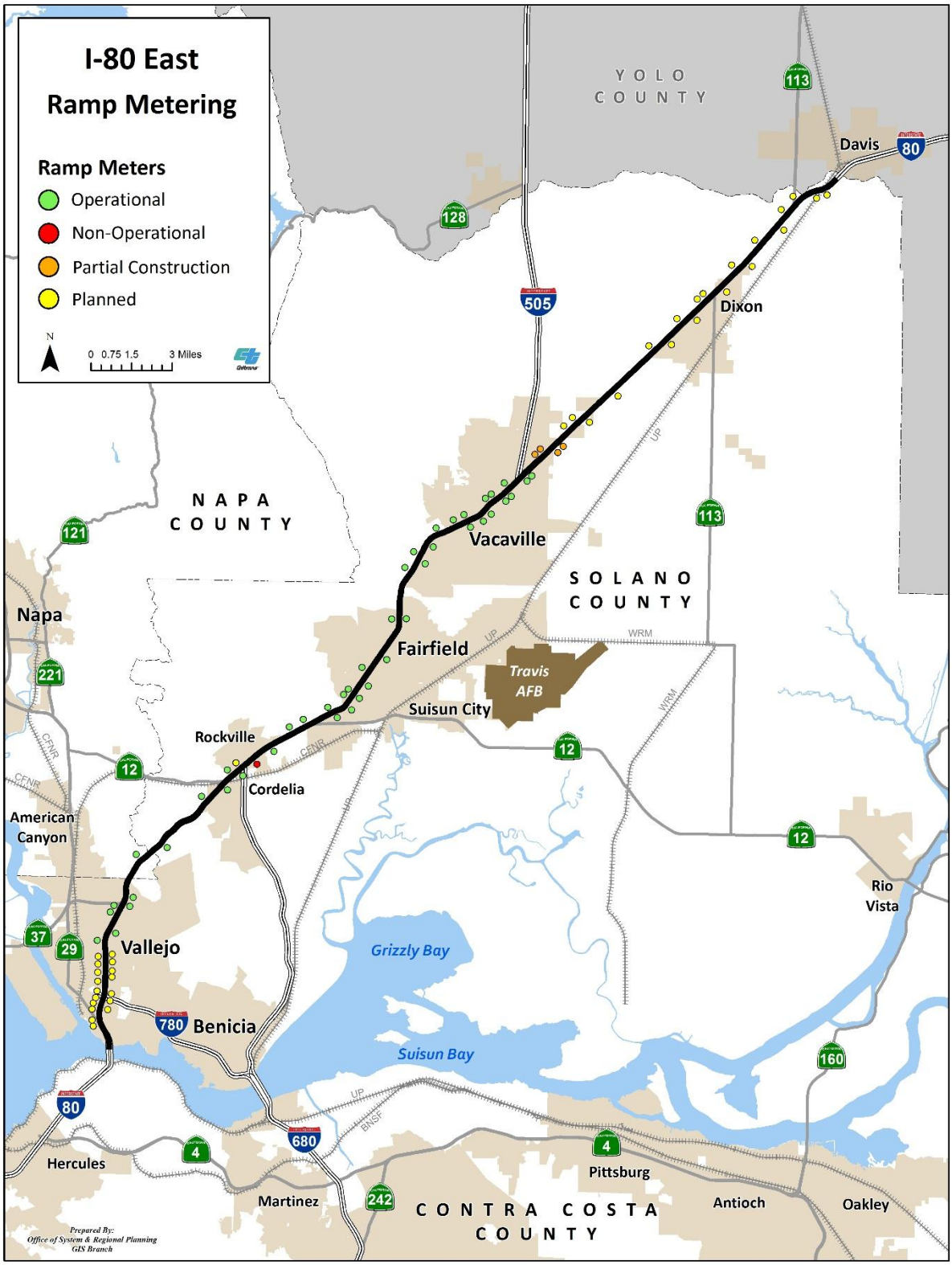
Ramp metering on the I-80 East Corridor was first activated in 2014 when previously installed ramp metering equipment was connected to mainline detection systems in the eastbound (EB) direction between Red Top Road and North Texas Street in Fairfield. In October 2015, ramp meters were activated in both the EB and WB directions between the I-80/Redwood Street Interchange in Vallejo and the I-80/I-505 interchange in Vacaville. Once fully activated, ramp meters began operating from 12:00 PM to 8:00 PM, Monday through Friday, in the EB direction and 5:00 AM to 10:00 AM, Monday through Friday and Sundays, from 12:00 PM to 8:00 PM, in the WB direction. The final stage, once funding is acquired, will expand ramp metering infrastructure along EB and WB I-80 on-ramps between Leisure Town Road in Vacaville and Old David Road near the Solano-Yolo County line.

Figure 10 on the following page also shows ramp metering locations along the I-80 East Corridor.

[43] http://www.dot.ca.gov/trafficops/tm/ramp.html

[44] http://www.sta.ca.gov/docManager/1000004419/Ramp%20Metering%20Staging%20and%20Imple_Plan_Final%207-1-13_wAppen.pdf

Figure 10 *I-80 East Corridor Ramp Metering*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

Other ITS/TOS Elements

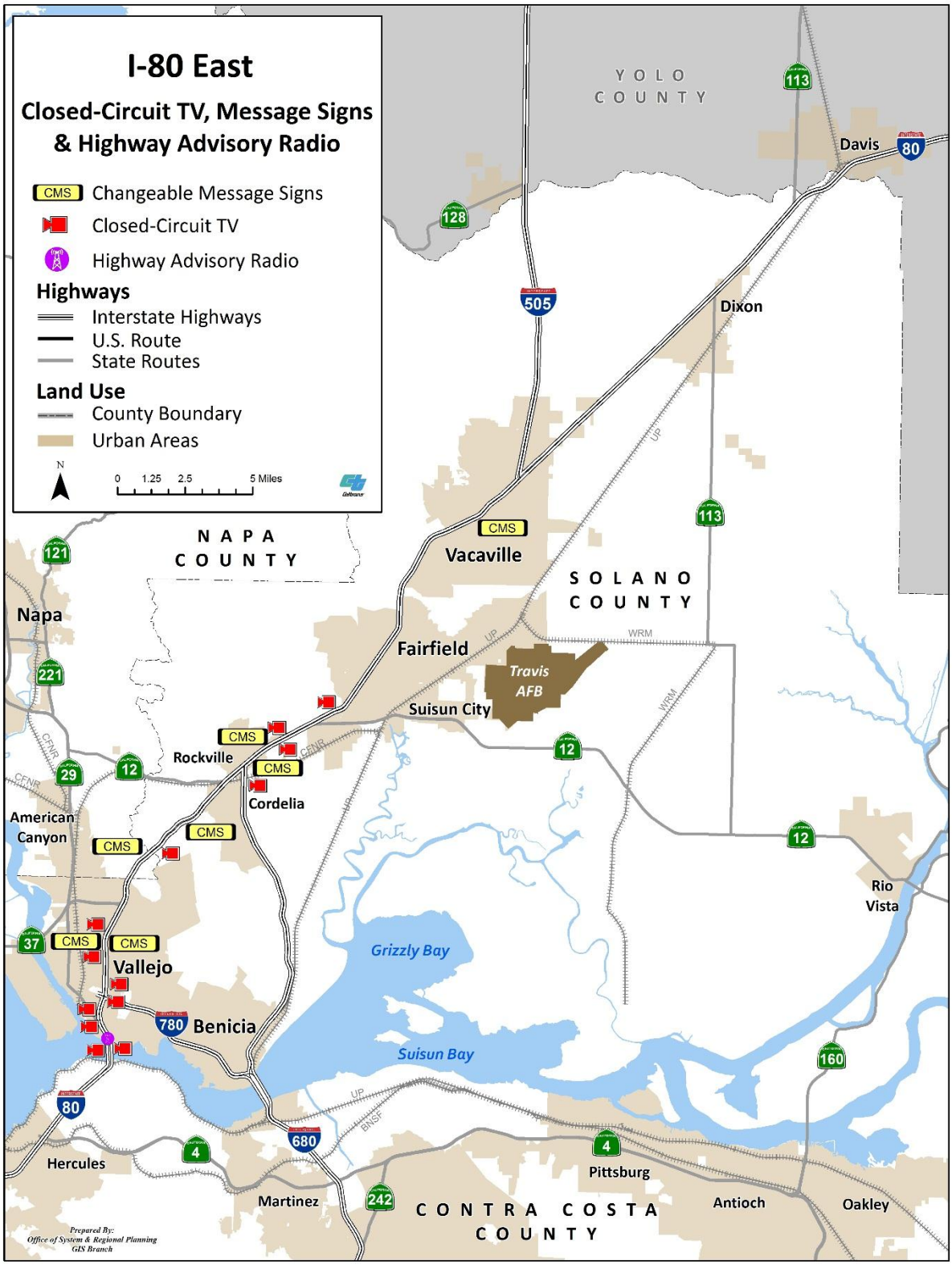
In addition to the operation of ramp meters within the I-80 East Corridor, there are also ITS and TOS components used to identify, measure and manage recurrent and non-recurrent events as they happen along the Corridor. These include Vehicle Mainline Detection Systems, Closed Circuit Television (CCTV), Changeable Message Signs (CMS), Extinguishable Message Signs (EMS), informational message signs, variable message signs, Highway Advisory Radio (HAR), and Traffic Monitoring Stations (TMS). Table 12 below lists the number of ITS/TOS elements, by direction, along the I-80 East Corridor.

Table 12 *Other ITS/TOS Elements*

TOS Element	Direction	Segment 1 (5.63 miles)	Segment 2 (7.21 miles)	Segment 3 (15.52 miles)	Segment 4 (16.36 miles)
CCTVs	EB	7	3	15	0
	WB	5	4	9	0
CMS/EMS	EB	1	2	2	2
	WB	2	2	2	1
HAR	-	1	0	0	1
TMS	EB	10	19	43	21
	WB	12	14	38	19

Figure 11 on the following page illustrates ITS/TOS elements and locations along the I-80 East Corridor in Solano County.

Figure 11 *I-80 East Corridor ITS/TOS Element Locations*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

4.5 Freight Network, Facilities and Trip Generators

Freight Movement

Freight movement refers to the transport and delivery of products and services from their origin to their destination. The goods movement supply chain is a vital component of the world economy and is reliant upon surface, air and maritime transportation systems and networks. I-80 continues to serve as one of the most critical freight corridors for the San Francisco Bay Area, Sacramento and Central Valley regions. The I-80 East Corridor is a key segment of this system and provides direct access to major interregional and regional freight corridors throughout Northern California. It is a key component of the transcontinental trucking network. In Solano County, I-80 connects with federal Interstate corridors (I-780, I-680, I-505) and State Routes including SR 29, SR 37, SR 12 and SR 113. All portions of I-80 are designated as a Primary Highway Freight System route[45] within the congressionally adopted National Highway Freight Network. All portions of I-80 are also a STAA – National Network route allowing Interstate "STAA" trucks, characterized as longer and heavier trucks, to travel along the entire route. The STAA Network consists of National Network, Terminal Access and Service Access routes.

Freight Planning

The 2014 California Freight Mobility Plan (CFMP), which serves as the State's long-range freight policy and planning document, categorizes the State's designated freight highway network into three tiers, with Tier 1 representing highways having the highest truck volumes and providing essential connectivity to and between key freight gateways and regions.[46] To help focus transportation investments on the greatest needs, the CFMP also classifies the State's designated freight highway networks with Tier 1 being considered as the most critical to freight movement and needing investment. Tier 2 and 3 facilities, also vital to freight movement and investment, have lower trucking volumes when compared with Tier 1 routes. However, all three tiers are of higher priority for freight funding than the much larger balance of the transportation system. In Solano County, I-80 is listed as a Tier 1 highway in the CFMP.

Regionally, freight facilities along the I-80 East Corridor are discussed in MTC's 2016 San Francisco Bay Area Goods Movement Plan. The corridor area is also being included as part of the on-going Improving Goods Movement Efficiency and Competitiveness in the Northern California Mega-region Study which is a partnership between Caltrans, MTC, the Sacramento Area Council of Governments, the San Joaquin Council of Governments and the Association of Monterey Bay Area Governments. The goals of the study are to understand regional freight movement clusters and their needs, transportation and land use challenges and opportunities, freight movement workforce training challenges and opportunities, and the identification of critical focus areas along with strategies and an implementation plan. Together these reports will serve as the long-range regional goods movement plans for the San Francisco Bay Area and will help shape future freight policies at the State level.

