Solano Transportation Authority
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SOLANO TRANSPORTATION AUTHORITY

Member Agencies:
Benicia ♦ Dixon ♦ Fairfield ♦ Rio Vista ♦ Suisun City ♦ Vacaville ♦ Vallejo ♦ Solano County

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ARTERIALS, HIGHWAYS, & FREEWAYS COMMITTEE MEETING AGENDA

1:30 p.m.
Thursday, June 29, 2017
One Harbor Center, Ste. #130
Conference Room 1
Suisun City, CA 94585

ITEM	BOARD/STAFF PERSON
1. CALL TO ORDER – SELF INTRODUCTIONS	Len Augustine, Chair
2. APPROVAL OF AGENDA (1:30 – 1:35 p.m.)	Len Augustine, Chair
3. OPPORTUNITY FOR PUBLIC COMMENT (1:35 – 1:40 p.m.)	
4. CONSENT CALENDAR (1:40 – 1:45 p.m.)	
A. Minutes of the Arterials, Freeways & Highways Committee Meeting of June 20, 2016 Recommendation: Approve the Arterials, Freeways & Highways Committee Meeting minutes of June 20, 2016. **Pg. 3**	Sheila Ernst, STA
5. ACTION ITEM	
A. CTP Arterials, Highways and Freeways Draft Element Chapters 1 – 6 Recommendation: Forward a recommendation to the STA Board to adopt the Resources Chapter of the Arterials, Highways, and Freeways Element Chapters 1 - 6 provided as Attachment A. (1:45 – 2:00 p.m.) **Pg. 5**	Robert Macaulay, STA

6. INFORMATIONAL ITEMS – DISCUSSION

A. State Route 37 Project Update Robert Guerrero, STA
(2:00 – 2:10 p.m.)
Pg. 125

B. I-80 Interchange Project Update Robert Guerrero, STA
(2:10 – 2:20 p.m.)
Pg. 127

C. Office of Traffic Safety (OTS) Grant Update Anthony Adams, STA
(2:20 – 2:30 p.m.)
Pg. 137

7. FUTURE AGENDA TOPIC

Meeting 10

1. The final Arterials, Highways, and Freeways Solano CTP Element

8. ADJOURNMENT Len Augustine, Chair

The next meeting of Arterials, Highways, & Freeways Committee ***is to be determined***.

ARTERIALS, HIGHWAYS, & FREEWAYS COMMITTEE
AGENDA
Draft Minutes for the meeting of
June 20, 2016

1. CALL TO ORDER – SELF INTRODUCTIONS

Len Augustine called the meeting to order at 1:30 p.m. in STA Conference Room 1.

Voting Members Present: ***In Alphabetical Order by Last Name***

Len Augustine	City of Vacaville
Steve Bird	City of Dixon
Elizabeth Patterson	City of Benicia
Harry Price	City of Fairfield
Jesse Malgapo	City of Vallejo
Pete Sanchez	City of Suisun City

Voting Members Not Present: ***In Alphabetical Order by Last Name***

Erin Hannigan	County of Solano
Norman Richardson	City of Rio Vista

Also Present: ***In Alphabetical Order by Last Name***

Janet Adams	STA
Ryan Dodge	STA
Sheila Ernst	STA
Daryl Halls	STA
Robert Macaulay	STA
Matt Tuggle	County of Solano
Jason Yee	STA Intern

2. APPROVAL OF AGENDA

With a motion from Board Member Price, and a second by Board Member Patterson, the Arterials, Highways, and Freeways committee approved the June 20, 2016 agenda. (6 Ayes, 2 Absent)

3. OPPORTUNITY FOR PUBLIC COMMENT

None.

4. CONSENT CALENDAR

A. Minutes of the Arterials, Freeways & Highways Committee Meeting of May 23, 2016

Recommendation:

Approve the Arterials, Freeways & Highways Committee Meeting minutes of May 23, 2016.

With a motion by Board Member Patterson, and a second by Board Member Sanchez the Arterials, Highways, and Freeways committee approved the recommendation. (6 Ayes, 2 Absent)

5. ACTION ITEM

A. Arterials, Highways and Freeways Element – Draft Goal Gap Analysis

Robert Macaulay provided an overview of the Arterials, Highways and Freeways Element – Draft Goal Gap Analysis. He explained that the Draft Goal Gap Analysis was previously distributed to the TAC for review and comment with no substantial comments received and that this item is now ready for action by the STA Board.

Recommendation:

Forward a recommendation to the STA Board to approve the Arterials, Highways and Freeways Element – Goal Gap Analysis provided as Attachment A.

With a motion by Board Member Sanchez, and a second by Board Member Patterson the Arterials, Highways, and Freeways committee approved the recommendation. (6 Ayes, 2 Absent)

6. INFORMATIONAL ITEMS - DISCUSSION

A. Potential Projects on Routes of Regional Significance

Robert Macaulay provided an overview of the Potential Projects on Routes of Regional Significance. He explained that Attachment A contains a list of projects identified by the cities of Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville and Vallejo, by Solano County, and by STA, for possible inclusion in the Solano CTP. He stated that the purpose of presenting this list for discussion at this time is to prepare the Committee for a subsequent discussion on how to categorize projects and allow for prioritization for funding. Mr. Macaulay concluded that the list consists of 61 individual projects, and is based upon agency submittals made in 2015.

Board Member Patterson requested that Lake Herman Road be removed from the list as it is inconsistent with the general plan and is not a regional route of significance.

7. FUTURE AGENDA ITEMS

A summary of the future agenda items for 2016 was presented.

8. ADJOURNMENT

The meeting adjourned at 2:07 p.m. The next Arterials, Highways, and Freeways committee is scheduled to meet at 1:30 p.m. on September 19, 2016 at the Solano Transportation Authority.

DATE: June 15, 2017
TO: STA Arterials, Highways, and Freeways Committee
FROM: Robert Macaulay, Director of Planning
RE: CTP Arterials, Highways and Freeways Element – Draft Element, Chapters 1 - 6

Background:
The Solano Comprehensive Transportation Plan (CTP) is one of the STA's primary long-range planning documents along with the Congestion Management Program (CMP) and the Metropolitan Transportation Commission's Regional Transportation Plan, known as Plan Bay Area. The CTP consists of three main elements: Active Transportation; Arterials, Highways and Freeways; and, Transit and Ridesharing. The overall purpose of the CTP is to establish the STA's long term goals, identify opportunities and resources to move the countywide transportation system from its current condition towards those goals, and to then prioritize steps to bring this change to fruition.

The STA Board has already approved several portions of the Solano CTP: the Introduction and overall Goals, the Land Use chapter, and the Active Transportation and Transit and Ridesharing elements.

During 2016, the Arterials, Highways and Freeways Committee and STA Board reviewed and approved several portions of the Arterials, Highways and Freeways Element. STA staff has been working on development of the Resources chapter of the Element, integrating the other chapters in a unified document, and re-examining some of the previously-adopted chapters.

Discussion:
The Draft Arterials, Highways and Freeways Element provided as Attachment A includes the following:

Chapter 1 – Introduction – NEW
Chapter 2 – Purpose – previously reviewed and approved, no changes
Chapter 3 – The Arterials, Highways and Freeways System - - previously reviewed and approved, amendments proposed
Chapter 4 – State of the System – previously reviewed, amendments proposed
Chapter 5 – Goal Gap Analysis – previously reviewed and approved, no changes
Chapter 6 – Arterials, Highways and Freeways Resources - NEW

Chapter 1 – Introduction. As with other Solano CTP Elements, the Arterials, Highways and Freeways element starts out with a quote that helps both gain attention and provide some overall tone for the document that follows. In this case, the first sentence of the document lays out its organizing principle: "Connections – that is the core of the Arterials, Highways and Freeways

(AHF) Element of the Solano Comprehensive Transportation Plan (CTP)." The Introduction goes on to emphasize how the roadway system ties the entire local and regional transportation system together, and that the backbone of the Solano roadway system is the I-80 system.

The Introduction chapter does not establish any policies or priorities. It simply sets the tone for what follows.

Chapter 2 – Purpose. This chapter sets out the overall purpose of the Element, including definition of the Arterials, Highways and Freeways system, the coordination of local and regional efforts, and the need to be internally consistent with other Solano CTP Elements.

Chapter 3 – The Arterials, Highways and Freeways system defined and detailed. This chapter begins by providing a definition and detailed description of the Routes of Regional Significance, which are the roadways the Element deals with. Local roads are not addressed by the Element. The RORS consist of:

1. All roadways in the Solano Congestion Management Program network
2. Roadways providing access to Transit Facilities of Regional Significance
3. Roadways providing access to major employment centers, identified by STA, with higher traffic volumes
4. Roads providing intercity and Freeway/Highway connections
5. Other roads critical to providing countywide emergency response

Appendix A to the Element restates the definition and examples, and provides detailed maps and lists of the RORS.

During the review of the RORS definitions and list, STA staff concluded that Farrel Road and Pleasants Valley Road in the unincorporated County west of Vacaville did not meet any of the definitions of a RORS, but Foothill Road and Pleasants Valley Road from Foothill to I-80 may be appropriate as an emergency bypass to I-80. It is recommended that this Chapter, and Appendix A, be amended to make this modification.

Chapter 3 concludes with a detailed statistical discussion of the RORS, including the number of lane miles. A list of the other facilities that make up the RORS, including items such as ramp metering equipment and soundwalls, is also provided.

Chapter 4 – State of the System. This Chapter provides a detailed examination of how performance of the RORS system is measured, both in terms of congestion (measured in Level of Service or vehicle to capacity ratio for arterials, and Mobility Performance Report recurring delay for highways and freeways) and maintenance (Pavement Condition Index for arterials and International Roughness Index for highways and freeways). The maintenance section relies heavily on the annual STA Pothole Report.

The only amendment proposed to this Chapter is the inclusion of updated roadway volume data from Caltrans for the highway and freeway system.

Chapter 5 – Goal Gap Analysis. This is a new chapter that has been reviewed only by the STA Technical Advisory Committee. Chapter 5 introduces the Element Goals – STA's goals for how the Arterials, Highways and Freeways Resources system will look and function in the future –

and then compares the system as explained in the State of the System chapter to those goals. The identified GAP is the difference between what is and what is desired.

For each Goal, the analysis identifies one of three measurements:

- **Completed** – this is a goal with a specific end-point that has been reached, such as the construction of a facility or the identification of Transit Facilities of regional Significance. This also includes studies that have been adopted (even if recommendations have not yet been implemented) and the initiation of an on-going program.
- **Significant Progress** – this is a project with substantial completion; typically, more than 10% Plans, Specifications and Estimates (PS&E) but not yet into construction or completion. It also includes studies where data collection and analysis has started, but final recommendations have not been adopted.
- ***Preliminary Proposal*** *– finally, this category covers projects that have less than 10% PS&E, plans that have not started data collection, and programs that have no administrative and/or financial commitments and no start date*.

No amendments are proposed for this Chapter.

Chapter 6 - Arterials, Highways and Freeways Resources. This is a new chapter that has been reviewed only by the STA Technical Advisory Committee. The Chapter begins by identifying all of the aspects that contribute to the cost of building, operating and repairing roads. The chapter then reports on funds received over the past five years for construction from all sources (federal, state, regional and local); and funds received over the past five years for roadway operations and maintenance, again from all sources (federal, state, regional and local).

After examining past revenue, the Chapter then examines anticipated new revenue through Fiscal Year 2020-21. Development of this section of the Chapter was delayed while awaiting final state legislative action on Senate Bill 1. The future revenue section uses the same format as the past revenue section: construction funds and listed separately from O&M, and funds are separated by source.

The tables below show the summary of funds available for construction and operation and maintenance.

Projected Total Funds for New Capacity Road Construction (best case)

TOTAL FUNDS Projected (in 2017 $1,000)					
	2016-17	**2017-18**	**2018-19**	**2019-20**	**2020-21**
Federal (CMAQ)	$0	$920	$920	$920	$920
State (STIP)	$34,627	$203	$3,296	$400	$400
Regional	$0	$0	$0	$0	$0
Local	$2,068	$2,556	$2,726	$2,127	$2,191
Total	**$36,695**	**$3,679**	**$6,942**	**$3,447**	**$3,511**

Projected Total Funds for Road Operation and Maintenance

TOTAL FUNDS Projected (in 2017 $1,000)					
	2017	**2018**	**2019**	**2020**	**2021**
Gas Tax	$17,680	$36,033	$36,394	$36,762	$37,137
SHOPP	$26,313	$26,839	$27,376	$27,924	$28,482
OBAG 1	$256	$256	$256	$256	$256
TOTAL	**$44,249**	**$53,128**	**$53,026**	**$53,941**	**$55,875**

This amount totals almost $43.3 million available for the construction of new roadway capacity, and $260.2 million available for roadway operation and maintenance. These amounts compare to a construction needs list that exceeds $1.3 billion, or 73 times the available revenue; and, a maintenance needs list that, over 10 years, tops $750 million.

Fiscal Impact:
None at this time.

Recommendation:
Forward a recommendation to the STA Board to approve the Arterials, Highways and Freeways Element Chapters 1 – 6, including appendices A, B and C.

Attachment:

A. Arterials, Highways and Freeways Element Chapters 1 – 6, including appendices A, B and C.

DRAFT

Arterials, Highways and Freeways Element

Arterials, Highways and Freeways Element

Table of Contents

Executive Summary

Fill in once element finalized.

Chapter I - Introduction

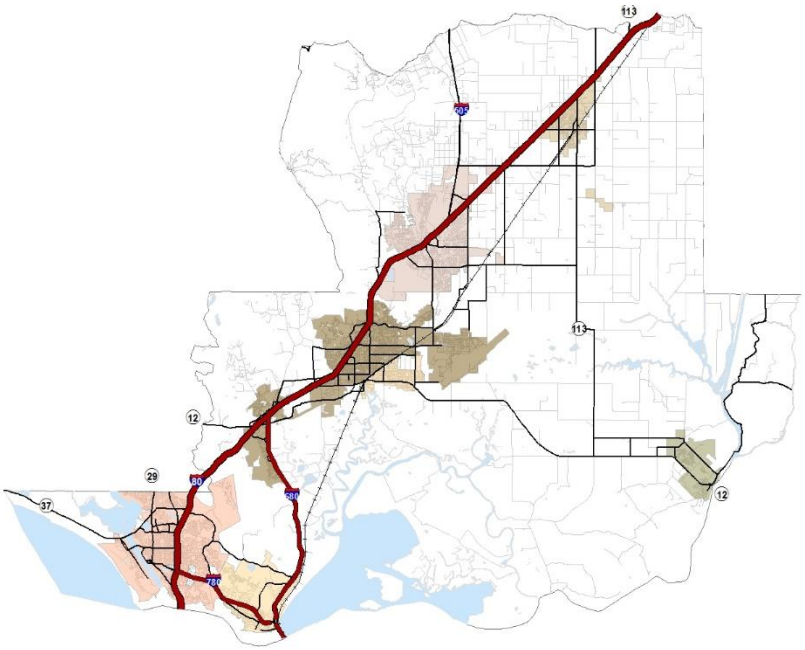
"It really boils down to this: that all life is interrelated. We are all caught in an inescapable network of mutuality, tired into a single garment of destiny. Whatever affects one destiny, affects all indirectly."

Martin Luther King Jr.

Connections – that is the core of the Arterials, Highways and Freeways (AHF) Element of the Solano Comprehensive Transportation Plan (CTP). The roadways covered by the AHF Element are what connect us all: not just cities and regions to one another, but also various modes of travel. Roadways handle cars, buses, local delivery vehicles, bicycles, taxies, carpools, heavy equipment haulers and long distance cargo trucks, and local agricultural machinery. The only transportation not on the roadways are trains, ships and airplanes - and access to rail, port and airport facilities all comes by way of roads. And like a garment, the whole is greater than the individual parts, and the failure of one part impacts the whole.

There are two other ways in which the AHF system resembles a garment. First, it must change as the community does or it will no longer fit its purpose. And second, it wears out over time, and proper care and attention can only slow, not prevent, that process.

The overarching theme of the Solano CTP is to Strengthen the System and Reduce Stress by developing, operating and maintaining an integrated local and regional transportation system anchored on the **I-80 corridor (Interstate highways 80, 680 and 780)**. The I-80 corridor is the core of the AHF system, and if its functionality breaks down, the remainder of the system - both locally and regionally - also begins to fail. As a result, the greatest emphasis found in this Element is on the proper form and function of the I-80 corridor.



But the I-80 corridor is not the whole system, and all of the other elements that feed into it, from state highways to local arterials, must also function for the whole system to be useful. A free-flowing interstate highway system to which no one can gain access is an asset to the region, but not to anyone in Solano County. This means that one of the most vital balancing tasks in the Element is how to allocate resources between the core I-80 system and the connecting highways and arterials.

The I-80 system is the core of the Solano transportation system – but it is not the whole of the system

A second vital balancing task is between system construction and system maintenance. The funding sources for these two tasks are mostly separate (money in a construction account can't be used for maintenance and vice-versa), and there are currently few local funds available for either purpose.

Expansion of the system adds to the maintenance burden, with one exception: Express Lanes can provide toll revenues that help maintain the roads on which they are located, and have the potential to also support facilities and programs that Reduce Stress by moving single occupant drivers into some form of transit. This is why expansion of the Express Lane system in Solano County is one of the highest priorities in the Solano CTP Transit and Rideshare Element.

Freight is the economy in motion

Another aspect of AFH investments is how critical they are to local and regional economic health. Even in the modern "knowledge-based" economy of software and social media, movement of goods is THE most basic factor in a healthy economy. Those goods may be Suisun Valley wine grapes, Discovery Kingdom visitors, Genentech pharmaceuticals, Montezuma Hills lambs - or workers at those afore-mentioned Knowledge Economy businesses in Benicia, Dixon and Fairfield. No matter what the goods are or where their trip starts or ends, some of the journey is on the AHF network.

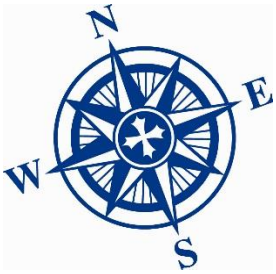
Construction and maintenance costs for the AHF system are also far greater - as much as an order of magnitude greater - than are those of the Transit and Rideshare system. Decisions on roadways also tend to have a larger influence on land use policy than do Transit and Rideshare or Active Transportation policies and investments. This means that AHF decisions are some of the most important ones contained in the Solano CTP, and the analysis needed for those decisions should be correspondingly more thorough. This includes using the Solano Napa Travel Demand Model to anticipate where traffic congestion will be in future years, in order to direct projects and programs to those areas that have the greatest anticipated needs.

An important difference between the overall Bay Area and Solano County is the question of road network maturity. In some portions of the central Bay Area, the roadway network is at or near maturity - there simply is not room to add more major roadways, and those that exist are at their practical limits regarding the number of lanes. The AHF Element will use the Solano-Napa Travel Demand Model and land use

projections from ABAG, MTC and the Solano cities to project future roadway needs, but will also begin the discussion on what the mature AHF network in Solano look like should.

This brings us to the final potentially controversial area to be addressed in the AHF element - the concept of "induced demand," or, in a more common phrase, "if you build it, they will come." This is the theory - broadly but not completely accept in the transportation field - that new roadways do not just serve existing traffic, they actually produce new traffic by making trips easier (faster, more reliable). Given the current emphasis at the state and national level on reducing emissions of greenhouse gasses, projects that result in more trips, and therefore more GHG emissions, are seen as counterproductive. But a lack of projects, resulting in more time with vehicles spent idling or moving slowly down a congested roadway, also contributes to the generation of GHG and other air pollutants.

In the world of transportation, everything really is interconnected, and most of how those connections occur is by roadway. Pull, push, build, restore or ignore one segment of the system, and all the others are impacted as well. This Element of the Solano CTP provides the best guidance as to which roadways should get which sort of attention.



Chapter 2 - Purpose

The Solano CTP: AHF Element is the STA's foundational document for planning and maintaining the major roadway network that connects Solano's communities with each other and with the broader region. The AHF Element is designed to serve the following purposes:

- Define the roadway network covered by this element. Those roadways are collectively referred to as Routes of Regional Significance (RORS). This step includes identifying roadways with special state and national designations such as goods movement corridors.
- Identify those roadways eligible to receive funding administered in some way by the STA.
- Compare the RORS system of today with the system desired by 2040, and identify the most important gaps between what exists and what is desired.
- Address the costs and funds available to both develop and maintain the current and ultimate RORS network.
- Identify programs and projects that allow for more efficient use of the existing system.
- Identify and prioritize projects to expand the RORS system in order to meet anticipated increases in traffic that cannot be accommodated by increased system efficiency.
- Ensure that Solano County efforts are coordinated and consistent with regional roadway plans, most notably MTC's Plan Bay Area; and, are taking into account state-mandated initiatives such as achieving a reduction in GHG emissions.

Like the other Elements of the Solano CTP, the AHF Element is designed to be both internally and externally integrated. *Internally* integrated means that the roadways in the AHF match those identified in the Transit and Ridesharing and the Active Transportation Elements. Just as importantly, these roadways match those contained in the planning documents of the STA member jurisdictions.

Externally integrated means that the AHF roadway network matches network identified by MTC and Caltrans District 4. Externally Integrated also means matching with the plans of neighboring regions such as Sacramento and San Joaquin counties.

The AHF Element interacts with the long range planning done by the 8 STA member jurisdictions and MTC. The cities and county of Solano can make their land use and transportation plans based in part upon the policies and projects identified in this document, which is in turn periodically modified to take into account the member agency's plans. The AHF Element identifies priorities for Solano County that will be recommended for inclusion in the RTP/SCS, and the RTP/SCS policies and investments will then

help shape the AHF Element when it is updated. The document serves as a guide for local and regional planners and engineers, elected officials and citizen committees, members of the public and advocacy groups.

If the Element is Externally Integrated, the question arises – who do we work with on roadway issues? The answer is ……

Who's Who, and What Do They Do?