Freight Traffic Generators

The I-80 East Corridor is located within the San Francisco Bay Area which includes major maritime cargo ports and airports, intermodal freight rail hubs, and goods movement distribution centers. The region also has major manufacturing industries such as biotechnology, electronic and precision instruments, wine-related agriculture and production, petroleum refining and chemical production which all rely heavily upon the surface highway, maritime and aviation based transportation systems. Major freight traffic generators include the Port of Oakland, Oakland International Airport, San Francisco International

[45] https://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/california.html
[46] http://www.dot.ca.gov/hq/tpp/offices/ogm/cfmp.html

Airport, and agricultural production in the North Bay and Central Valley. Solano County is also home to Travis Air Force Base, "Gateway to the Pacific," and the 60th Air Mobility Command representing the largest air mobility organization in the Air Force handling more cargo and passengers than any other military air terminal in the United States. Other aviation resources include the Nut Tree Airport in Vacaville which serves as a general aviation facility owned by Solano County and operated by the County General Services Department. The airport accommodates light aircraft and corporate jets as well as retail, service and repair businesses relating to aviation.

Cordelia Commercial Vehicle Enforcement Facility

Located in unincorporated Solano County at the convergence of two major Interstates (I-80 and I-680) and one State Route (SR 12), the CCVEF has been a beacon for truck safety inspection and regulation in the North Bay for over sixty years. Conveniently positioned in both the eastbound and westbound directions of I-80, the original facilities were opened in 1958.

In 2013, the I-80 Eastbound Truck Scales Relocation Project was completed and opened for business. This $97 million project was funded by the Proposition 1B Trade Corridor Improvement Fund Program and Regional Measure 2 bridge tolls. The EB CCVEF now leads in commercial safety with one of the most advanced technological systems in the United States through the Intelligent Imaging System's Smart Roadside Inspection System (SRS). SRS includes weigh-in-motion, roadside sensors, integrated camera technology, and traffic control systems. The EB CCVEF was built to accommodate commercial traffic well into the year 2035. The project has resulted in a 19 percent increase in commercial traffic flowing through the facility while minimizing the impact on commute times and lessening traffic congestion on the I-80 Corridor.

By 2016, the EB facility conducted 13 percent more inspections than the WB facility, thus highlighting the need to improve the underperforming, yet still effective, WB facility. The existing WB facility has become outdated, under capacity, and does not include the state of the art technology needed for today's truck inspections. The planned truck scales facility will be relocated 0.7 mile east from its current location and will provide a new braided off-ramp connection and new entrance ramp connection to/from WB I-80. The project will result in the following benefits:

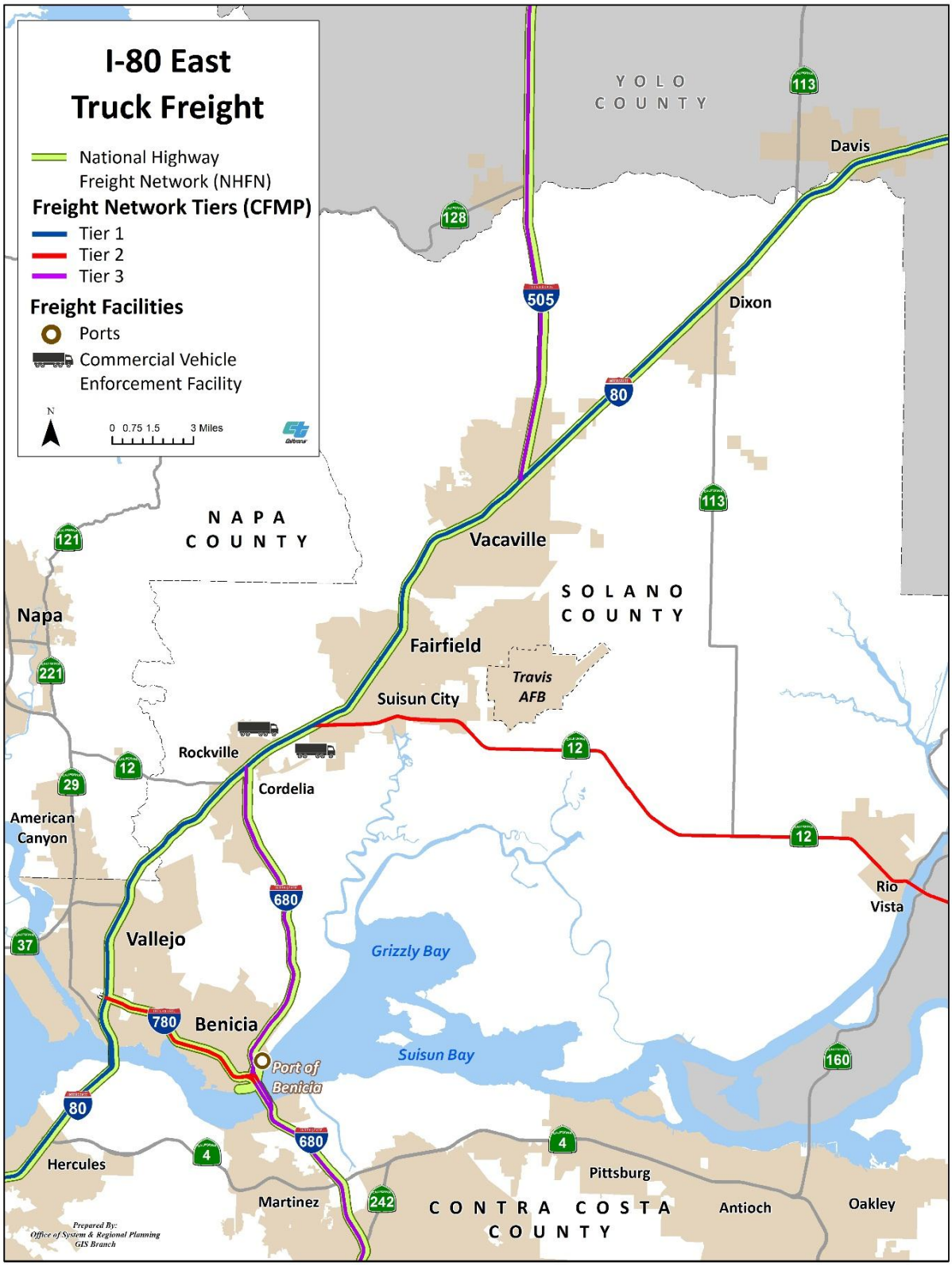
- Increased processing capacity of the truck scales up to 1000 trucks per hour;
- Increased queue capacity and a reduction in congestion;
- Reduction in rear-end accidents along I-80 and;
- Improved corridor operations by increasing weaving distances between adjacent interchanges

Freight Rail

Freight rail transportation services near the I-80 East Corridor are currently operated by the Union Pacific Railroad which functions as the owner/operator of the Class I rail line which parallels I-80 between Fairfield, Dixon and points beyond. The railroad currently accommodates both freight and passenger (Amtrak/Capitol Corridor) rail operations. The diversion of freight cargo volumes from trucking to rail could highly benefit truck-based congestion along the I-80 East Corridor.

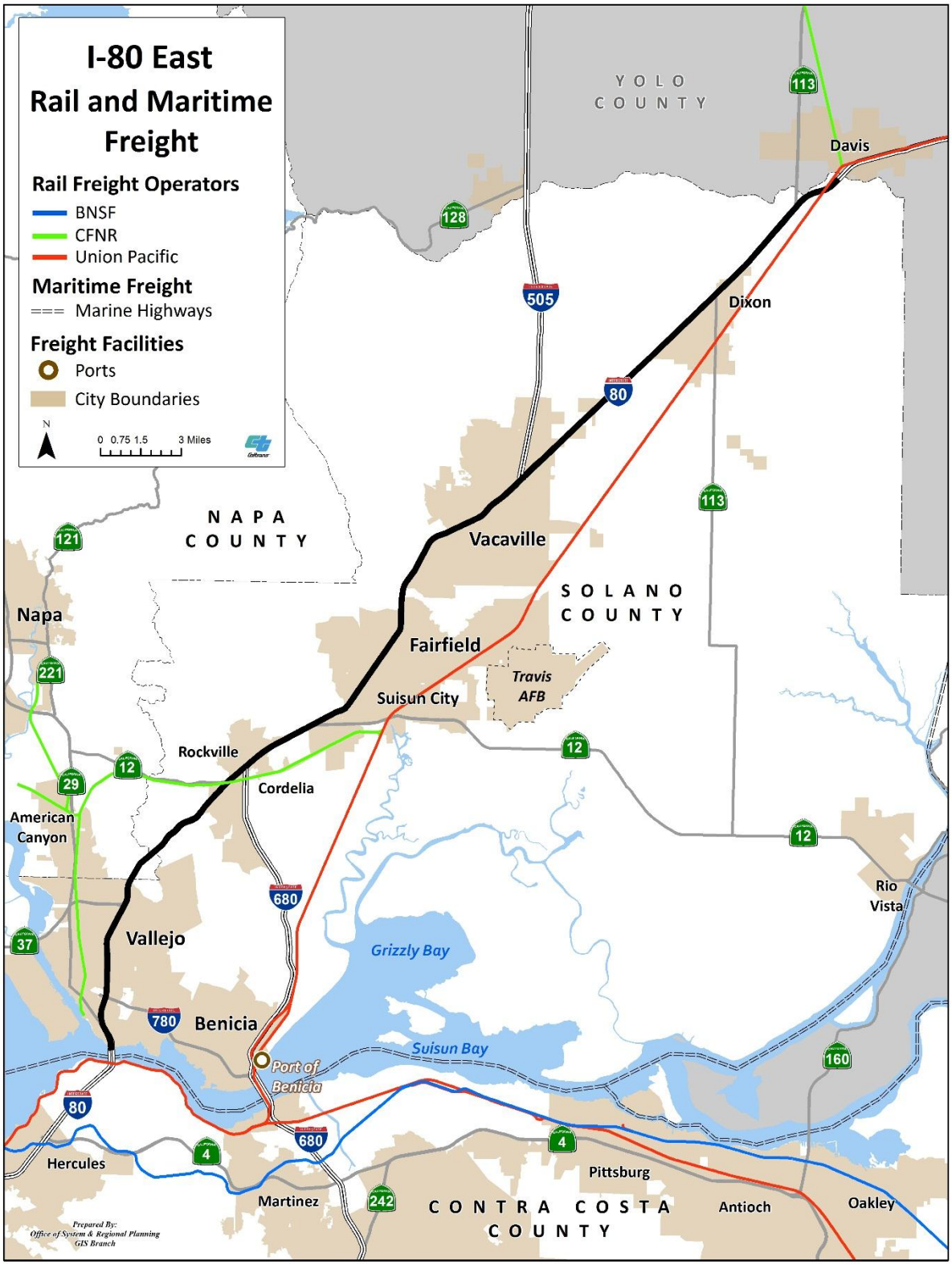
Figure 12 and 13 on the following pages illustrate existing State and federal trucking networks and facilities as well as railroad and maritime corridors near the I-80 East Corridor in Solano County.

Figure 12 *I-80 East Corridor Trucking Facilities*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

Figure 13 *I-80 East Corridor Freight Rail Facilities*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

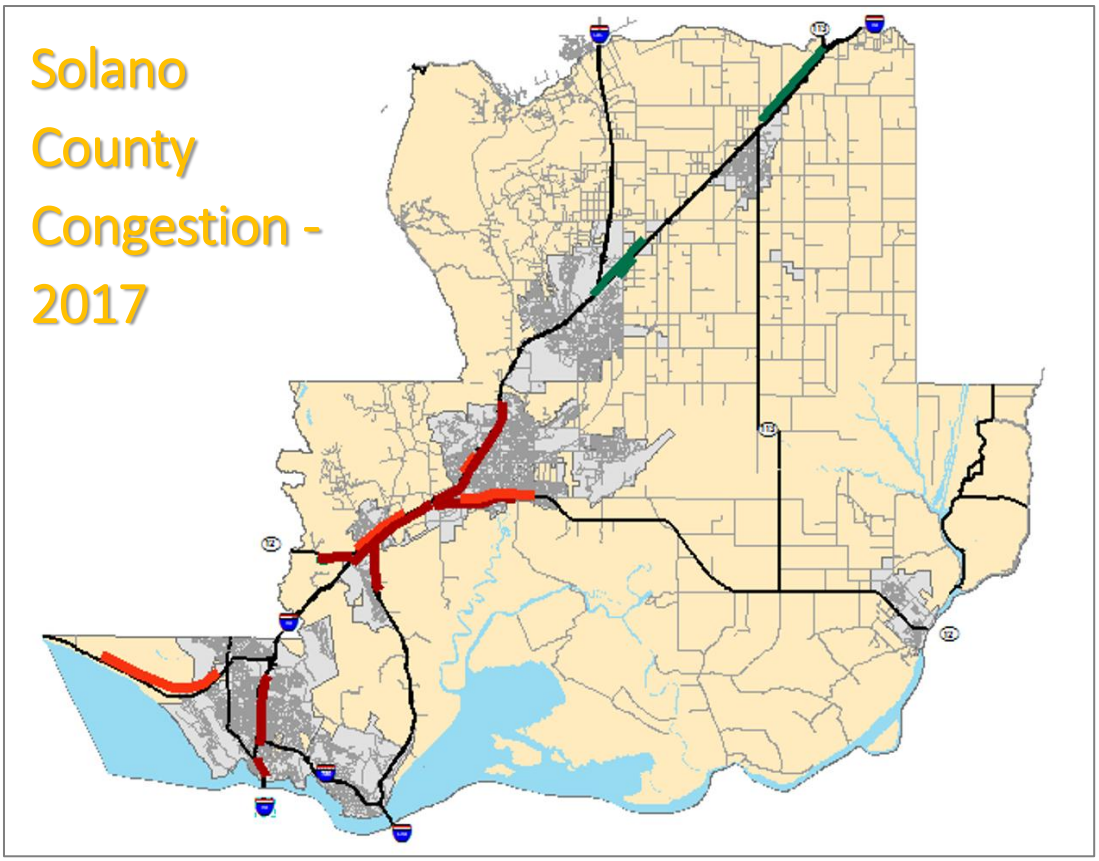
Chapter 5 – Freeway Performance

5.1 Existing Conditions

This section summarizes I-80 East Corridor traffic conditions between the Contra Costa County and the Yolo County line. Information presented in this section is derived from the 2010 I-80 East CSMP, the 2013 Solano County I-80 Ramp Metering Study and Implementation Plan, MTC's Travel Model One, and the Solano-Napa Activity-Based Model (SNABM). Each source was utilized to provide information on existing and future traffic volumes, known bottlenecks, and measures of corridor performance based on current and future conditions.

The I-80 East Corridor functions as a six to ten-lane freeway with three to five GP lanes in each direction. Current HOV lanes exist between Red Top Road and east of the Air Base Parkway interchange. Through implementation of the I-80 East Ramp Metering Implementation Plan and the SoHIP, ramp metering is currently operational in both the EB and WB directions between Tennessee Street in Vallejo and I-505 in Vacaville. Ramp meters are enabled Monday through Friday in the WB direction from 5:00 a.m. to 10:00 a.m. and in the EB direction from 12:00 p.m. to 8:00 p.m. They are also enabled on Sundays from 12:00 p.m. to 8:00 p.m. in the WB direction. Figure 14 displays EB (red) and WB (green and orange) limits of current recurring traffic congestion along the I-80 East Corridor. Aside from bottleneck information shown in Tables 1 and 15, data on weekend congestion levels and locations is not provided in this report due to constraints in the modeling information.

Figure 14 *Current Peak Period Congestion in Solano County*



Source: SNABM, December 2017

Traffic Volumes

The traffic volumes dataset was derived from the MTC Travel Model One and the Caltrans Traffic Census Program. MTC's Travel Model One defines the AM peak period as 6:00 a.m. to 10:00 a.m. and PM peak period as 3:00 p.m. to 7:00 p.m., Monday through Friday.

In 2015, Average Daily Traffic (ADT) for the WB AM peak period across all four segments of the I-80 East Corridor varied between 17,252 and 36,284 total vehicles. In the EB, PM peak period direction, volumes varied between 19,258 and 33,339 total vehicles across all four corridor segments. The highest peak period directional volumes were reported in Segment 3 during the WB AM and EB PM peak periods. The lowest peak directional volumes were reported in Segment 4 during the WB AM peak period and EB PM peak period. Table 13 summarizes total average daily peak period traffic volumes for the I-80 East Corridor.

Table 13 *2015 I-80 East Corridor Average Daily Peak Period Traffic*

Segment	**1**		**2**		**3**		**4**	
2015	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**
AM Peak Period	13,921	24,355	13,062	23,968	17,226	36,284	15,496	17,252
PM Peak Period	23,602	15,802	24,495	14,456	33,339	20,918	19,258	18,170

Source: MTC Travel Demand One Version 4, December 2017

Person Throughput

Based on occupancy data gathered from MTC's Travel Model One, vehicles with two or more persons represent about ten to eleven percent of all vehicles on the I-80 East Corridor. Increasing the HOV definition to include three or more persons per vehicle, the percentage share of HOV-eligible vehicles reduces to approximately five to seven percent along the Corridor. Eligible users of HOV lanes include buses, vanpools, clean air vehicles, and motorcycles. The data also shows that truck traffic represents about four to seven percent of total traffic volume on the I-80 East Corridor. East of North Texas Street in Fairfield, truck traffic generally accounts for less than four percent of total traffic volumes. However, east of the I-80/I-505 Interchange in Vacaville, trucks account for just over seven percent of total traffic volumes. Table 14 summarizes directional HOV occupancy percentage shares during the AM and PM peak periods.

Table 14 *Vehicle Occupancy*

Route	**Time / Direction**	**2+ HOV %**	**3+ HOV %**
I-80 East Corridor	AM / EB	10%	5%
	AM / WB	10%	5%
	PM / EB	11%	7%
	PM / WB	11%	7%

Source: MTC Travel Demand One Version 4, December 2017

Bottlenecks

Table 15 shows recurring weekday bottlenecks in the GP lanes and describes their location, direction, and queue characteristics. Each location is described in terms of:

- Changes in facility configuration such as lane drops and the start and end points of HOV lanes;
- Interchange spacing;

- On and off-ramp storage capacity and design, and;
- Corridor segments where the capacity of the existing facility is exceeded by travel demand.

This information was found in the I-80 East CSMP, Solano County I-80 Ramp Metering Study and Implementation Plan, and the Solano I-80 Ramp Metering – Stage II Implementation Before & After Study. In addition, HOV lanes also experience congestion due to operational degradation of the GP lanes. Due to the location of HOV lane termini near high demand off-ramps and the inability of HOV vehicles to move freely in to and out of HOV lanes, degradation of the GP lanes along the Corridor occurs during peak periods.

Table 15 *2015 Bottlenecks*

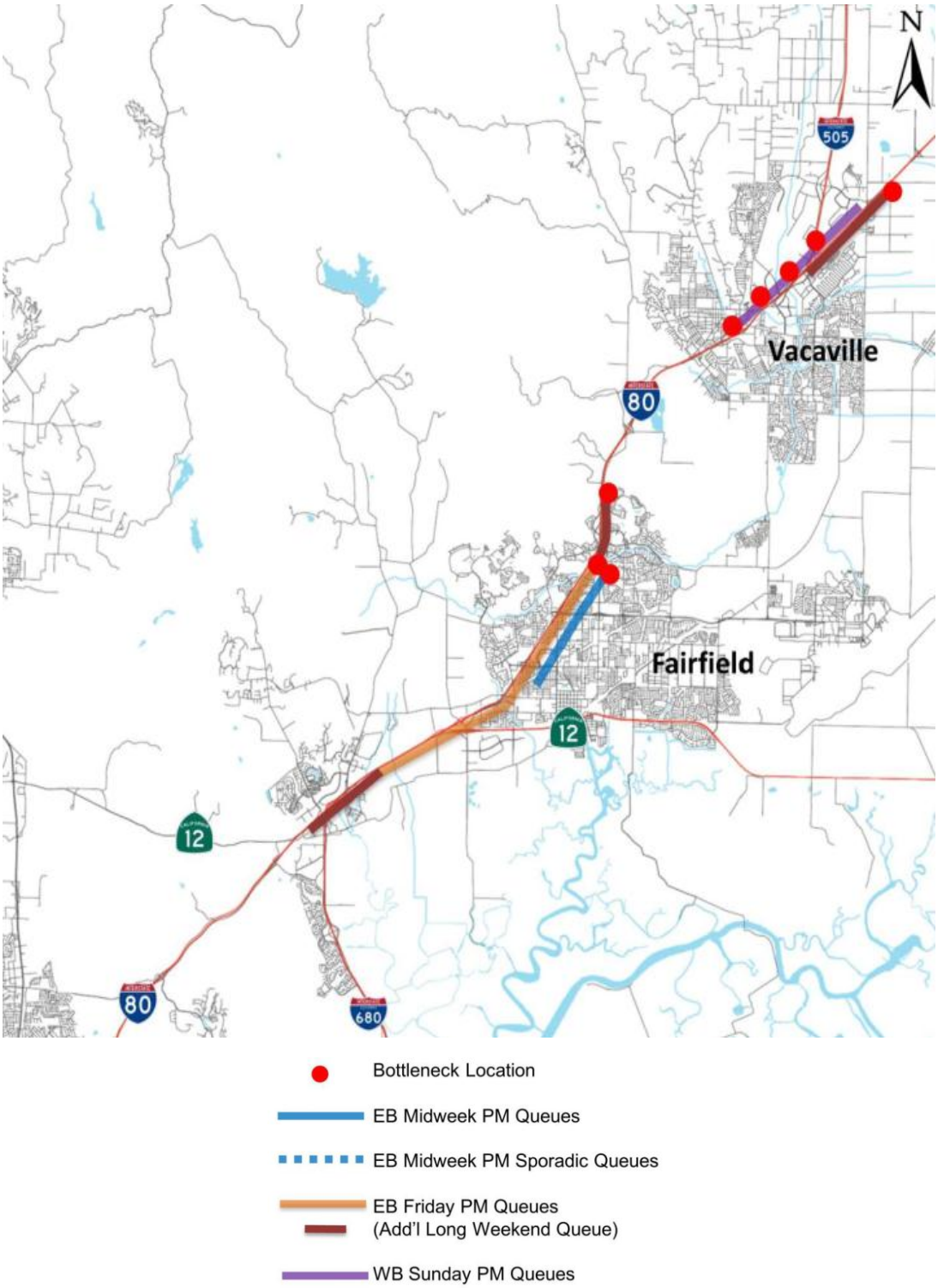
Time / Direction	Location Number	Location Description	Queue Length	End of the Queue
PM / EB	1	Tennessee Street on-ramp to Redwood Street eastbound off-ramp. Peak period volumes combined with drivers entering the corridor from Tennessee Street result in a mainline bottleneck.	1.0+ mi	I-780, and on occasion to I-80 Willow Ave in Contra Costa County
	2	Between the I-680 NB connector on-ramp and the Suisun Valley Road off-ramp with queues extending to Green Valley Road.	1.0+ mi	Green Valley Road
	3	Travis Boulevard on-ramp due to mainline volumes combined with high weave, merge volumes from the Travis Boulevard on-ramp and Airbase Parkway off-ramp. At times this secondary bottleneck can be hidden due to the primary bottleneck at North Texas Street.	3.0+ mi	To near EB CCVEF
	4	West of the N. Texas Street off-ramp, where the end of the eastbound HOV lane is combined with the drop of the rightmost mixed flow lane, resulting in a mainline bottleneck.	2.0+ mi	Travis Boulevard and on occasion extending to I-680 (typically during long weekends/holiday Fridays)
	5	West of Weber Road where the rightmost mixed-flow lane drop results in mainline bottleneck. Queue typically extends to east of Leisure Town Road.	1.5 mi	I-80 Leisure Town Road Interchange
	6	West of Richards Boulevard rightmost mixed-flow lane drop resulting in a mainline bottleneck.	3.5 mi	I-80 Kidwell Road Interchange
AM / WB	1	Redwood Street on-ramp and Tennessee Street off-ramp. Queue is a result of overlapping downstream bottlenecks.	2.4 mi	Near Broadway off-ramp
	2	Redwood Street on-ramp and Tennessee Street off-ramp. Queue is a result of overlapping downstream bottlenecks.	1.3+ mi	Secondary bottleneck to Tennessee St.
	3	Georgia Street on-ramp to I-780 off-ramp. Primary downstream bottleneck impacting Redwood and Tennessee Street secondary bottleneck.	0.75 mi	Near Woodside Road Interchange
	4	SR 12 West connector to westbound I-80/southbound I-680 connector ramp due to converging high merging, weaving volumes.	1.0 mi	Past WB CCVEF

Source: I-80 East CSMP, Solano County I-80 Ramp Metering Study and Implementation Plan, 2015

In addition to the bottlenecks listed in Table 15, a supplementary bottlenecks illustration, Figure 15, has been provided on the following page. This figure, taken from the Solano County I-80 Express Lanes Project

Application, shows existing bottlenecks and queue locations on I-80 between I-680/SR 12 and I-505 for both weekdays and weekends.

Figure 15 *I-80 East Corridor Existing Bottlenecks and Queues (Between I-680 and I-505 Only)*



Source: MTC, 2017

Summary of 2015 Conditions

As corridor volumes trend upward overall, peak-hour volumes at critical junction points and interchanges will increase and some congestion may begin to spill over into segments that experience lower traffic volumes and better performance. Post-2015 deployment of ramp meters along the I-80 East Corridor have helped improve vehicle traffic flows and travel times during the shoulders of the AM and PM peak periods. Future corridor reliability, efficiency, and performance will depend on the completion of the I-80/I-680/SR 12 Interchange Project and the extension and conversion of the existing I-80 HOV lanes to express lanes. Other strategies may include interchange consolidation and rebuilding, especially in Segment 1 in Vallejo and funding of the last phase (Phase III) of the I-80 East Ramp Metering Implementation Plan to the Yolo and Contra Costa County lines. Key projects include the reconstruction of the westbound CCVEF and the organization of a TSMO strategy amongst local, County and State transportation representatives.