United States Department of Transportation (US DoT) - The federal Department, with a Cabinet Secretary, that coordinates all federal transportation activities. Within the Department are a number of specialized agencies. The one that most directly influences this Element is:

- Federal Highway Administration (FHWA) - The FHWA's role in the Federal-aid Highway Program is to oversee federal funds used for constructing and maintaining the National Highway System (primarily Interstate Highways, U.S. Routes and most State Routes). This funding mostly comes from the federal gasoline tax and mostly goes to state departments of transportation. FHWA oversees projects using these funds to ensure that federal requirements for project eligibility, contract administration and construction standards are adhered to.

Other US DoT agencies that impact surface transportation are:

- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Railroad Administration (FRA)
- Federal Transit Administration (FTA)
- National Highway Traffic Safety Administration (NHTSA)

The Surface Transportation Board (STB) was spun off from the US DoT as an independent federal agency in 2015.

California Department of Transportation (Caltrans) – The state equivalent of the US DoT, and is a part of the California State Transportation Agency (CalSTA). Caltrans is responsible for construction, operation and maintenance of the state highway system, as well as other functions such as operating the state ferry system and oversight of the Capitol Corridor train system. Solano County is in Caltrans District 4, headquartered in Oakland.

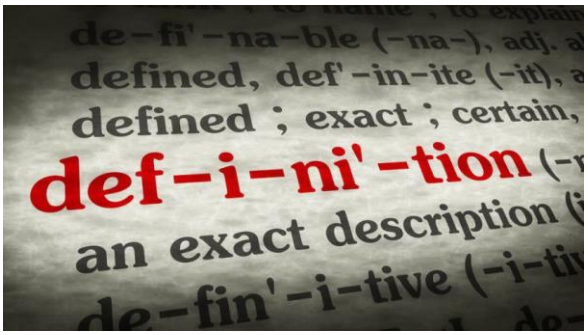
Metropolitan Transportation Commission (MTC) – MTC is the transportation planning agency for the nine-county Bay Area, including Solano County. There are two agencies that are sub-sets of MTC that are important to Solano County's transportation system and decision making:

- **BAIFA** is the Bay Area Infrastructure Financing Authority, which oversees the planning, financing, construction and operation of freeway express lanes and related transportation projects.
- **BATA**, the Bay Area Toll Authority, manages the revenues from the region's seven state-owned toll bridges and manages the Bay Area's FasTrak electronic toll payment system. BATA funds the toll bridges' operations, maintenance and administration; and the long-term capital improvement and rehabilitation of the bridges.

The Association of Bay Area Governments (ABAG) is similar to MTC, but deals primarily with land use and housing issues such as the every-eight-year Regional Housing Needs Analysis. ABAG also addresses regional earthquake preparedness, environmental concerns and regional trail systems.

Chapter 3 – The AHF System

Section 1: The AHF System Defined



The AHF system is the essential roadways and interchanges that connect the cities in Solano County with each other and the region, and provide access to key activity centers. It includes all interstate freeways, state highways, and selected local arterials. The AHF system also includes those facilities that are in the right-of-way and act to make the system more useable, such as ramp metering lights, overhead message boards, signage and landscaping - collectively known as Intelligent Transportation System (ITS) infrastructure.

In many instances, there is significant overlap in facility use between the various modes of transportation in Solano County. For example, an intercity arterial may include a Class 2 bike lane, a state highway may be crossed by students by means of a Safe Routes to Schools pathway, and interstate freeways carry both express buses and large trucks moving freight to a local employment center.

The AHF element addresses the Solano Routes of Regional Significance, which are defined below, and explained in detail in the following paragraphs. The AHF Element does not address local roadways that are not RORS, even though these roadways are connected to the RORS. Appendix A contains the definition, map and list of all RORS. The criteria for a road to be designated a Solano RORS are:

1. All roadways in the Solano Congestion Management Program network
2. Roadways providing access to Transit Facilities of Regional Significance
3. Roadways providing access to major employment centers, identified by STA, with higher traffic volumes
4. Roads providing intercity and Freeway/Highway connections
5. Other roads critical to providing countywide emergency response

1. All roadways in the Solano Congestion Management Program (CMP) network. The CMP "is a mobility monitoring and planning tool for California counties that contain an urbanized area with a population of 200,000 or more." The 1991 CMP legislation allows the local Congestion Management Agency (CMA) to prepare, monitor, and update the CMP. As the CMA for Solano County, the Solano Transportation Authority (STA) has revised the Solano County CMP once every two years since 1991. The CMP network is defined as "all State highways within Solano County and principal arterials, which provide connections from communities to the State highway system and between the communities within Solano County." Appendix A is a list and map showing the CMP network.

2. Roadways providing access to Transit Facilities of Regional Significance. The criteria STA has established for Transit Facilities of Regional Significance (TFORS) are:

1. All passenger rail lines, and all passenger train stations, current or planned, identified in an adopted STA Plan.

2. All ferry facilities, including terminals, maintenance docks and fueling stations, current or planned, identified in an adopted STA Plan.
3. Bus stations providing all of the following services:
    a. Routes to destinations outside Solano County or between two or more cities in Solano County
    b. Peak hour headways of 1 hour or less
4. Maintenance and parking facilities for busses providing services identified in 1, 2 or 3 above.
5. Interchanges that provide access to and from the highway system for stations identified in 1, 2 or 3 above.

The Transit and Rideshare Element has a more detailed discussion of TFORS, including a list and map showing all designated RORS.

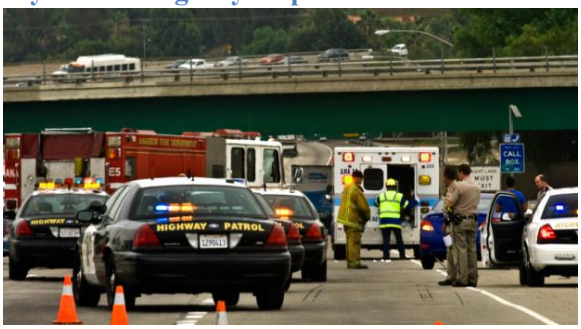
3. Roadways providing access to major employment centers with higher traffic volumes. Major employment centers, as designated by the STA, are those facilities that employ workers from throughout the county or region, rather than primarily local residents, or that draw visitors or customers from throughout the county or region, rather than primarily local residents. In addition, they are of sufficient size that they require one or more two-lane arterials to serve their peak-hour traffic demands. The arterials serving these employment centers are RORS.

There are major employment centers with higher traffic volumes in Benicia (the port and the Benicia Industrial Park, including the Valero refinery), Dixon (the Northeast Dixon Industrial Park), Fairfield (Cordelia Business Park, SR 12 Industrial Park, Fairfield Tolenas Industrial Park, County Government Center and Court complex, Solano Town Center Mall, Anheuser Busch, and Travis Air Force Base), Vacaville (California State Prison-Solano, Vacaville 80/505 Industrial Park and the Factory Stores/Nut Tree area) and Vallejo (Solano County Fairgrounds/Six Flags Discovery Kingdom, Kaiser-Vallejo and Mare Island).

Appendix B contains a map and more detailed description of the major employment centers in Solano County.

4. Roads providing intercity and Freeway/Highway connections. A small number of arterial roadways provide important, short-length connections between freeways and highways, such as Vaca Valley Parkway between I-80 and I-505 in Vacaville and Lake Herman Road between I-80 and I-680.

5. Other roads critical to providing countywide emergency response. This final RORS category covers other roadways that are important to providing access through chokepoints in Solano County in the event of an emergency, whether that emergency is a short-term event like an automobile accident or a long-term disaster such as a levy breach or a landslide. Several roadways meet this criteria, including McGary Road, parallel to I-80 between American Canyon Road and Red Top Road; Lopes Road, parallel to I-680 from Red Top Road to Lake Herman Road and McCormack Road (and associated shorter roads) parallel to SR 12, between SR 113 and Liberty Island Road.



6. Supporting Facilities in the Right-Of-Way. A RORS consists of more than just the pavement on which vehicles drive. Other hard-scape features include the curb, gutter, stormwater drainage inlets and sidewalk. Additional elements include signs providing directions and traffic or road condition information, traffic signals, ramp metering loops and lights, and signal priority/preemption equipment. In some cases, equipment also includes emergency call boxes and roadway monitoring cameras. Many of the signs and detectors work together to provide what is referred to as an Intelligent Transportation System (ITS). ITS is meant to reduce congestion by providing drivers with information about road conditions ahead, and by smoothing out the peaks in traffic volume that often lead to roadway congestion on either a local or system-wide basis.

A final element of the right-of-way improvements is landscaping and sound walls. These facilities generally don't impact the performance of the system (although median landscaping and barriers block headlights of oncoming vehicles and reduce head-on accidents). In the case of soundwalls, they do provide a very real benefit to the community by reducing noise impacts and improving community livability.

The RORS System - By The Numbers.

Interstate Freeways. The interstate freeway system in Solano County covers 72.9 linear miles and 284.6 lane miles, as detailed below. Annual Average Daily Trips (AADT) data is from the 2015 Caltrans traffic volume report.

Designation	Start	End	Linear Miles	Lane Miles	Description
I-80	Yolo County Line (Davis)	Contra Costa County Line (Al Zampa Bridge)	43	165	6- to 10-lane divided interstate freeway. Main freeway corridor in Solano County. AADT
I-680	I-80 (Fairfield)	Contra Costa County Line (George Miller Bridge)	12.5	50	4-lane divided freeway along the Suisun Marsh. AADT
I-780	I-80 (Vallejo)	I-680 (Benicia)	6.8	27.2	4-lane divided freeway connection I-80 and I-680. AADT
I-505	Yolo County Line (Winters)	I-80 interchange (Vacaville)	10.6	42.4	4-lane divided freeway, connection I-80 in Solano County to I-5 in Yolo County. AADT

State highways. The state highway system in Solano County covers 83.2 linear miles and 215.9 lane miles, as detailed below:

Designation	Start	End	Linear Miles	Lane Miles	Description
SR 12 (west)	Napa County Line	I-80 (Fairfield)	2.8	11	4-lane divided state highway connecting Solano and Napa counties. Newly improved. Connections to SR 29 and I-80 remain to be improved.
SR-12 (east)	I-80 (Fairfield)	Sacramento County Line (Rio Vista)	24.5	64.7	2- and 4-lane state highway connecting Fairfield Suisun and Rio Vista. Significant truck traffic related to wine, agriculture and Travis AFB,
SR 29	Napa County Line (American Canyon)	I-80 (Vallejo)	5.9	23.6	4-lane divided highway and urban arterial through Vallejo; primary entryway into Napa County.
SR 37	I-80 (Vallejo)	Sonoma County Line	11.5	32.6	Divided 2-lane and 4-lane state highway providing connection to Sonoma and Marin counties.

Designation	Start	End	Linear Miles	Lane Miles	Description
SR 84	SR 12	Sacramento River Crossing (Ryer Island Ferry)	2.3	4.6	2-lane highway from Rio Vista to the Ryer Island Ferry
SR 84	Sacramento River (Ryer Island Ferry Crossing)	Sacramento county Line	10.9	21.8	2-lane north-south state highway on Ryer Island.
SR 113	SR 12	I-80 (Dixon)	20.8	45.8	2- and 4-lane state highway through central Solano County, and 2-lane arterial through Dixon.
SR 113	I-80	Yolo County Line (Davis)	.7	4.2	6-lane divided state highway from I-80 north through Davis to I-5 in Woodland.
SR 128	Napa County Line	Yolo County Line	.7	1.4	2-lane undivided highway giving access to Lake Berryessa.
SR 220	SR-84	Sacramento County Line	3.1	6.2	2-lane east-west state highway on Ryer Island.