5.2 Future Operating Conditions and Alternatives

The intent of this section is to provide a high-level overview of future freeway performance and summarize future conditions of the I-80 East Corridor. The traffic analysis examines long-term conditions in 2040, based on performance outputs from MTC's Travel Demand One.

Findings for future conditions analysis includes an evaluation of the benefits of the planned I-80 Express Lanes Project and the I-80/I-680/SR 12 Interchange Improvement Project. The I-80 Express Lanes Project will maintain the current number of mixed-flow lanes in the Corridor and convert the existing HOV lanes into High Occupancy Toll (HOT) lanes as well as extend these lanes just east of the I-80/I-505 Interchange. The I-80/I-680/SR 12 Interchange Project, composed of seven separate phases, each with independent utility, remains a high priority for the county and region. Once completed, the project will feature a realignment of I-680, an improved direct connector between I-80 and SR 12, HOV direct connectors between I-80 and I-680 as well as improved ramp access and connection to the local road network. Table 16 provides year 2040 average daily peak period traffic volumes and assumes the aforementioned projects, and others in PBA 2040 have been completed. Table 16 also shows the percent change from 2015 average daily peak period traffic.

In 2040, forecast WB, AM peak hour traffic demand across all four segments of the I-80 East Corridor will vary between 22,053 and 41,890 total vehicles. In the EB, PM peak period direction, volumes will vary between 24,021 and 37,703 total vehicles across all four corridor segments. The highest peak period directional volumes were reported in Segment 3 during the WB AM peak and EB PM peak periods. SOV vehicles continue to account for the majority of traffic with HOV vehicles representing nearly ten percent of total traffic.

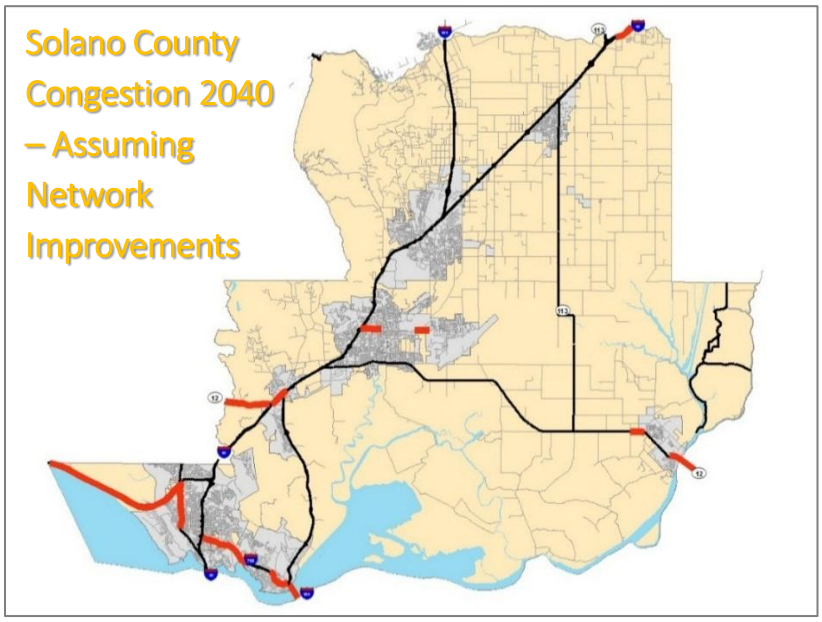
Table 16 *2040 I-80 East Corridor Average Daily Peak Period Traffic*

Segment	**1**		**2**		**3**		**4**	
2040	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**
AM Peak Period	16,127	25,688	12,417	27,267	19,290	41,890	20,142	22,053
Percent Change From 2015	+15.8%	+5.5%	-4.9%	+13.8%	+12.0%	+15.4%	+30.0%	+27.8%
PM Peak Period	24,157	17,611	24,021	13,731	37,703	22,329	24,717	23,418
Percent Change From 2015	+2.3%	+11.4%	-1.9%	-5.0%	+13.1%	+6.7%	+28.3%	+28.9%

Source: MTC Travel Demand One Version 4, December 2017

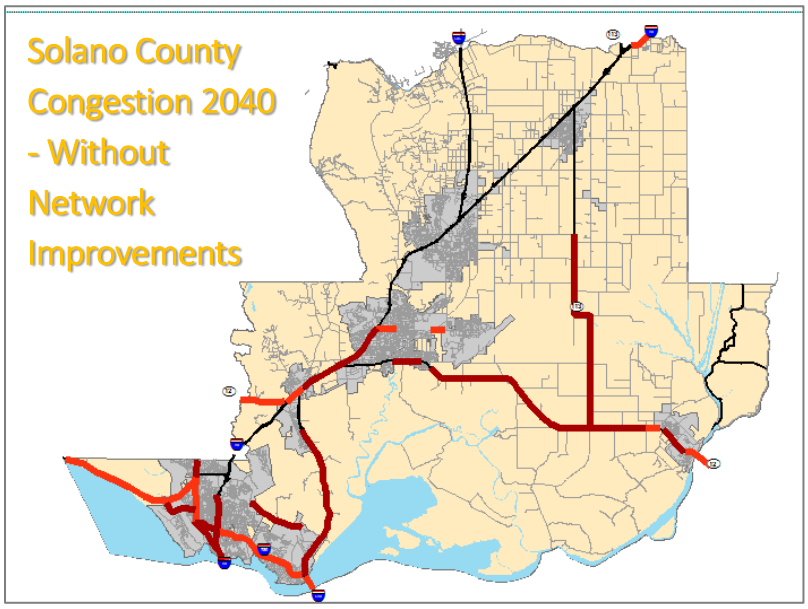
Figures 16 and 17 represent forecast congestion (in orange and red) in 2040 both with and without planned network improvements. Further discussion on recommended strategies, projects and benefits, aligned with previously established corridor goals and objectives is provided in Chapter 6.

Figure 16 *Forecast Peak Period Congestion in Solano County With Network Improvements*



Source: SNABM, December 2017

Figure 17 *Forecast Peak Period Congestion in Solano County Without Network Improvements*



Source: SNABM, December 2017

<u>Person-Throughput 2040</u>

Compared with 2015 volumes, the percentage of HOV vehicles with two or more persons is projected to remain roughly the same. On average, HOV vehicles continue to represent approximately ten percent of

all vehicles along the I-80 East Corridor. Table 17 summarizes 2040 directional HOV occupancy percentage shares during the AM and PM peak periods.

Table 17 *I-80 East Corridor Vehicle Occupancy (2040) – Peak Periods*

Route	Time/Direction	2+ HOV %	3+ HOV %
I-80 East Corridor	AM EB	12%	5%
	AM WB	7%	5%
	PM EB	10%	7%
	PM WB	11%	7%

Source: MTC Travel Demand One Version 4, December 2017

Summary of 2040 Conditions

Overall, planned and programmed improvement projects along the I-80 East Corridor will produce significant benefits now and in the future. These benefits include increases in corridor efficiency, safety, capacity and reliability. However, these improvements may also produce increased levels of VMT within the Corridor. This increase is potentially a reflection of two factors. First, with improved capacity and throughput, vehicles can more freely travel along the Corridor, thus reducing overall travel times. Secondly, improved travel times and reliability may also draw more vehicles into the Corridor. Many of these vehicles may also qualify for the planned express lanes including carpools, clean-air vehicles, buses, and vanpools. Therefore, projected increases in VMT levels may be offset by person-throughput along the Corridor and changes in overall travel patterns.

Chapter 6 – Recommended Strategies

6.1 Project Lists

This section presents the recommended projects within the I-80 East Corridor. There are four major project categories: 1) highway and transit projects; 2) bicycle and pedestrian projects; 3) projects in the SHOPP Ten-Year Plan; and 4) Draft 2017 RMDP.

As stated in the SCCP Guidelines, all projects nominated for funding must be identified in a currently adopted Regional Transportation Plan and a comprehensive corridor plan. The first round of project applications are due to the CTC in February 2018. Projects from the following lists that are closest to construction should be given priority.

Highway and Transit Projects

As shown in Table 18, the first group of projects includes highway and transit projects programs that may have significant impacts on the Corridor. The list includes projects in PBA 2040, the Bay Area's current RTP.

The recommended highway strategies include express lane projects, other operational improvements such as auxiliary lanes and TSMO strategies, interchange reconfigurations and local arterial projects that interact with and will help improve the operations of freeway interchanges.

The recommended transit strategies consist of a variety of projects. Transit capital projects include new and enhanced stations, new and improved bus stops, and expanded express bus service. Other projects include programs to improve accessibility, mobility and multimodal streetscapes to provide a variety of traffic safety, roadway configuration and infrastructure improvements in the County.

Table 18 also includes information on when a project is expected to be ready for construction. Projects are grouped into short, medium and long-term and defined as follows:

- Short-term: within four years (by Fiscal Year (FY) 2020/2021)
- Mid-term: between four and ten years (FY 2021/2022 to FY 2026/2027)
- Long-term: more than ten years (beyond FY 2026/2027)

Table 18 *I-80 East Corridor Future Highway and Transit Projects*

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost ($M)	Short Term (0-4 Years)	Med Term (4-10 Years)	Long Term (10+ Years)	RTP ID
Highway Projects										
SOL	80	29.86	29.86	Widen Vaca Valley I/C	Widen Vaca Valley bridge over I-80 from 2-lanes to 4-lanes	$15.0	X			N/A
SOL	80	14.40	14.60	I-80 WB Cordelia Truck Scales Relocation	Relocate and Expand the WB Truck Scales and Inspection facility. The new truck scales facility will be relocated 0.7 mile east from its current location and will provide a new braided off-ramp connection and new entrance ramp connection to/from westbound I-80.	$202.0	X			230322
SOL	80 680	13.22 (I-80)	13.00 (I-680)	I-680 Express Lanes: I-80 westbound to I-680 southbound and I-680 northbound to I-80 eastbound direct connectors	Express lanes on I-680/I-80 interchange in Solano County - widen to add express lane direct connectors I-80 westbound to I-680 southbound and I-680 northbound to I-80 eastbound. This complements the larger interchange project of RTP ID 17-08-0009.	$140.0		X		17-10-0061
SOL	80	12.80	19.20	Provide auxiliary lanes on I-80 in eastbound and westbound directions from I-680 to Airbase Parkway	Project provides auxiliary lanes on I-80 in the EB & WB directions from I-680 to Airbase Parkway; and remove the I-80/Auto Mall Parkway hook ramps and C-D road slip-ramp.	$57.0			X	17-08-0011
SOL	80	10.80	17.00	I-80/I-680/SR 12 Package 2A	Reconstruct EB SR 12 West to EB I-80 connector, braid Green Valley Rd. off-ramp with EB SR 12/I-80 EB.	$76.0	X			230326
SOL	80	10.80	17.00	I-80/I-680/SR 12 Package 2B	On I-680 from 0.6 mile north of Gold Hill Road O/C to 0.6 mile south of Cordelia overhead. Realignment of Lopes Road and construct new Interchange at I-680/Red Top Road.	$63.0	X			230326
SOL	80	10.80	17.00	I-80/I-680/SR 12 Package 3	Construct new I-80 westbound to I-680 southbound connector, realigning southbound I-680 approximately 0.5 miles to the west of the original location, connecting back to the existing alignment near the I-680/Red Top Road interchange. A westbound off-ramp will be constructed to the I-80/Green Valley Road Interchange and a new westbound on-ramp improvements will be added to the I-80 /Suisun Road Interchange, completing both interchanges.	$170.0	X			23032 6

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost ($M)	Short Term (0-4 Years)	Med Term (4-10 Years)	Long Term (10+ Years)	RTP ID
SOL	80	10.80	17.00	I-80/I-680/SR 12 Package 4	Construct I-680 northbound to eastbound I-80 connector, realign northbound I-680 to complement the improvements of Construction Phase 3. A third eastbound lane will be added to SR 12 (East) between Chadbourne and the Webster Street off-ramp. No additional access improvements will be constructed with this phase.	$140.0		X		230326
SOL	80	10.80	17.00	I-80/I-680/SR 12 Package 5	Construct NB I-680/WB SR 12 (West) connector, extend Business Center Drive from its current terminus westerly across SR 12, connecting with a realigned Red Top Road at the existing I-80/Red Top interchange. Construct new interchange on SR 12 (West) at Red Top Road and reconstruction of the I-80/Red Top Interchange, complete the local roadway improvements resulting in a parallel arterial between I-80/Red Top Road east to I-80/Abernathy Road, 5 miles to the east.	$123.0		X		230326
SOL	80	10.80	17.00	I-80/I-680/SR 12 Package 6	I-80/I-680 Express Lanes connector between I-680 and the eastern leg of I-80 connecting in the median of both facilities.	$55.0			X	230326
SOL	80	10.80	17.00	I-80/I-680/SR 12 Package 7	Construct the EB I-80 to SB I-680 and NB I-680 to WB I-80 connectors. These two low volume ramps will complete the interstate-interstate movements of the I-80/I-680 interchange. The northbound I-680 to westbound I-80 ramp construction will require replacement of the Union Pacific Railroad (UPRR) Cordelia underpass, including new track.	$56.0			X	230326
SOL	80	10.40	30.30	I-80 Express Lanes (Red Top Rd. to I-505)	West Segment - Convert the existing HOV lanes to express lanes, install tolling equipment in the median, retrofit CHP observation areas, and improve Travis off-ramps. East Segment - Proposed median and outside widening of I-80, placement of median barrier, retaining walls, sound walls, structure modifications, continuous ingress/egress striping and CHP observation areas.	$228.0	X			17-10-0059 17-10-0044
SOL	80	0.80	5.60	I-80 Express Lanes (Carquinez Bridge to SR 37)	Proposed outside widening of I-80, replace portions of median barrier, retaining walls, sound walls, continuous	$110.0		X		N/A

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost ($M)	Short Term (0-4 Years)	Med Term (4-10 Years)	Long Term (10+ Years)	RTP ID
					ingress/egress striping, and consolidation of on and off ramps and extension of acceleration lanes.					
SOL	80	Var	Var	Construct 4-lane Jepson Parkway from SR 12 East to Leisure Town Road at I-80	Constructs Phases 2, 3, 4, 6, 7, 8 and 10. Road costs only - bike and other special enhancements assumed from other programs (i.e. Regional Bicycle Program).	$85.0	X			17-08-0012
SOL	80	Var	Var	Roadway Operations	This category includes projects that improve roadway, intersection, or interchange operations, ITS, as well as other transportation system management. This project also includes a realigning SR 113 around downtown Dixon to I-80.	$59.0		X		17-08-0008
Var	80	0.02 (SOL)	3.80 (ALA)	I-80 Express Lanes in both directions: Carquinez Bridge to Bay Bridge	Express Lanes on westbound I-80 from Carquinez Bridge Toll Plaza to Powell St. and on eastbound I-80 from Powell St to Cummings Skyway. Add new express lane on eastbound I-80 from Cummings Skyway to Carquinez Bridge.	$81.0	X			17-10-0053
Transit Projects										
SOL	80	Var	Var	Fairfield Transportation Center Parking Facility	Expand parking at the Fairfield Transportation Center	$50.0		X		N/A
SOL	80	Var	Var	Solano Express Service Expansion	Consolidate and stream-line the Solano Express intercity service along the I-80 Corridor. The consolidation will minimize the off- freeway time, increase frequency and improve reliability of the system. The system will provide more service options within the County, including the Community College campuses in Fairfield and Vacaville.	$2/Year	X			N/A
SOL	80	Var	Var	Solano Express Bus New Bus Stops	Construct new Intercity bus stops along the I-80 Corridor in the cities of Vallejo, Fairfield and Vacaville	$2.0	X			N/A
SOL	80	Var	Var	Fairfield Transportation Center Bus Access Improvements	Provide direct bus access to and from the Fairfield Transportation Center (FTC) at the North Texas Blvd.	$5.0	X			N/A
SOL	Var	Var	Var	Construct train station building and support facilities at the new	Construct train station building and expanded bicycle access for the new multimodal center serving the Capitol Corridor.	$81.0	X			17-08-0014

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost ($M)	Short Term (0-4 Years)	Med Term (4-10 Years)	Long Term (10+ Years)	RTP ID
				Fairfield/ Vacaville multimodal station						
SOL	Var	Var	Var	Access and Mobility Program	This category includes projects that improve access and mobility for people with disabilities, low- income residents, and Seniors, including providing Lifeline transit service countywide and providing transit service to Seniors and individuals with disabilities	$113.0	X			17-08-0001
SOL	Var	Var	Var	Multimodal Streetscape	Projects in this category implement multimodal or Complete Streets elements	$2.0	X			17-08-0005
SOL	Var	Var	Var	Solano Managed Lanes Implementation Plan (MLIP) Support Projects	Construct projects and operate programs to support implementation of the MLIP. Projects include expansion of transit centers, including in Vallejo and Fairfield, and new bus stops served by Solano Express; construction or expansion of Park and Ride facilities; and, replacement and maintenance of intercity buses.	$115.0			X	17-08-0015

Source: STA, 2017

Bicycle and Pedestrian Projects

Table 19 lists recommended bicycle and pedestrian projects within the I-80 East Corridor. Bicycle projects are based on the projects listed in both the *Draft District 4 Bike Plan Needs Assessment* (expected to be completed in Spring 2018) as well as the *Solano Countywide Bicycle Transportation Plan (2012).* Pedestrian projects were collected from the *Solano Countywide Pedestrian Transportation Plan (2012).* A high level geo-photographic survey was also conducted by District 4 Transportation Planning to determine locations that are in need of bicycle or pedestrian improvements.

With a few exceptions, most projects focus on freeway crossings, especially those at freeway interchange locations, because freeways often represent a major barrier within the bicycle and pedestrian networks. An inventory of intersections, interchanges, and over and under-crossings along I-80 East within the Corridor limits are included in Appendix A.

Table 19 *I-80 East Corridor Planned Bicycle and Pedestrian Improvement Projects*

Co.	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed*
SOL	80	0.36	Carquinez Bay Trail	Natural surface trail connecting Carquinez Bridge Trail to existing trail above the Carquinez Strait	Bike/ped	Proposed
SOL	80	1.11	Glen Cove to Sonoma Boulevard	Connection from the existing regional Bay Area Ridge Trail east of the Carquinez Bridge along and under I-80 to SR 29, at terminus of bike/pedestrian pathway across Carquinez Bridge	Bike/ped	Planned
SOL	80	1.26	Maritime Academy Drive	New trail over/under I-80 to connect Bay Area Ridge Trail segments	Bike/ped	Proposed
SOL	80	1.27	Sequoia Avenue	Bike/ped crossing	Bike/ped	Proposed
SOL	80	1.78	Magazine Street	Bike/ped crossing	Bike/ped	Proposed
SOL	80	2.44	Benicia Road from I-80 to Beach Drive	0.5 mile Class II Bikeway (bike lanes) on Benicia Road from I-80 to Beach Drive	Bike	Planned
SOL	80	2.88	Georgia Street	Class II Bikeways (bike lanes)	Bike	Proposed
SOL	80	3.23	Solano Avenue	Add Class II Bikeway (bike lanes) on Solano Avenue and potentially slip ramp from Solano Avenue to Mariposa Street/I-80 SB on-ramp	Bike	Proposed
SOL	80	3.5	Tennessee Street to Solano Avenue	Reconfigure to diamond interchange and provide bicycle facility on Tennessee Street across the freeway	Bike	Proposed
SOL	80	4.43	Redwood Parkway	Class II Bikeways (bike lanes) on Redwood Parkway	Bike	Proposed
SOL	80	5.63	Columbus Parkway	Construct a Class I Bikeway (shared use path) along Columbus Parkway from I-80 to Georgia Street	Bike/ped	Planned
SOL	80	7.21/8.11	McGary Road	Class II Bikeways (bike lanes) on McGary Road from Vallejo city limits to Hiddenbrooke Parkway	Bike	Proposed
SOL	80	8.1	American Canyon Road	Bike/ped crossing	Bike/ped	Proposed
SOL	80	R11.59	Red Top Road	Class II Bikeways (bike lanes) on Red Top Road from Lopes Road to McGary Road	Bike	Proposed
SOL	80	16.16	Chadbourne Road	Bike/ped crossing	Bike/ped	Proposed
SOL	80	17.21	Rockville Road	Provide bike signal and phase for linear bike trail movement through interchange area	Bike	Proposed
SOL	80	17.92	Travis Boulevard	Class II Bikeways (bike lanes) on Travis Boulevard to the west of I-80	Bike	Proposed
SOL	80	19.18	Waterman Boulevard/Air Base Parkway	Complete gap in existing Class II Bikeways (bike lanes) across interchange on Waterman Boulevard/Air Base Parkway	Bike	Proposed
SOL	80	20.93	Manuel Campos Parkway	Class II Bikeways (bike lanes) and add sidewalk on north side of Manuel Campos Parkway	Bike/ped	Proposed
SOL	80	R25.30	Alamo Drive	Reconstruct ramps to/from NB I-80 and bike lanes on Alamo Drive	Bike	Proposed
SOL	80	R26.01	Davis Street	Class II Bikeways (bike lanes)	Bike	Proposed
SOL	80	R26.48/R27.23	Allison Drive to Elmira Road	Ulatis Creek Bicycle Facilities: Class I Bikeway (bike path) along the creek, Phase 2 is along Allison Drive to I-80	Bike	Proposed
SOL	80	R28.01	Nut Tree Road	Class II Bikeways (bike lanes) and add sidewalk on south side	Bike/ped	Proposed

Co.	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed*
SOL	80	29.85	Leisure Town Road	Class I Bikeway (shared use path) on Leisure Town Road from I-80 to Ulatis Creek	Bike/Ped	Proposed
SOL	80	29.87	Ulatis Creek Area near I-80	Construct Class I Bikeway (bike path), and Class II Bikeways (bike lanes) at various locations along Ulatis Creek from Vaca Valley Road to Leisure Town Road	Bike	Planned
SOL	80	31.36	North Meridian Road	Class II Bikeways (bike lanes)	Bike	Proposed
SOL	80	32.62	Midway Road	Class II Bikeways (bike lanes)	Bike	Proposed
SOL	80	35.52	Dixon Avenue West	3.0 miles of Class III Bikeway (bike route) from I-80 to Meridian Road	Bike	Planned
SOL	80	36.89	Pitt School Road	Bike/ped crossing	Bike/ped	Proposed

* *Planned: Projects identified in the Solano Countywide Bicycle Transportation Plan (2012) and Solano Countywide Pedestrian Transportation Plan (2012).*

Proposed: Newly proposed bicycle projects from the Draft District 4 Bike Plan needs assessment and bicycle and pedestrian projects from the high-level geo-photographic survey.

SHOPP

The SHOPP is a four-year funding program for operating and maintaining the SHS that is updated every two years. It is Caltrans primary tool to implement the *fix-it-first* policy for the SHS. Within each SHOPP cycle, priorities are evaluated to match funding and performance measures as they relate to the goals established in the Caltrans Strategic Management Plan, namely Safety, Sustainability, Livability, Economy and Performance. As projects are selected and developed, they must also address Complete Streets, the Americans with Disabilities Act (ADA), Sea Level Rise, and issues such as wildlife and fish passage. The SHOPP is limited to maintenance, safety, and rehabilitation projects on existing State highways and bridges, with generally no projects that add new traffic capacity. In addition to managing the condition of the physical infrastructure, SHOPP projects also include safety improvements, operational improvements, environmental mitigation, traffic operations systems/traffic management systems, freight improvements and system resiliency and adaptation to climate change.

In accordance with Streets and Highways Code Section 164.6, Caltrans also prepares a ten-year State rehabilitation plan every two years that identifies the rehabilitation and reconstruction needs of all highways and bridges on the SHS, also known as the Ten-Year SHOPP Plan. For the 2017 cycle, a State Highway System Management Plan (SHSMP) has been developed as a new integrated management plan that fulfills the Streets and Highway Code requirements for the Ten-Year SHOPP Plan and incorporates the Five-Year Maintenance Plan. The SHSMP also helps fulfill the requirement for Caltrans to develop a robust Asset Management Plan, as outlined in SB 486. Among other changes, the SHSMP integrates the maintenance, rehabilitation and operation into a single management plan, introduces new national performance measures for pavement and bridges as required by federal law and presents performance targets approved under provisions of SB 486.[47] Table 20 lists projects in the adopted 2016 SHOPP program and the draft 2018 SHOPP Program as well as other planned projects for future SHOPP cycles.

The SHOPP project list includes projects to implement ramp metering and other TOS elements in the State Highway System. In addition, Caltrans also prepares a District RMDP that contains a list of ramp metering locations currently in operation or planned for operation in the next ten years, as discussed in Section 4.4 – Transportation Systems Management and Operations. The RMDP is consistent with the Ten-Year SHOPP Plan and provides more detailed location information about the planned ramp metering projects. These projects are also included in Table 20.