Local Arterials. There are 96 individual roadways that make up the RORS - Arterials network in Solano County, as shown in Appendix A. They account for approximately 191 linear miles of mostly 4-lane roads, with almost 775 lane miles of pavement.

Other Right-of-Way Facilities. Other aspects of the RORS are found in the right-of-way. They are Intelligent Transportation System (ITS) infrastructure and landscaping.

ITS Infrastructure. ITS infrastructure consists of cameras, electronic message boards, ramp metering lights, road sensors and command centers.

- Cameras: Caltrans has cameras in two locations in Solano County - I-80 just east of the I-80/I-680 interchange, and I-680 just south of the I-80/I-680 interchange. These cameras give Caltrans, CHP and the general public the opportunity to observe traffic conditions in real time at these locations.

- Electronic Message Boards: Caltrans operates 7 electronic message boards in Solano County. These message boards can have new messages sent to them remotely, allowing them to provide timely information on traffic conditions or other important information. The message boards are located in Vallejo on I-80 and SR-37; in Fairfield on I-80 and I-680; and, in Dixon on I-80. Additional temporary message signs can be placed by Caltrans to warn of construction or lane closures, or for events such as the SR 12 safety campaign in 2008.

- Ramp Metering: Ramp metering is the process by which the rate at which cars enter the freeway is controlled by lights on the entry ramps. The system is designed to maintain a stable flow of traffic on the freeway by avoiding temporary clumping of traffic where a large number of vehicles all enter the freeway at the same point and time. Sensors measure the traffic flow on both the freeway and the on-ramp, and red/green lights meter the rate at which cars are allowed to enter the freeway.

  Caltrans and the Metropolitan Transportation Commission (MTC) has required the installation, and eventual activation, of ramp metering facilities for all freeway entrances in Solano County, and for some freeway-to-freeway connections. In 2015, Caltrans activated ramp metering for both east-bound and westbound ramps from Redwood Street in Vallejo to I-505 in Vacaville as part of their 2nd phase of Ramp Metering Implementation in Solano County. Metering for the remaining ramps in Solano County (Phase 3) is not funded or scheduled at this time.

- Truck weight and inspection stations. In addition to the ITS infrastructure listed above and found in almost every California county, Solano County also hosts a pair of Caltrans truck scales. These facilities, located on I-80 just east of Suisun Valley Road and the I-80/I-680/SR-12 interchange, weigh large cargo trucks and conduct other safety inspections. The westbound truck scales were constructed in 1958; the eastbound scales were redesigned, relocated and rebuilt in 2013 by Caltrans and STA.

Landscaping and soundwalls. These elements of the RORS system are generally intended to buffer adjoining land uses from the negative impacts of nearby roadways - sound and light. Center-of-the-road landscaping can also buffer the impacts of on-coming traffic by blocking visibility of headlights. Finally, walls and landscaping can provide safety benefits by keeping unauthorized people and vehicles out of road rights-of-way and providing a physical barrier that prevents head-on accidents.

Soundwalls and landscaping on the interstate freeways and state highways are owned and maintained by Caltrans. Similar facilities on arterial roadways are owned and maintained by the jurisdiction in which it is located. The STA does not have an inventory of soundwalls or landscaping in Solano County.

Chapter 4 – State of the System

Arterials, Highways and Freeways State of the System

The previous section of the Arterials, Highways and Freeways Element describes the system - the roadways and other components that make up the Routes of Regional Significance. This next section describes the state of the Routes of Regional Significance system as of mid-2015. The reason for reporting on the state of the system is simple: if the purpose of the CTP - Arterials, Highways and Freeways element is to identify the desired future Arterials, Highways and Freeways system and set policies to get us from where we are to where we want to be, we need to know where we are. The state of the system chapter defines where we are.

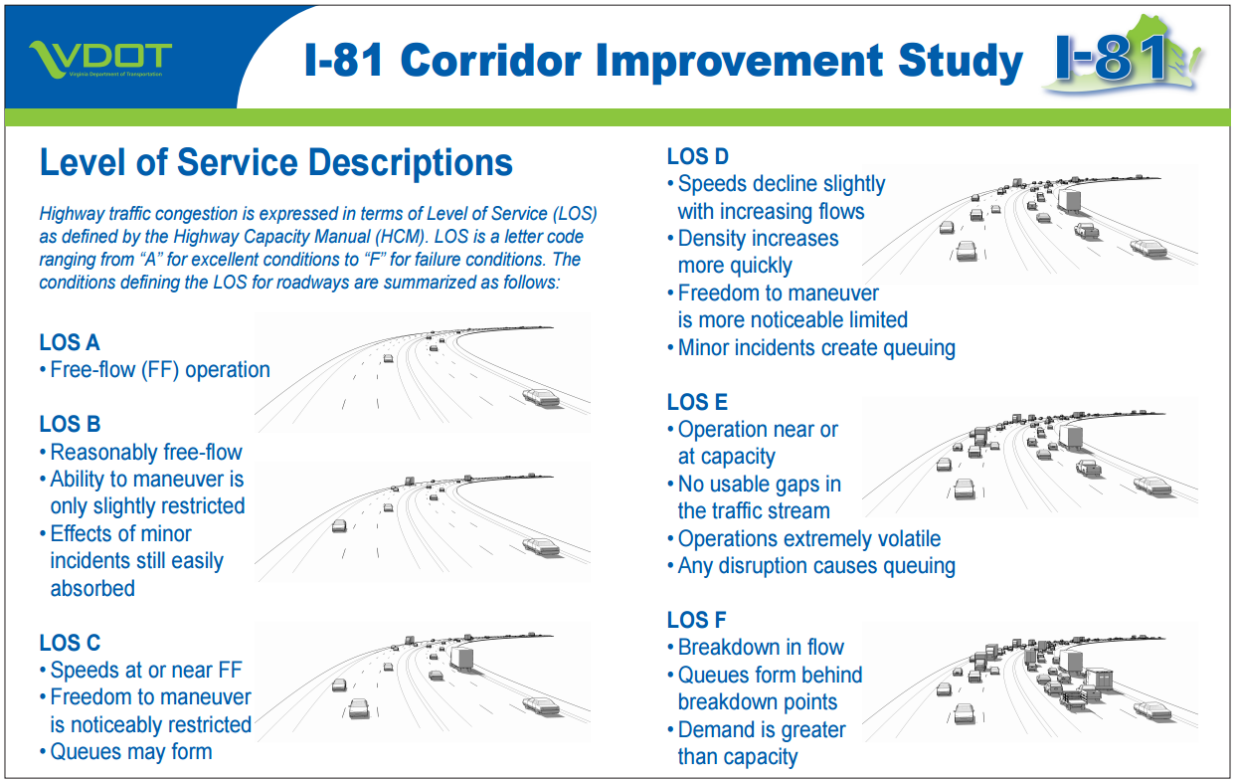
The state of the Arterials, Highways and Freeways system is measured in two ways - how well it performs, and how well it is maintained. As with so much of the overall transportation system, these two features interact with each other. Well-maintained roads can handle more traffic, and more traffic leads to more wear and tear on the roadways. Well maintained roads can also handle more transit vehicles quickly, which leads to less wear and tear; and, they support a local economy that generates more taxes that support keeping the roads in good shape.

How Well It Performs

Drivers on Solano roadways know to expect delays in certain locations and times: I-80 westbound around the I-80/I-680/SR-12 interchange in the morning, and in both Vallejo and much of Fairfield in the evening, SR 37 west around the Mare Island Bride in the morning are two of the most prominent examples. But where else does long-lasting congestion occur, and how is it measured?

The traditional measure of roadway performance is Level of Service (LoS), usually measured by the Volume to Capacity (V:C) ratio. LoS is measurement is summarized as: every roadway and intersection has a capacity, based primarily on the number of lanes and design speed. During the peak hour of traffic, the number of cars traveling the roadway is measured, and the ratio of capacity to actual volume is measured and reported as a letter grade. When the volume exceeds the capacity - a V:C ratio of 1 or greater - the roadway receives an "F" grade, and is essentially in gridlock.

The following graphic, prepared by the Virginia Department of Transportation, provides a good summary of capacity-based LoS.



There are additional measures of performance for roadways. These include Vehicle Hours of Delay (VHD), which also measures congestion, Vehicle Miles Traveled (VMT) and collision rates. VMT is often used as a proxy for measuring air emissions, especially greenhouse gases; more VMT means more air emissions, so long as the makeup of the fleet remains constant. Collision rates on freeways and highways are reported in comparison to the statewide average for similar roads because this is the standard reporting metric used by Caltrans.

Total volume for a roadway is reported as Annual Average Daily Trips (AADT) – the average number of trips on a roadway, in a specific direction. AADT gives an idea of the volume of traffic on a road. Another important measure is the percentage of trucks in the traffic flow, as trucks have an oversized impact upon congestion due to their large size and limited mobility.

Cities and counties set their own LoS standard; most typically have a standard of C, D or E. LoS C allows for better traffic flow than LoS E, but typically requires wider roadways and more turn lanes. These wider roadways are more expensive to construct and maintain. On the other hand, once a roadways has an LOS that has deteriorated to E, the cost of expanding that roadway to bring the LoS back to C can be prohibitive. The community must then balance several competing outcomes: accepting congestion, funding expanded streets or changing he number, mix and timing of vehicle travel on the road network.

The California Department of Transportation (Caltrans) uses a different measure of congestion. Caltrans Mobility Performance Report and Analysis Program (MPRAP) reports freeway system operations in its Annual Mobility

Caltrans to use the speed of traffic flow as a measure of system performance

Performance Report (MPR) and in Annual /Quarterly Statistics web releases. The Caltrans methodology is summarized below.

> Except for areas where a highway or freeway acts as a 'main street,' such as SR 12 in Rio Vista, SR 113 in Dixon and SR 29 in Vallejo, all Caltrans freeways and highways have similar speed limits (55 MPH, 65 MPH or, rarely in Solano County, 70 MPH). This allows Caltrans to use the speed of traffic flow as a measure of system performance. Caltrans uses a standard of 35 MPH; if traffic is moving below that speed, the roadway is considered congested. The MPRAP uses the Caltrans Performance Monitoring System (PeMS) which collects and archives vehicle counts and calculates speeds at all hours of the day and all days of the week and has analytical tools. Delay is determined by comparing the travel times over a segment of roadway at the speed of travel and the threshold speed where congestion is considered to occur.

The following pages show maps and tables showing how well the Routes of Regional Significance system is performing as of May 2015, when STA had actual traffic counts collected on several key arterial roadways. The information comes from a variety of sources: direct measurements taken by the cities and county by placing measuring tubes cross the road (captures all traffic), cell phones, Bluetooth transmitters and other electronic device (measures speed of vehicles with electronic devices onboard), cameras that measure vehicle numbers and occupancy, and even on-site observers using the standard Mark I eyeball and manual counters. As the Bay Area economy improves, all of these systems are expected to show that local and regional traffic conditions are worsening.

Freeway Performance. The Interstate Freeway portion of the Routes of Regional Significance consists of I-505, I-780 I-680 and I-80. The Caltrans corridor reports that form the basis for this summary are provided in Appendix A.

A freeway is considered congested when the speed of traffic flow drops below 35 miles per hour. Congestion is referred to as *recurring* or *non-recurring*. Recurring congestion happens on a regular, often daily basis. An example of this is the Bay Bridge toll plaza on a weekday morning. Non-recurring congestion happens irregularly, and is usually associated with a one-time event like a vehicle break-down or an accident. The location of recurring congestion can be mapped and predicted, and engineering solutions such as improved exit ramps can be implemented. Non-recurring congestion cannot be predicted, and the response is usually a mobile service such as a Freeway Service Patrol vehicle. This measure is used on freeways and highways only. Local roads, because of their frequent controlled intersections, do not measure recurring or non-recurring congestion.

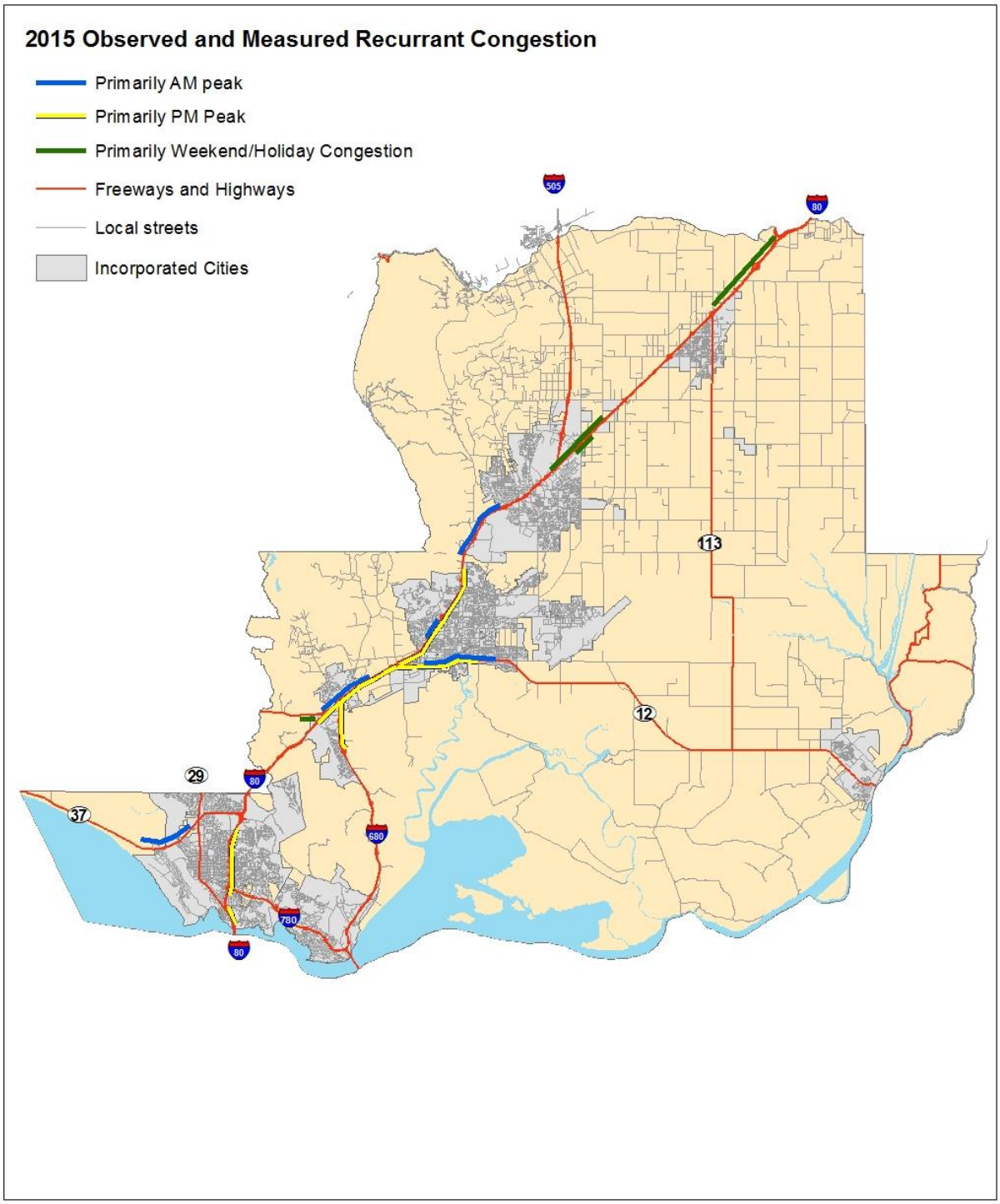
Caltrans has a formal reporting system for recurrent congestion. The MPR also reports Bottleneck locations. PeMS is also used to determine bottleneck locations. PeMS defines a bottleneck as "a persistent and significant drop in speed between two locations on a freeway." Bottlenecks are determined by the bottleneck identification algorithm in PeMS. This algorithm looks at speeds along a facility and declares a bottleneck at a location where there has been a drop in speed of at least 20 mph between the current detector and the detector immediately downstream. This speed drop must persist for at least five out of any seven contiguous five-minute data points, and the speed at the detector in question must be below 40 mph. While PeMS identifies the detector locations where these conditions are met, these bottleneck locations are only approximate (based on the locations where detectors are present). The bottlenecks identified through the PeMS Bottleneck Identification Algorithm are filtered by a number of

factors to obtain the bottlenecks mapped in the documents below. This filtering was done to create a consistent bottleneck analysis process for all districts, and to only report bottlenecks that are recurrent and causing large amounts of delay. The bottlenecks reported include bottleneck locations that were active on at least 20 percent of all weekdays during the year, persisted for at least 15 minutes on average, and caused more than 100 vehicle hours of delay (VHD) per weekday.

The following pages show Caltrans most recent Average Annual Daily Trips (AADT) maps for Solano County and the surrounding area. Note that these maps are based on 2015 data.

Using more recent data and observations, the figure below shows STA's analysis of significant recurring congestion on the freeways and highways in the county.

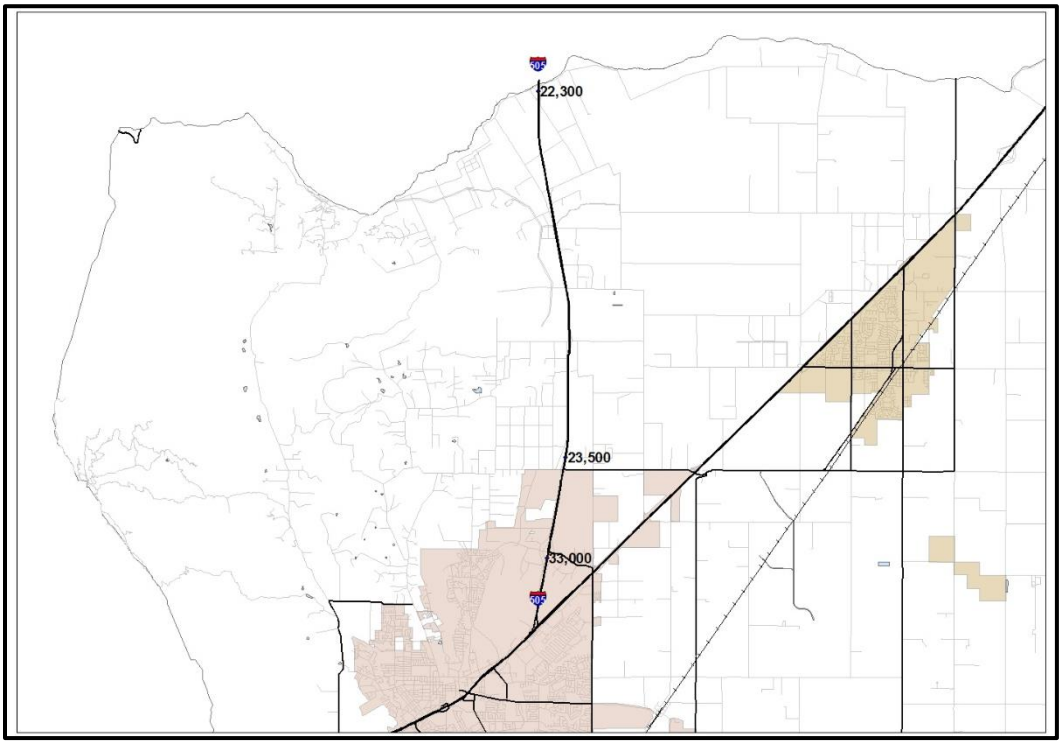
Figure 1 – Recurring Freeway and Highway Congestion in Solano County



Solano Highways

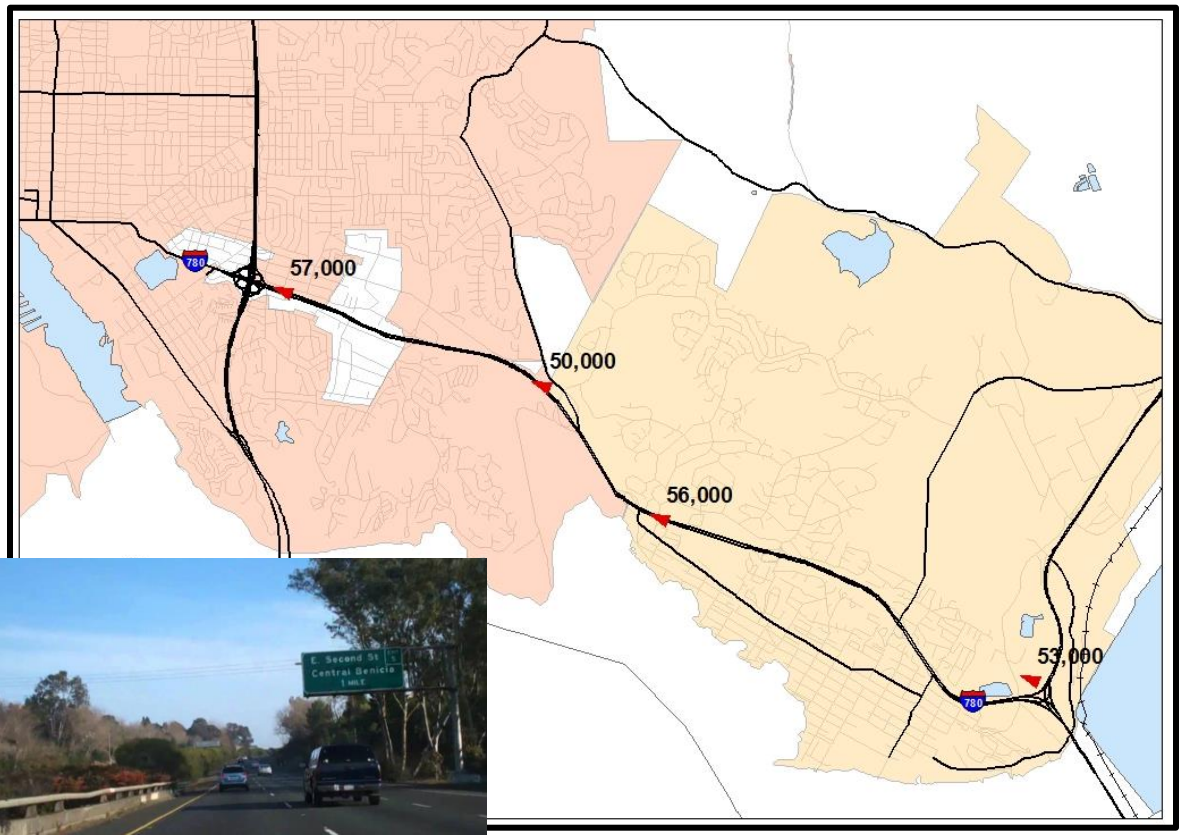
I-505 is located in Vacaville and rural Solano County; it runs from I-80 north to the Yolo County line, and then on to I-5. Caltrans reported in 2011 that I-505 in Solano County operated at a V:C ratio of 0.3 (LoS of A) for its entire length in Solano County, indicating that it has significant un-used capacity. Even during the busiest times of the day, there is no appreciable congestion on any portion of I-505, and no reported VHD. Caltrans statistics show that I-505 has an accident rate below the state-wide average for similar roads. I-505 has the unique characteristic in Solano County of having a 70 MPH speed limit.