[47] http://www.catc.ca.gov/programs/SHOPP/2017_State_Highway_System_Management_Plan.pdf

Table 20 *I-80 East Corridor Future SHOPP and Ramp Metering Projects*

Co.	Route	Begin Postmile	End Postmile	SHOPP ID	EA	Title	Description	Source*
SOL	80	0.90	28.30	20559	4S910	Major Damage	In Solano County, from Sonoma Boulevard to Redwood Road, construct rock slope protection and regrading	2017 10-Year SHOPP Plan
SOL	80	1.00	1.00	20937	0J040	Major Damage	In Solano County, in Vallejo, at the SR 29 separation, repair slip-outs	2017 10-Year SHOPP Plan
SOL	80	1.07	1.07			Implement ramp meters at SB Sonoma Boulevard (SR 29)/Sequoia Avenue	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	1.10	1.10	17115	0Q090	Mobility	In Vallejo on I-80 from 0.1 km east of SR 29 separation to 0.2 km east of Redwood St. OC - Lengthen deceleration lanes on exit ramps and construct retaining walls and soundwalls	2017 10-Year SHOPP Plan
SOL	80	1.10	1.10	14021	0J600	Bridge rehab/scour	In Vallejo, at I-80/SR 29 separation Bridge No. 23-0087. Replace bridge. (PA&ED Only)	Draft 2018 SHOPP
SOL	80	1.10	R25.10	13155	4G960	Vegetation control/gore paving	In and near Vallejo, Fairfield and Vacaville, from SR 29 to Alamo Drive; also in Vallejo on SR 37 at I-80 (PM R11.45). Install roadside safety improvements.	2016 SHOPP
SOL	80	1.14	1.14	11336	2K840	Bridge	I-80 Mobility Improvement I-80/SR 29 Separation, Br#23-0087	2017 10-Year SHOPP Plan Draft 2018 SHOPP
SOL	80	1.24	1.24			Implement ramp meters at West Lincoln Road/Sequoia Avenue/Maritime Academy Drive/Sonoma Boulevard (SR 29)	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	1.72	1.72			Implement ramp meters at East Lincoln Road/Magazine Street	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	1.73	1.73			Implement ramp meters at West Lincoln Road/Pint Street/Magazine Street	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	1.80	4.40	13438	0J710	Raise overcrossing	In Vallejo, from Magazine Street Overcrossing (No. 23-0066) to Redwood Street Overcrossing (No. 23-0114). Increase vertical clearance at six overcrossing structures.	Draft 2018 SHOPP

Co.	Route	Begin Postmile	End Postmile	SHOPP ID	EA	Title	Description	Source*
SOL	80	2.00	44.70	20685		Mobility	I-80 from I-780 to the Yolo County Line. Install Fiber Communications.	2017 10-Year SHOPP Plan
SOL	80	2.04	2.04			Implement ramp meters at San Miguel Road/San Diego Drive	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	2.15	2.15			Implement ramp meters at WB I-780	I-80 to I-780	Draft 2017 Ramp Metering Development Plan
SOL	80	2.29	2.29			Implement ramp meters at EB I-780	Freeway-to-freeway connector entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	2.33	2.33			Implement ramp meters at EB I-780	Freeway-to-freeway connector entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	2.33	2.33			Implement ramp meters at WB I-780	Freeway-to-freeway- connector entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	2.35	2.35	16649	1SS18	Major Damage	In Solano County, in Vallejo, at Benicia Road	2017 10-Year SHOPP Plan
SOL	80	2.80	2.80			Implement ramp meters at Campbell Avenue/14th Street/Georgia Street	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	2.97	2.97			Implement ramp meters at Georgia Street/Miller Avenue/Steffan Street	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	3.13	3.13			Implement ramp meters at Solano Avenue/Springs Road/Mariposa Street	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	3.17	3.17			Implement ramp meters at Florida Street/East Lincoln Road/Solano Avenue/Springs Road	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	3.42	3.42			Implement ramp meters at WB Tennessee Street/Mariposa Street	Loop entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	3.42	3.42			Implement ramp meters at EB Tennessee Street/Mariposa Street	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan

Co.	Route	Begin Postmile	End Postmile	SHOPP ID	EA	Title	Description	Source*
SOL	80	3.60	3.60			Implement ramp meters at Humboldt Street/Tennessee Street/Admiral	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	3.60	3.60			Implement ramp meters at Admiral Callaghan Lane/Tennessee Street	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	4.00	12.00	20507		Pavement	0.5 mile east of Tennessee Street OC to SR 12/I-80 Separation	2017 10-Year SHOPP Plan
SOL	80	5.20	44.20	19039		Safety - Collision reduction	0.4 mile west of SR 37/I-80 Sep to 0.2 east of S. Davis OH	2017 10-Year SHOPP Plan
SOL	80	10.00	11.20	13365	2A960	Drainage	Near Fairfield, from Lynch Road to Red Top Road	2017 10-Year SHOPP Plan
SOL	80	12.99	12.99			Implement ramp meters at NB I-680	Freeway-to-freeway connector entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	13.90	13.90	11248	3G690		Near Fairfield, at Dan Wilson Creek Bridge No. 23-0006. Rehabilitate bridge.	2016 SHOPP
SOL	80	14.40	14.40	20443		Mobility	I-80 PM 14.4 (WB) - commercial vehicle enforcement facilities improvement	2017 10-Year SHOPP Plan
SOL	80	14.60	14.60	20902	4G872		Near Fairfield, at Suisun Creek Bridge No. 23-0007. Scour mitigation.	Draft 2018 SHOPP
SOL	80	15.00	30.70	15957	0K640	Pavement	SR 12 to 0.7 m east of Leisure Town Road OC	2017 10-Year SHOPP Plan
SOL	80	15.40	30.70	20646		Pavement	SR 12 to 0.8 miles east of Leisure Town Overcrossing	2017 10-Year SHOPP Plan
SOL	80	17.20	17.21	20272		Facilities	Relocate to another site per City's request /Fairfield MS (5701)	2017 10-Year SHOPP Plan
SOL	80	19.30	19.30	20663		Mobility	Construct an auxiliary lane on I-80 between Air Base Pkwy and Manuel Campos/N Texas St	2017 10-Year SHOPP Plan
SOL	80	22.10	23.00	18425	4K300	Safety - SI (safety index)	Between westbound I-80 and the local frontage road (Lyon Rd) - Install outer separation barrier	2017 10-Year SHOPP Plan
SOL	80	27.40	44.70	17191	2G290	Mobility	I-80 (27.4/44.7 PM). Install TOS/RM.	2017 10-Year SHOPP Plan
SOL	80	30.60	38.40	13914	4A110	Safety - SI (safety index)	On I-80 between the Cities of Vacaville and Dixon	2017 10-Year SHOPP Plan

Co.	Route	Begin Postmile	End Postmile	SHOPP ID	EA	Title	Description	Source*
SOL	80	31.18	31.18			Implement ramp meters at North Meridian Road	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	31.37	31.37			Implement ramp meters at North Meridian Road/Weber Road	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	31.62	31.62			Implement ramp meters at Midway Road/Oday Road	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	32.79	32.79			Implement ramp meters at Midway Road/Lewis Road	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	35.51	35.51			Implement ramp meters at West Dixon Avenue/West A Street/Schroeder Road	Loop entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	35.55	35.55			Implement ramp meters at West A Street/West Dixon Avenue/Batavia Road	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	36.86	36.86			Implement ramp meters at Pitt School Road/Stratford Avenue	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	36.94	36.94			Implement ramp meters at Pitt School Road	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	38.15	38.15			Implement ramp meters at Currey Road/Milk Farm Road	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	38.29	38.29			Implement ramp meters at Currey Road/NB Lincoln Highway (SR 113)/Milk Farm Road	Hook entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	38.38	38.38			Implement ramp meters at NB SR 113 (North 1st Street)	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	38.70	44.70	20647		Pavement	Pedrick Road Overcrossing to Yolo County Line	2017 10-Year SHOPP Plan
SOL	80	39.73	39.73			Implement ramp meters at Pedrick Road/Sparling Road	Loop entrance ramp	Draft 2017 Ramp Metering Development Plan

Co.	Route	Begin Postmile	End Postmile	SHOPP ID	EA	Title	Description	Source*
SOL	80	39.80	39.82	20279		Facilities	Reconstruct and expand station / Dixon MS (5755)	2017 10-Year SHOPP Plan
SOL	80	39.80	39.80			Implement ramp meters at Pedrick Road/Sievers Road	Loop entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	41.02	41.02			Implement ramp meters at Kidwell Road/Olmo Lane	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	41.51	41.51			Implement ramp meters at Kidwell Road/Sparling Road	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	42.53	42.53			Implement ramp meters at SB SR 113	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	R43.21	R43.21			Implement ramp meters at Old Davis Road	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	R43.38	R43.38			Implement ramp meters at SB SR 113	Freeway-to-freeway connector entrance ramp	Draft 2017 Ramp Metering Development Plan
SOL	80	R43.55	R43.55			Implement ramp meters at Old Davis Road	Slip or diagonal entrance ramp	Draft 2017 Ramp Metering Development Plan

** 2016 SHOPP: Project in the adopted 2016 SHOPP program and in pre-construction phases, including projects amended into the program from future cycles due to SB 1 funding augmentation.*

Draft 2018 SHOPP: Draft project list for the 2018 SHOPP program to be adopted by the California Transportation Commission in 2018.

2017 10-Year SHOPP Plan: Projects in the 2017 Ten-Year SHOPP Plan but not included in previous programs.

Draft 2017 Ramp Metering Development Plan: Planned ramp metering projects consistent with the Ten-Year SHOPP Plan with specific locations.

6.2 Short-Term Highway and Transit Project Evaluation

A qualitative evaluation was conducted to gauge how a project would help meet the Corridor Goals outlined in Chapter 2 – Corridor Goals, Objectives and Performance Measures. Depending on the level of impact, a project would receive a high, medium or low rating under each of the seven goals. The evaluation was focused on short-term (zero to four years) highway and transit projects only due to time constraints.

While many goals are clearly defined and self-explanatory, others require additional interpretation. For highway projects, the evaluation was based on the following assumptions:

- Projects similar in nature will receive similar scores. For example, interchange reconfiguration projects will be graded similarly unless the scope of a project includes specific components (such as active transportation improvement) that result in different ratings.
- For Goal 3 – Improve trip reliability within the Corridor, trip reliability is defined as reliability of vehicular trips on the freeway within the Corridor.
- For Goal 6 – Support economic prosperity, the emphasis is on the reduction of freeway congestion that benefits economic productivity.
- For Goal 7 – Efficiently manage transportation assets within the Corridor to protect existing and future investment, transportation assets are limited to assets on I-80 within the Corridor.

For transit projects, a slightly different set of assumptions were used for the following goals:

- For Goal 3 – Improve trip reliability within the Corridor, trip reliability is defined as transit trip reliability within the Corridor.
- For Goal 6 – Support economic prosperity, the focus is on how a transit project would help improve the livability of a community that contributes to economic prosperity.
- For Goal 7 – Efficiently manage transportation assets within the Corridor to protect existing and future investment, transportation assets are limited to transit assets, most of which are located outside of freeways.

Table 21 includes the evaluation results for short-term highway and transit projects respectively. Because of the differences in assumptions, a comparison between highway and transit projects would not yield a meaningful conclusion. Instead, the evaluation results mainly help demonstrate the best performers within each project category in terms of their impacts on advancing the corridor goals.