AADT ON I-505 (2016)



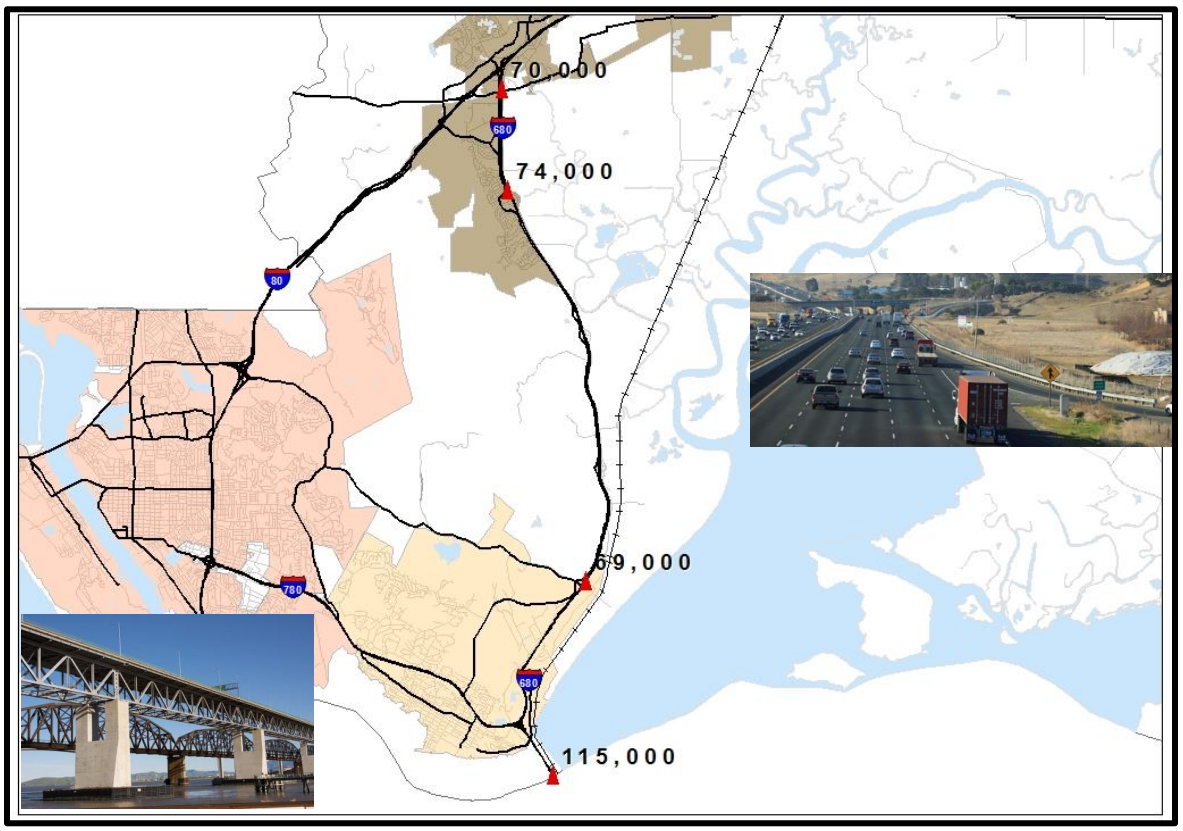
I-780, in the cities of Benicia and Vallejo, connects I-80 and I-680. Caltrans' 2012 report on I-780 shows the roadway operating at a V:C ration of 0.6 (LoS of C). Reports from city and STA staff and observation of real-time traffic reports show periodic short-term congestion at some off-ramps in Benicia during the evening commute, and at the I-780/I-80 interchange in Vallejo during both morning and evening peak hours, but I-780 generally operates at an acceptable LoS and has some un-unused capacity. There is no reported VHD. I-780 has an accident rate below the state-wide average for similar roads. In 2014, I-780 had a 2014 AADT that ranged from 52,000 vehicles (at the junction with I-680) to 57,000 (western Benicia) to 24,700 (at the junction with I-80), as shown below. Trucks account for approximately 4.5% of the AADT on I-780.

AADT ON I-780 (2016)



I-680, in Solano County runs from I-80 to the Benicia Martinez Bridge (two spans) and the Contra Costa County line; it then continues south, through Contra Costa and Alameda counties to US 101 in Santa Clara County. The 2013 report from Caltrans for I-680 in the cities of Benicia and rural Solano County shows this roadway also operates at a low V:C ratio of 0.7 (Los D). For the portion of the roadway in Fairfield, however, traffic congestion is much more significant at times. Specifically, the north-bound lanes approaching the interchange with I-80 and SR-12 see frequent PM peak congestion, with the worst being found on Friday evenings. The most recently-reported (2010) V:C ratio for northbound I-680 approaching I-80 is only 0.46, but the actual LoS is reported as D because of delays caused by the compact location of the I-680/SR-12 and I-80 merges. Accident rates on I-680 are below the state-wide average for similar roads. Except for Friday evenings, especially on holidays, this degraded ratio and resulting congestion usually do not last for an entire hour.

AADT ON I-680 (2016)



I-80, the main roadway through Solano County, has significant variations in V:C and operations during the course of a typical day. The other freeways all have distinct morning and evening commute directions, while I-80 handles morning commutes to both the east (Davis and Sacramento) and west (Marin/Sonoma and Napa via SR 37 and SR 12, and the inner Bay by the Carquinez bridge), with reverse commutes in the evening. I-80 also handles in-county commuters during approximately the same time.

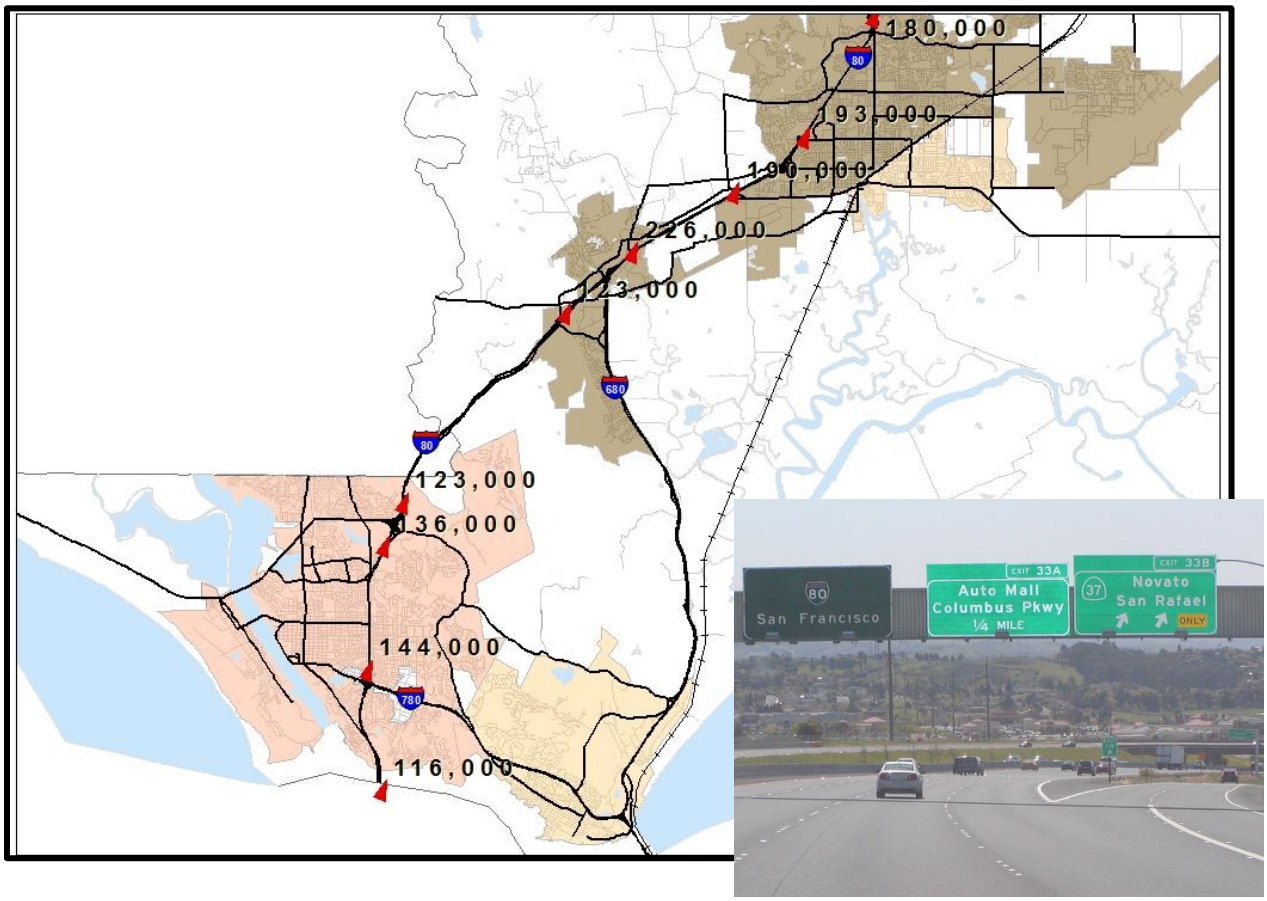
Friday evening and holiday traffic patterns are similar to regular commutes but with larger peak hour volumes, while weekend traffic typically follows a somewhat different pattern.

I-80 has the only High Occupancy Vehicle (HOV) lanes in Solano County. There is one lane in each direction of travel. They extend from Red Top Road to half-way between Airbase Parkway and North Texas Street, and operate during the morning and evening week-day peak hours.