Table 21 *I-80 East Corridor Short-Term Highway and Transit Project Evaluation Results*

Co.	Title	Description	RTP ID	Goal 1: Provide a safe transport system to all users within the Corridor	Goal 2: Reduce recurring freeway congestion and improve freeway efficiency in moving people	Goal 3: Improve trip reliability within the Corridor	Goal 4: Support an accessible and inter-connected multi-modal transport system within the Corridor	Goal 5: Reduce pollutants and GHG emissions within the Corridor	Goal 6: Support economic prosperity	Goal 7: Efficiently manage transport assets within US 101 to protect existing and future investment
Highway Projects										
SOL	Widen Vaca Valley I/C	Widen Vaca Valley bridge over I-80 from 2-lanes to 4-lanes	N/A	High	Medium	Medium	Low	Low	Medium	Medium
SOL	I-80 WB Cordelia Truck Scales Relocation	Relocate and Expand the WB Truck Scales and Inspection facility. The new truck scales facility will be relocated 0.7 mile east from its current location and will provide a new braided off-ramp connection and new entrance ramp connection to/from Westbound I-80.	230322	High	Medium	Medium	Medium	Low	High	Medium
SOL	I-80/I-680/SR 12 Package 2A	Construct new EB SR 12 to EB I-80 Connector, braid Green Valley Rd. off--ramp with EB SR 12/I-80 EB.	230326	Medium	High	Medium	Low	Low	High	Medium
SOL	I-80/I-680/SR 12 Package 2B	On 680 from 0.6 Mile North of Gold Hill Road OC to 0.6 Mile south of Cordelia OH. Realignment of Lopes Road and construct New Interchange at I-680/Red Top Road.	230326	Medium	Medium	Medium	Low	Low	Medium	Medium
SOL	I-80/I-680/SR 12 Package 3	Construct I-80 Westbound to I-680 Southbound	230326	Medium	High	Medium	Low	Low	High	Medium

Co.	Title	Description	RTP ID	Goal 1: Provide a safe transport system to all users within the Corridor	Goal 2: Reduce recurring freeway congestion and improve freeway efficiency in moving people	Goal 3: Improve trip reliability within the Corridor	Goal 4: Support an accessible and inter-connected multi-modal transport system within the Corridor	Goal 5: Reduce pollutants and GHG emissions within the Corridor	Goal 6: Support economic prosperity	Goal 7: Efficiently manage transport assets within US 101 to protect existing and future investment
		Connector, realigning southbound I-680 approximately 0.5 miles to the west of the original location, connecting back to the existing alignment near the I-680/Red Top Road interchange. A westbound off ramp will be constructed to the I-80/Green Valley Road interchange and a new westbound on ramp improvements will be added to the I-80 / Suisun Road Interchange, completing both interchanges.								
SOL	I-80 Express Lanes (Red Top Rd. to I-505)	West Segment - Convert the existing HOV lanes to Express lanes, install tolling equipment in the median, retrofit CHP observation areas, and improve Travis Off Ramps. East Segment - Proposed median and outside widening of I-80, placement of median barrier, retaining walls, sound walls, structure	N/A	High	High	High	High	Medium	High	High

Co.	Title	Description	RTP ID	Goal 1: Provide a safe transport system to all users within the Corridor	Goal 2: Reduce recurring freeway congestion and improve freeway efficiency in moving people	Goal 3: Improve trip reliability within the Corridor	Goal 4: Support an accessible and inter-connected multi-modal transport system within the Corridor	Goal 5: Reduce pollutants and GHG emissions within the Corridor	Goal 6: Support economic prosperity	Goal 7: Efficiently manage transport assets within US 101 to protect existing and future investment
		modifications, continuous ingress/egress striping and CHP observation areas.								
SOL	Construct 4-lane Jepson Parkway from SR 12 East to Leisure Town Road at I-80	Constructs Phases 2, 3, 4, 6, 7, 8 and 10. Road costs only - bike and other special enhancements assumed from other programs (i.e. Regional Bicycle Program).	17-08-0012	High	Medium	Medium	High	High	Medium	Medium
Var	I-80 Express Lanes in both directions: Carquinez Bridge to Bay Bridge	Express lanes on westbound I-80 from Carquinez Bridge Toll Plaza to Powell St Direct Connector on eastbound I-80 from Powell St Direct Connector to Cummings Skyway. Add new express lane on eastbound I-80 from Cummings Skyway to Carquinez Bridge.	17-10-0053	High	High	High	Medium	Medium	High	High
Transit Projects										
SOL	Solano Express Service Expansion	Consolidate and stream line the Solano Express intercity service along the I-80 Corridor. The consolidation will minimize the off-freeway time, increase frequency and improve reliability of the system. The system will provide	N/A	High	Medium	Medium	High	High	Medium	Medium

Co.	Title	Description	RTP ID	Goal 1: Provide a safe transport system to all users within the Corridor	Goal 2: Reduce recurring freeway congestion and improve freeway efficiency in moving people	Goal 3: Improve trip reliability within the Corridor	Goal 4: Support an accessible and inter-connected multi-modal transport system within the Corridor	Goal 5: Reduce pollutants and GHG emissions within the Corridor	Goal 6: Support economic prosperity	Goal 7: Efficiently manage transport assets within US 101 to protect existing and future investment
		more service options within the County, including the Community College campuses in Fairfield and Vacaville.								
SOL	Solano Express Bus new bus stops	Construct new Intercity bus stops along the I-80 Corridor in the cities of Vallejo, Fairfield and Vacaville	N/A	High	Low	Low	High	Low	Low	Low
SOL	Fairfield Transportation Center bus access improvements	Provide direct bus access to and from the Fairfield Transportation Center (FTC) at the North Texas Blvd.	N/A	High	Medium	Medium	High	Low	Medium	Medium
SOL	Construct train station building and support facilities at the new Fairfield/ Vacaville Multimodal Station	Construct train station building and expanded bicycle access for the new multimodal center serving the Capitol Corridor.	17-08-0014	High	Medium	Medium	High	High	Medium	Medium
SOL	Access and Mobility Program	This category includes projects that improve access and mobility for people with disabilities, low- income residents, and Seniors, including providing Lifeline transit service	17-08-0001	High	Medium	Low	High	Low	Medium	Low

Co.	Title	Description	RTP ID	Goal 1: Provide a safe transport system to all users within the Corridor	Goal 2: Reduce recurring freeway congestion and improve freeway efficiency in moving people	Goal 3: Improve trip reliability within the Corridor	Goal 4: Support an accessible and inter-connected multi-modal transport system within the Corridor	Goal 5: Reduce pollutants and GHG emissions within the Corridor	Goal 6: Support economic prosperity	Goal 7: Efficiently manage transport assets within US 101 to protect existing and future investment
		countywide and providing transit service to Seniors and individuals with disabilities								
SOL	Multimodal Streetscape	Projects in this category implement multimodal or complete streets elements	17-08-0005	High	High	Low	High	High	High	Medium

Appendices

Appendix A: Bicycle and Pedestrian Facilities Crossing I-80 East

Table 22 *Bicycle and Pedestrian Facilities Crossing I-80 East Corridor (Freeway Ramp Crossings are Highlighted)*

Segment	Post Mile	Location Description	Interchange Description	Posted Speed Limit	Bicycle Facility Description*	Pedestrian Facility Description**	Ramp Intersection Crossing Needs	Nearby Bicycle/Pedestrian Accessible Transit Facilities
1	R1.258	Sequoia Avenue, Vallejo	Sequoia Avenue at-grade crossing of I-80	25 mph (Sequoia Avenue)	No dedicated bike facilities	No pedestrian facilities	I-80 On and Off-ramps located at this intersection	SolTrans local route 3 bus line
1	R1.738	Magazine Street, Vallejo	Magazine Street crossing over I-80	35 mph (Magazine Street)	No dedicated bike facilities	No pedestrian facilities	I-80 On and Off-ramps located at this intersection	SolTrans local Route 3 and 38 bus lines
1	2.438	Benicia Road, Vallejo	Benicia Road crossing over I-80	30 mph (Benicia Road)	No dedicated bike facilities	Sidewalks in each direction with marked crosswalks and pedestrian countdown timers	No ramps are located at this intersection	Soltrans local route 8 bus line
1	2.881	Georgia Road, Vallejo	Georgia Road crossing over I-80	30 mph (Georgia Road)	No dedicated bike facilities	Sidewalks in each direction with marked crosswalks and pedestrian countdown timers	I-80 On and Off-ramps located at this intersection	None
1	3.232	Solano Avenue-Spring Road, Vallejo	Solano Avenue-Spring Road crossing over I-80	30 mph (Solano Avenue-Spring Road)	No dedicated bike facilities	Sidewalks in each direction with marked crosswalks and pedestrian countdown timers	I-80 WB On and Off-ramps only located at this intersection	Soltrans local route 7 bus line
1	3.496	Tennessee Avenue, Vallejo	Tennessee Avenue crossing over I-80	30 mph (Tennessee Avenue)	No dedicated bike facilities	Sidewalks in each direction with marked crosswalks and pedestrian countdown timers	I-80 WB On and Off-ramps only located at this intersection	Soltrans local route 6 bus line

Segment	Post Mile	Location Description	Interchange Description	Posted Speed Limit	Bicycle Facility Description*	Pedestrian Facility Description**	Ramp Intersection Crossing Needs	Nearby Bicycle/Pedestrian Accessible Transit Facilities
1	4.427	Redwood Street, Vallejo	Redwood Street crossing over I-80	30 mph (Redwood Street)	No dedicated bike facilities	Sidewalks in each direction with marked crosswalks and pedestrian countdown timers	I-80 On and Off-ramps located at this intersection	Soltrans local route 7 and 38 bus lines
2	5.672	Columbus Parkway, Vallejo	Columbus Parkway crossing over I-80	45 mph (Columbus Parkway)	No dedicated bike facilities	No pedestrian facilities	I-80 On and Off-ramps located at this interchange	None
2	8.096	American Canyon Road – Hiddenbrooke Parkway, Vallejo	American Canyon Road-Hiddenbrooke Parkway crossing over I-80	40 mph (Hidden Brooke Parkway)	No dedicated bike facilities	No pedestrian facilities	I-80 On and Off ramps located at this interchange	None
2	9.671	Lynch Road, Vallejo	Lynch Road crossing underneath elevated portion of I-80	35 mph (Lynch Road)	No dedicated bike facilities	No pedestrian facilities	No ramps are located at this intersection	None
2	R1.738	Red Top Road, Fairfield	Red Top Road crossing underneath elevated portion of I-80	35 mph (Red Top Road)	No dedicated bike facilities	Sidewalks on south side of 18th Street	I-80 On and Off ramps located at this interchange	None
2	11.96	SR 12 West, Fairfield	I-80 East/ State Route 12 West Interchange	55-65 mph (SR 12 West/ I-80 East, Fairfield	No dedicated bike facilities	No pedestrian facilities	I-80/SR 12 West connector ramps located at this interchange	None
2	R12.788	Green Valley Road, Fairfield	Green Valley Road crossing over I-80	NA	No dedicated bike facilities	Sidewalk on East side of overcrossing	No ramps are located at this intersection	None
3	R1.738	I-680, Fairfield	I-80 / I-680 Interchange	65 mph (Mission Bay Drive)	No dedicated bike facilities	No pedestrian facilities	I-80/SR 12 connector ramps located at this interchange	None
3	R13.484	Pittman Road/Suisun Valley Road, Fairfield	Pittman Road-Suisun Valley Road crossing over I-80	35 mph (Pittman Road-Suisun Valley Road)	No dedicated bike facilities	No pedestrian facilities	No ramps are located at this intersection	None

Segment	Post Mile	Location Description	Interchange Description	Posted Speed Limit	Bicycle Facility Description*	Pedestrian Facility Description**	Ramp Intersection Crossing Needs	Nearby Bicycle/Pedestrian Accessible Transit Facilities
3	R13.737	Kaiser Road – Unnamed Road, Fairfield	Kaiser Road – unnamed Road crossing underneath elevated portion of I-80	NA	No dedicated bike facilities	No pedestrian facilities	No ramps are located at this intersection	None
3	15.652	SR 12, Fairfield	I-80 East/ State Route 12 Interchange	55-65 mph (SR 12/ I-80 East, Fairfield	No dedicated bike facilities	No pedestrian facilities	I-80/SR 12 connector ramps located at this interchange	None
3	16.155	Chadbourne Road, Fairfield	Chadbourne Road crossing over I-80	35 mph (Chadbourne Road)	No dedicated bike facilities	No pedestrian facilities	I-80 On and Off ramps located at this interchange	Soltrans local route 7 and 30 bus lines
3	17.222	Rockville Road – West Texas Road, Fairfield	Rockville Road – West Texas Road crossing under I-80	35 mph (West Texas Road)	No dedicated bike facilities	Sidewalk/barrier on East side of Rockville Road/West Texas undercrossing	WB on/EB off at Rockville Road – West Texas Road. WB off/EB on located east at Oliver Road	Fairfield Transportation Center. Soltrans local route 1, 3, 5 and 7 bus lines. Soltrans Express routes 20, 30, 40, 50 and 90
3	17.33	Fairfield Linear Park Trail, Fairfield	Fairfield Linear Park Trail crossing underneath elevated portion of I-80	15 mph (Fairfield Linear Park Trail)	Multi Use Trail (MUT)/Class I Bikeway	Bi-directional Sidewalk	No ramps are located at this intersection	Fairfield Transportation Center. Soltrans local routes 1, 3, 5 and 7 bus lines. Soltrans Express routes 20, 30, 40, 50 and 90
3	R17.901	Oliver Avenue – Travis Boulevard, Fairfield	Oliver Avenue/Travis Boulevard crossing over I-80	35 mph (Oliver Avenue/ Travis Boulevard	No dedicated bike facilities	Sidewalk only on west side of overpass and east and west approaches.	I-80 On and Off ramps located at this interchange	Soltrans local route 3 bus line
3	19.171	Waterman Boulevard – Airbase Parkway - Vacaville	Waterman Boulevard – Airbase Parkway crossing over I-80	35 mph (Airbase Boulevard)	No dedicated bike facilities	Sidewalk on east side of Airbase Parkway. Sidewalk on west side of overpass and Waterman Boulevard.	I-80 On and Off ramps located at this interchange	Soltrans local route 3 bus line

Segment	Post Mile	Location Description	Interchange Description	Posted Speed Limit	Bicycle Facility Description*	Pedestrian Facility Description**	Ramp Intersection Crossing Needs	Nearby Bicycle/Pedestrian Accessible Transit Facilities
3	20.929	Manuel Campos Parkway, Fairfield	Manuel Campos Parkway crossing over I-80	35 mph (Manuel Campos Parkway)	No dedicated bike facilities	Sidewalk only on west side of overpass and east and west approaches.	No ramps are located at this intersection	Soltrans local route 1 bus line
3	R23135	Lagoon Valley Road, Fairfield	Lagoon Valley Road crossing over I-80	25 mph (Lagoon Valley Road)	No dedicated bike facilities	No pedestrian facilities	I-80 On and Off ramps located at this interchange	None
3	23.955	Cherry Glen Road– Lincoln Highway, Vacaville	Cherry Glen Road– Lincoln Highway crossing over I-80	35 mph (Bryant Street)	No dedicated bike facilities	No pedestrian facilities	I-80 East On and Off ramps located at this interchange	None
3	R25.307	Alamo Drive, Vacaville	Alamo Drive crossing over I-80	35 mph (Alamo Drive)	Class II Bikeways (bike lanes) in each direction	Sidewalk only on west side of overpass and east and west approaches.	I-80 On and Off ramps located at this interchange	None
3	R26.014	Davis Avenue, Vacaville	Davis Avenue crossing underneath I-80	30 mph (Davis Avenue)	No dedicated bike facilities	Sidewalks in each direction with marked crosswalks and pedestrian countdown timers	I-8On and Off ramps are located west of interchange	None
3	R26.473	Mason Street-Elmira Road, Vacaville	Mason Street-Elmira Road crossing underneath I-80	30 mph (Elmira Road)	Class II Bikeways (bike lanes) in each direction at interchange. Shared facility east and west of interchange	Sidewalks in each direction with marked crosswalks and pedestrian countdown timers	I-80 On and Off ramps are located west of interchange	None
3	R27.231	Allison Drive, Vacaville	Allison Drive crossing underneath I-80	30 mph (Allison Drive)	No dedicated bike facilities	No Pedestrian Facilities	I-80 EB Off and On at interchange. WB Off and On located east of interchange at El Monte Vista Avenue.	Soltrans regional routes 20, 30 and 40. YoloBus route 220

Segment	Post Mile	Location Description	Interchange Description	Posted Speed Limit	Bicycle Facility Description*	Pedestrian Facility Description**	Ramp Intersection Crossing Needs	Nearby Bicycle/Pedestrian Accessible Transit Facilities
3	R27.997	Nut Tree Road, Vacaville	Nut Tree Road crossing over I-80	30 mph (Nut Tree Road)	No dedicated bike facilities	Sidewalk on east side only. Marked sidewalks and pedestrian countdowns at intersections on either end of interchange	I-80, I-505 and local access On and Off ramps located at I-80 East/I-505 interchange east of Nut Tree Road.	Yolobus route 220
3	R28.333	I-80/I-505 Interchange, Vacaville	I-80 East/I-505 Distribution Structure	30, 35 and 55 mph ramp speed limit	No dedicated bike facilities	No Pedestrian Facilities	I-80, I-505 and local access ramps	NA
4	29.867	Vaca Valley Parkway, Vacaville	Vaca Valley Parkway - Leisure Town Road crossing over I-8	30 mph (Leisure Town Road)	No dedicated bike facilities	Sidewalk, marked crosswalk and pedestrian count downs on west side only	I-80 On and Off ramps located at this interchange	Yolobus route 220
4	31.366	N. Meridian Road - Weber Road, Vacaville	N. Meridian Road-Weber Road crossing over I-80	50 mph (Meridian Road)	No dedicated bike facilities	No Pedestrian Facilities	I-80 On and Off ramps located at this interchange	None
4	32.63	Midway Road-Lincoln Highway, Dixon	Midway Road-Lincoln Highway crossing over I-80	45 mph (Midway Road)	No dedicated bike facilities	No Pedestrian Facilities	I-80 On and Off ramps located at this interchange	None
4	35.548	Dixon Avenue-W. A Street, Dixon	Dixon Avenue- W. A Street crossing over I-80	40mph (W. A Street)	No dedicated bike facilities	No Pedestrian Facilities	I-80 On and Off ramps located at this interchange	None
4	36.892	Pitt School Road, Dixon	Pitt School Road crossing over I-80	25 mph (Pitt School Road)	No dedicated bike facilities	No Pedestrian Facilities	I-80 EB On and Off ramps located west of interchange and WB located east of interchange	None
4	38.29	Curry Road – SR 113 S. , Dixon	WB I-80 East - SR 113 S. connector crossing over I-80 mainline	45 mph (S. SR 113)	No dedicated bike facilities	No Pedestrian Facilities	I-80 On and Off ramps located at this interchange	None

Segment	Post Mile	Location Description	Interchange Description	Posted Speed Limit	Bicycle Facility Description*	Pedestrian Facility Description**	Ramp Intersection Crossing Needs	Nearby Bicycle/Pedestrian Accessible Transit Facilities
4	39.75	SR 113 / Pedrick Road, Dixon	Pedrick Road crossing over I-80 – SR 113	55 mph (Pedrick Road)	No dedicated bike facilities	Sidewalk on west side of interchange overpass with no connection on either side.	I-80 – SR 113 On and Off ramps located at this interchange	None
4	41.258	SR 113 / Kidwell Road, Dixon	Kidwell Road crossing over I-80 – SR 113	35 mph (Kidwell Road)	No dedicated bike facilities	No Pedestrian Facilities	I-80 – SR 113 On and Off ramps located at this interchange	None
4	41.258	SR 113 / Old Davis Road, Dixon	SR 113 N. – Old Davis Road crossing over I-80 – SR 113	45 mph (Old Davis Road)	No dedicated bike facilities	No Pedestrian Facilities	I-80 – SR 113 N. On and Off ramps located at this interchange	None
4	SOL 44.72/ YOL 0.228	Richards Boulevard, Davis	Richards Boulevard crossing over I-80	35 mph (Richards Boulevard)	Class II Bikeway (bike lane) WB direction only	Sidewalks on east side of Richards Boulevard	I-80 – SR 113 On and Off ramps located at this interchange	Unibus & Yolobus routes 44 & 242 AM, Mon ,Tues and Wed

**No dedicated bike facilities: Crossings that lack any lane markings and/or signage for bicyclists.*

Multi-Use Trail (MUT/Class I Bikeway): Route that is completely separated from automobile traffic.

Class II Bikeways (bike lanes): Provide a restricted right-of-way designated for the exclusive or semi exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted.

***No Pedestrian Facilities: No sidewalk exists.*

Appendix B: 2015 Existing Corridor Mobility Performance Measures

While bottlenecks indicate locations in a corridor where vehicular demands exceed freeway capacity, corridor-wide mobility performance measures help describe how well the entire freeway is performing. To determine corridor-wide performance, the MTC Travel Model One was used to calculate variations in travel time measured by the additional time it takes to travel a corridor segment (DELAY), or the difference between traveling at 65 and 35 miles per hour (MPH) and congested travel time (CTIM) where that additional time is spent at speeds less than 35 MPH. VMT is used to measure volumes between points along the Corridor and vehicle hours traveled (VHT) is used to measure volumes to determine travel times between points. Each of these measures were taken into account for each of the four I-80 East Corridor segments during AM and PM peak periods in both directions of travel.

Table 23 *2015 Measures of Corridor Performance*

2015 / Segment		AM Peak Period			PM Peak Period		
		EB	WB*	Total	EB*	WB	Total
1	Sum of CTIM	2.53	5.30	7.83	3.11	3.38	6.49
	Sum of DELAY	3.75	798.67	802.42	217.27	26.26	243.43
	Sum of VMT	27,323	78,998.81	106,321.81	58,552.52	46,015.90	104,568.42
	Sum of VHT	428.62	2,034	2,463.36	1,125.40	747.87	18.73.27
2	Sum of CTIM	5.99	7.50	13.49	6.11	7.08	13.19
	Sum of DELAY	.22	159.48	159.70	41.02	1.51	42.53
	Sum of VMT	56,449.72	163,408.60	159,853.32	119,719.50	81,795.20	201,514.70
	Sum of VHT	868.66	2,673.46	3,482.82	1,882.86	1,259.90	3,142.76
3	Sum of CTIM	5.69	7.10	12.79	7.97	6.01	13.98
	Sum of DELAY	20.12	569.65	589.77	1,225.87	53.50	1,279.37
	Sum of VMT	101,126.90	164,519.20	265,646.10	176,749.10	117,563.60	2,944,312.70
	Sum of VHT	1575.92	3,100.72	4,676.64	3,945.10	1,862.18	5,807.28
4	Sum of CTIM	12.08	10.91	22.99	13.11	11.00	24.11
	Sum of DELAY	58.55	134.07	192.62	394.20	162.81	557.01
	Sum of VMT	177,057	178,448.30	355,505.30	232,585.40	185,055.20	417,640.60
	Sum of VHT	2782.50	2,879.43	5,661.93	3,972.44	3,009.82	6,982.26
Total	Total Sum of CTIM	26.29	30.81	57.10	30.30	27.47	57.77
	Total Sum of DELAY	82.64	1,661.87	1,744.51	1,878.36	243.98	2,122.34
	Total Sum of VMT	361,955.62	585,374.91	887,326.53	587,006.52	430,429.10	1,018,037.42
	Total Sum of VHT	5,655.70	10,688.35	18,284.05	10,925.80	6,879.77	17,805.57

Source: MTC Travel Demand One Version 4, December 2017
Note: All measures are for average weekday peak periods, AM or PM.
* Denotes peak period direction
CTIM = congested travel time (minutes)
VOL = vehicle volume (number of vehicles)
DELAY = difference between the congested travel time and the free flow travel time (vehicle hours of delay)
VMT = vehicle-miles traveled (miles)
VHT = vehicle-hours traveled (hours)

Appendix C: 2040 Future Corridor Mobility Performance Measures

Using the same performance measures from the Existing Corridor Mobility Performance Measures (2015) section, MTC's Travel Model One was used to calculate future corridor performance. Table 24 below lists year 2040 measures of performance for the I-80 East Corridor.

Table 24 *2040 Measures of Corridor Performance*

2040 / Segment		AM Peak Period			PM Peak Period		
		EB	WB*	Total	EB*	WB	Total
1	Sum of CTIM	3.35	5.68	9.03	4.05	3.57	7.62
	Sum of DELAY	77.61	895.27	972.88	401.37	20.05	421.42
	Sum of VMT	40,819.60	90,402.70	131,222.30	72,234	46,936.50	119,170.50
	Sum of VHT	701.37	2,294	2,995.69	1,498.22	747.75	2,245.97
2	Sum of CTIM	7.52	7.63	15.15	7.84	6.98	14.83
	Sum of DELAY	1.21	274.78	275.99	11,910	3.95	123.05
	Sum of VMT	90,756	177,931	268,687	175,149	96,677.40	271,826.40
	Sum of VHT	1393.46	3,012.19	4,409.65	2,813	1,491.30	4,305
3	Sum of CTIM	5.57	6.60	12.17	6.09	5.61	11.70
	Sum of DELAY	7.03	533.66	540.69	242.95	42.68	285.63
	Sum of VMT	99,426.40	175,932	275,358	175,384	115,475	290,859
	Sum of VHT	1,536.67	3,240.30	4,776.97	2,941.16	1,819.23	4,760.39
4	Sum of CTIM	12.82	13.42	26.24	17.14	13.86	31.00
	Sum of DELAY	369.54	810.10	1,179.64	2,156.20	988.77	3,144.97
	Sum of VMT	225,987	244,652	470,639	291,868	252,255	544,123
	Sum of VHT	3,846.27	4,573.97	8,420.74	6,646.47	486,961	11,516.08
Total	Total Sum of CTIM	29.26	33.33	62.59	35.12	30.03	65.15
	Total Sum of DELAY	455.39	2,513.81	2,969.20	2,919.62	1,055.45	3,975.07
	Total Sum of VMT	456,989	688,917.70	1,145,906.30	714,635	511,343.90	1,225,978.05
	Total Sum of VHT	7,477.77	13,120.78	20,603.10	13,899.55	8,927.89	22,827.05

Source: MTC Travel Demand One Version 4, December 2017

Note: All measures are for average weekday peak periods, AM or PM.

* Denotes peak period direction

CTIM = congested travel time (minutes)

VOL = vehicle volume (number of vehicles)

DELAY = difference between the congested travel time and the free flow travel time (vehicle hours of delay)

VMT = vehicle-miles traveled (miles)

VHT = vehicle-hours traveled (hours)