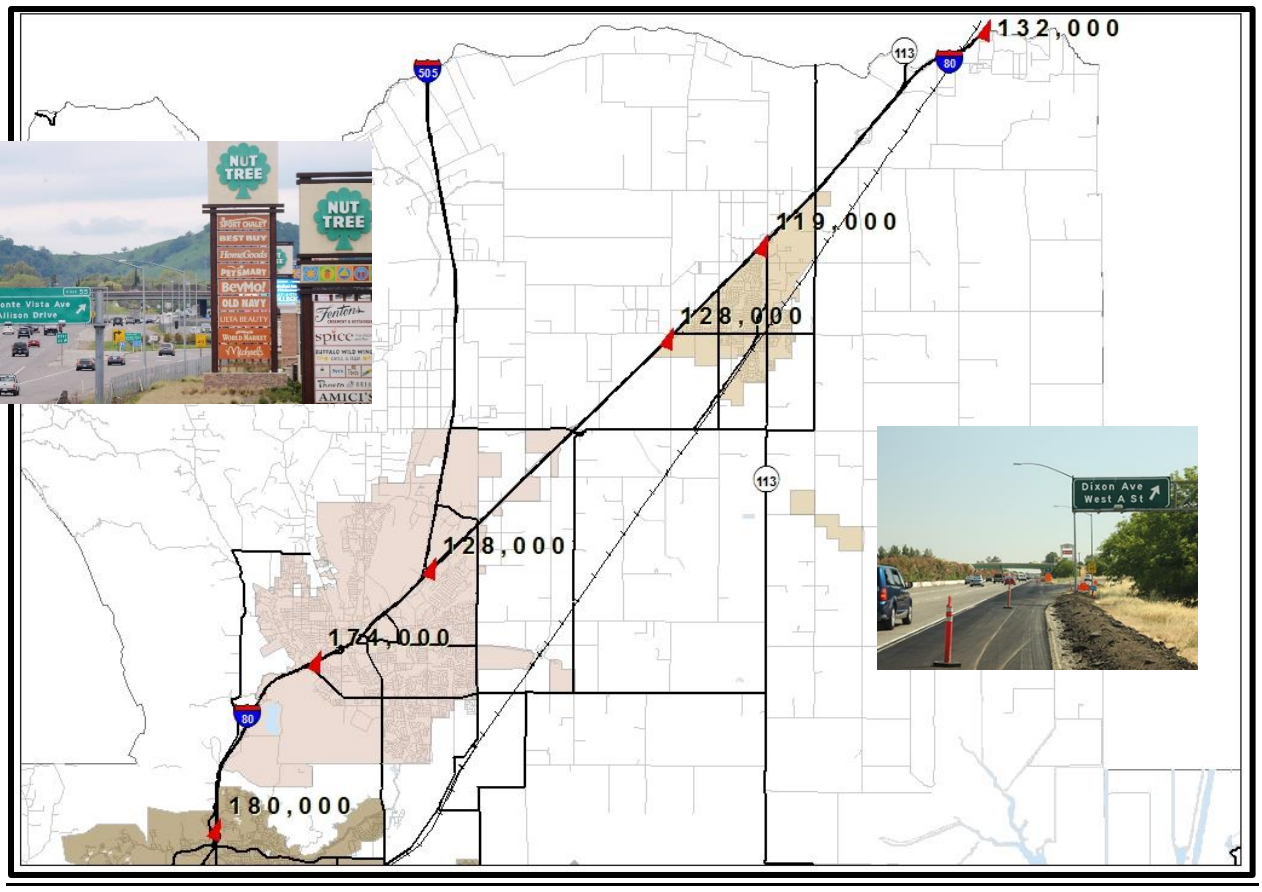
Unfortunately, the most recent Caltrans report on I-80 in Solano County (approved in 2010) does not include V:C data. Instead, congested areas are shown on report maps, and vehicle hours of delay are reported. The report does indicate 2,200 VHD in 2008 alone. The segments of I-80 just north of the Carquinez Bridge in Vallejo and between the two connections with SR 12 in Fairfield have accident rates above the statewide average for similar roadways; the remaining portions have accident rates below the average.

The following maps show I-80 traffic volumes in the western portion of the county (Fairfield and Vallejo) and he eastern portion of the county (Dixon and Vacaville).

Western Solano County
AADT ON I-80 (2016)



Eastern Solano County
AADT ON I-80 (2016)



Below is a summary, based upon the 2010 Caltrans report, observations by STA and agency staff, and monitoring of real-time traffic reports such as the Caltrans Quickmap site, of I-80 congestion patterns in Solano County:

Weekday Commute Congestion - morning commute

Eastbound commuters from central and eastern Solano cities do not routinely face significant morning congestion. There are some locations - such as east of Leisure Town Road in Vacaville where the number of lanes drops from four to three - where there are short-term delays, but these do not last for the whole of the peak commute period. Similarly, I-80 EB at the merge point from I-780 sees short-term periodic congestion due to the configuration of the ramp.

Westbound commuters face significant backups over a multi-hour time period during their morning commute. From east to west, recurring periodic congestion is encountered in the Lagoon Valley area of Vacaville and at Airbase Parkway and West Texas Street in central Fairfield. The next point of significant recurring congestion is in the area of the I-80/I-680/SR-12 interchange complex, beginning around the westbound truck scales and continuing to the lane-reduction point west of the SR-12 West (Jameson Canyon) ramp. Finally, there are frequent spots of slow traffic in Vallejo as new vehicles enter the freeway, but the more persistent congestion caused by lane drops or complex weaving movements found in the central county are typically not found in Vallejo during the morning commute.

Weekday Commute Congestion - evening commute

Eastbound commuters face several congestion points in Solano. From west to east, they begin in Vallejo at the I-80/I-780 interchange, where traffic exiting I-80 onto Benicia Road mix with vehicles from I-780 entering I-80 on a short ramp. This mixing of traffic trying to decelerate with traffic trying to accelerate on the same short ramp segment leads to traffic backing up onto I-80. Traffic on I-80 again becomes congested at the Columbus Parkway/SR-37 ramp off of I-80.

Traffic flows smoothly until the I-80/I-680/SR-12 interchange complex; traffic is often congested from this point through Fairfield, as far east as the North Texas Street off ramp or even Cherry Glen Road. The most significant point of congestion is where the freeway width is reduced from 5 lanes to 4 between Air Base Parkway and North Texas Street in Fairfield. Congestion at a smaller scale is also common at the Alamo Drive exit in Vacaville. Friday evening congestion occurs at the same points mentioned above, but lasts longer and extends further back down the freeway.

Westbound I-80 commuters face little in the way of evening congestion in Solano County.

Holiday Congestion

During holidays, particularly the Friday of a three-day weekend and the Wednesday before Thanksgiving, the evening commute congestion points remain the same as a regular week day, but the length of the back-up queues and their duration are both larger. In addition, the lane drop

east of Leisure Town Road in Vacaville is also congested, and the multi-lane drop at Richards Boulevard in Davis (Yolo County) can extend into Solano County.

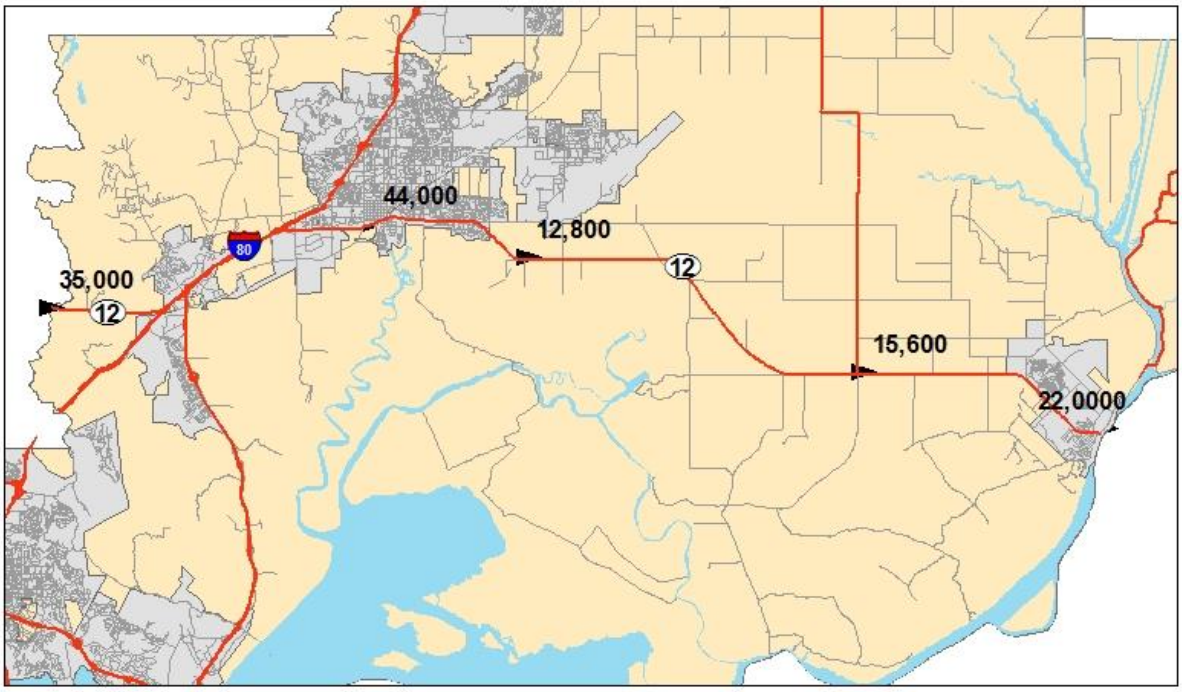
Weekend Congestion

Weekend congestion on I-80 is mostly variable, depending upon where and when special events (such as the Dixon May Fair or the Solano County Fair) are taking place. However, on Sunday afternoons and evenings, there are three typical congestion spots, all impacting westbound traffic. From east to west, these are in Dixon, from Kidwell Road to as far west as Pitt School Road; in Vacaville approaching the lane drop at the I-505 interchange; and, in Fairfield at the I-80/I-680/SR-12 interchange complex.

Highway Performance. The major elements of the State Highway system in Solano County consists of SR 12, SR 29, SR 37 and SR 113. There are other state routes in the Routes of Regional Significance (SRs 84, 128 and 220), but they experience no significant congestion, and are not analyzed further in this chapter.

SR 12 has two segments in Solano County - from the Napa County line to I-80 (the Jameson Canyon or SR 12 West segment) and from I-80 to the Sacramento County line in Rio Vista (SR 12 East).

AADT ON SR 12 (2014)



SR 12 west (a.k.a. Jameson Canyon) is primarily a commute corridor, with a handful of rural residences, a winery and access to a golf course on the Napa side. The corridor has recently undergone a major expansion from a two-lane highway to a four-lane divided expressway, and past information on congestion, delay and safety is no longer applicable. Anecdotal descriptions of the roadway's operation show that there is no west-bound congestion on SR 12 west in Solano County, while east-bound traffic does experience evening peak hour and weekend congestion backing up from the lane reduction at Red Top Road. The shoulders on SR 12 west are allowed to be used as a bike lane, although connections for bicyclists onto SR 12 are currently inadequate. This is a good example of 'context sensitive' application of Complete Streets.

SR 12 east has two areas of congestion - the *cities of Fairfield and Suisun City*, and approaching the *Rio Vista* Bridge. In *Fairfield and Suisun City*, the congestion occurs during the morning commute (westbound) and evening commute (eastbound), and occurs at the controlled

intersections (from west to east, Beck Avenue, Pennsylvania Avenue, Marina Boulevard and Sunset Avenue). The delays are almost entirely caused by the need to stop through traffic on SR 12 so that traffic from side streets can cross or enter on to SR 12. Vehicles may take several light cycles to pass through an intersection - one of the definitions of LoS F. During weekday morning commute hours, congestion is exacerbated by the need of school children to cross SR 12 as they walk from home to school.

The portion of SR 12 in Fairfield and Suisun City exceeds the state average for accidents, primarily due to rear end accidents at controlled intersections. The portion of the roadway between Suisun City and Rio Vista is a double fine zone due to the lack of shoulders, turn pockets and median separation and high number of fatal accidents in the 2007-2015 time period.

In Fairfield, the shoulders of SR 12 are not designed or designated for bicycle or pedestrian use. There are several collector and arterial streets to the north, including West Texas Street, that provide a parallel alternative to SR 12. In Suisun City, there is an extensive network of biked paths on one or both sides of SR 12 to provide bicycle, pedestrian and student travel options. There are no bus turn-outs on SR 12 in Suisun City.

In *Rio Vista*, traffic on portions of SR 12 stops when the draw bridge is opened to allow water traffic to pass. As documented in the Rio Vista Bridge study of 2010, these back-ups can extend for more than a mile on either side of the bridge. Commercial water-borne traffic is not generally predictable, but recreational traffic (involving smaller boats and therefore shorter span openings) is more common in the summer months. The stopped traffic on SR 12 impacts not only through traffic on the highway, but also in-town traffic that is obstructed by the queued vehicles when trying to cross SR 12. Accidents in this segment do not exceed the state average for similar roadways.

In Rio Vista, the Complete Streets status of SR 12 is variable, but in no place is it high quality. From Summerset Drive to Drouin Drive, there is no access at all due to the lack of shoulders and steep drop-offs or cuts through hills. Once the main urban area of Rio Vista is entered, there is a variable mix of shoulders and sidewalks that can allow for bicycle and pedestrian access along the SR 12 corridor, but there are gaps in this system.

SR 29 in the City of Vallejo runs from the Napa County line south to I-80, near the Carquinez Strait. It is also known as Sonoma Boulevard. SR 29 acts as a primary arterial for Vallejo, including the historic downtown area (Florida Street to Maine Street). SR 29 is crossed by railroad tracks north of downtown near Missouri Street, and south of downtown south of Ryder Street. There is little use of these tracks

right now, so they do not impact traffic flow. If their use increases in the future, they could be a source of additional congestion on SR 29.

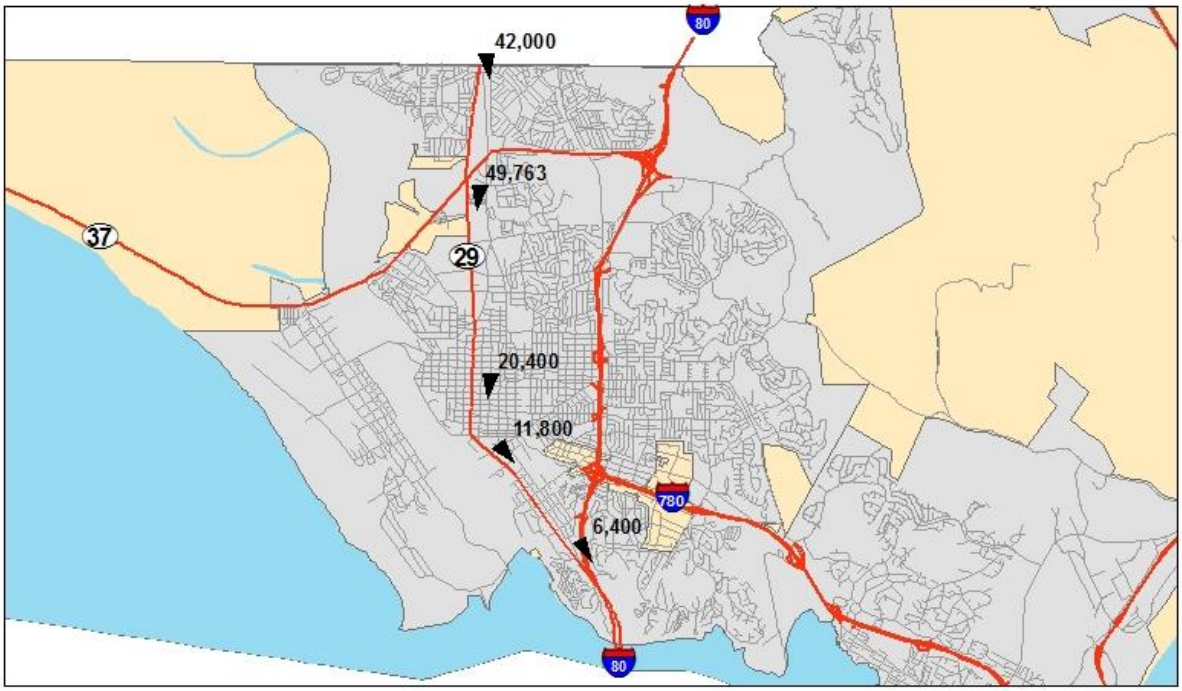
Caltrans has not published recent safety data on SR 29 in Solano County.

Traffic on SR 29 is restricted by a large number of controlled intersections and by cross-streets that also carry heavy traffic. In fact, the main characteristic of SR 29 in Vallejo is that it acts more as an arterial street and a downtown main street than as a highway. As a result, traffic congestion on SR 29 in downtown Vallejo is more of a condition than an incident; it occurs at many times of the day, and the duration of the congestion is variable. Some level of congestion is common through the course of the day.

SR 29 through Vallejo does not provide consistent Complete Streets facilities. From Mini Drive south to Lewis Brown Drive, there are shoulders that are adequate for bicycle use, but are not designated as such. South of Lewis Brown Drive, there are sidewalks on one or both sides of SR 29 in many, but not all, areas. South of Redwood Street, sidewalks become commonplace, although on-street parallel parking makes bicycle access difficult. There is adequate room for transit stops. South of Cherry Street, the shoulder is marked by a solid while line, but the shoulder area is still not painted as a bike lane.

Outside of downtown Vallejo, congestion can occur on SR 29 at the intersection with SR 37 during peak traffic periods, but this is not a consistent problem. South of Curtola Parkway, congested traffic is rare.

AADT ON SR 29 (2014)



SR 37 is located in the City of Vallejo and unincorporated Solano County, and runs from I-80 across the Napa River Bridge, and then along the northern edge of San Pablo Bay to the Solano/Sonoma County line. SR 37 is a 4-lane highway with grade separated interchanges from I-80 to just west of the Mare Island bridge, where it drops down to 2 lanes. During the week, congestion on SR 37 occurs in the west-bound direction during the morning commute, as vehicles merge from the two-lane segment to the one-lane segment. The back-up sometimes extends onto the Mare Island Bridge. While the most recent Caltrans document on SR 37 does not contain safety data, the overall impression is of a safe corridor due to the concrete median barrier along its entire Solano County length.

On weekends, congestion on SR 37 can occur at the lane merge as discussed above, but may occur at any time of the day. Congestion is especially common when events are held at the Sonoma Raceway at Sears Point. In addition, occasional congestion can occur in both the west-bound and east-bound direction at Fairgrounds Drive/Marine World Parkway, where visitors to the county fairgrounds and/or the Discovery Kingdom theme park exit and enter the highway. The timing of this congestion is variable, depending upon the opening time of the two facilities.

The White Slough Trail is a Class 1 bike path parallel to SR 37, from SR 29 to Sacramento Street. There are no Complete Streets facilities on the remainder of the route.

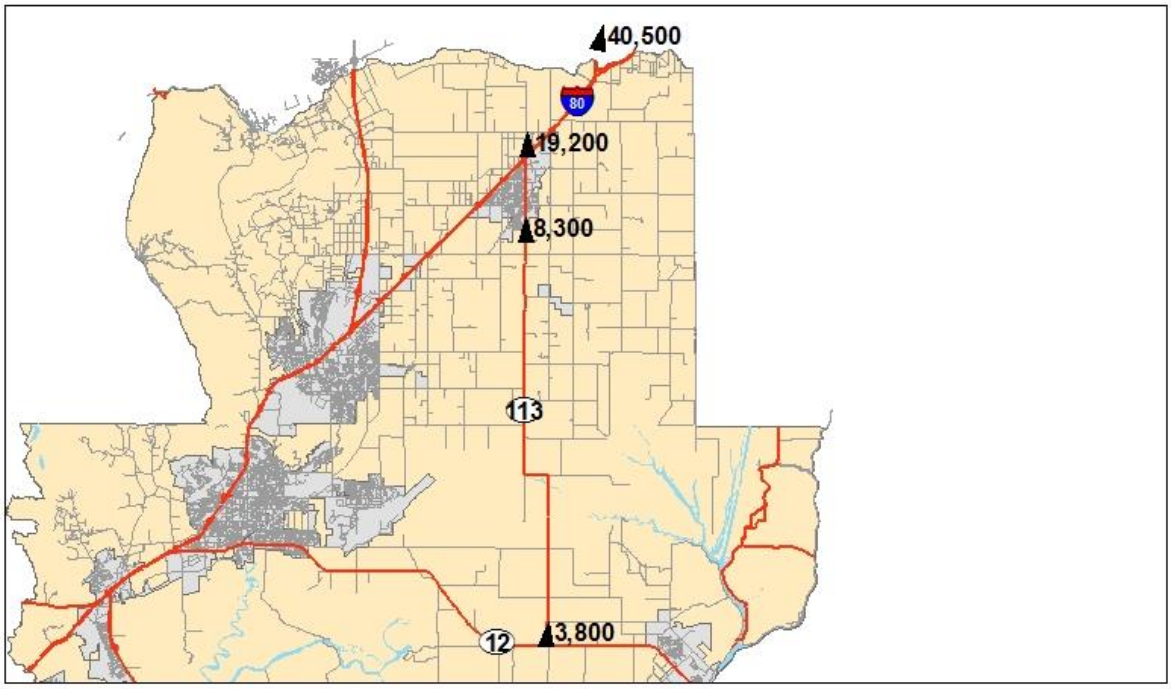
AADT ON SR 37 (2014)

SR 113 runs from SR 12 in rural Solano County north to I-80 in the City of Dixon. A second, short segment runs from I-80 north to the Yolo County Line in the northeast corner of the county. Most of SR 113 operates without congestion at any time of the day or week due to low V:C ratio. The accident rate for the segment of the roadway from SR 12 north to Dixon is slightly above the statewide average for similar roads. For the segment through Dixon, and from I-80 north to the Yolo County line, the accident rate is below the statewide average.

As noted in STA's 2008 SR 113 Major Investment Study (MIS), there is peak-hour congestion on SR 113 within the City of Dixon. This occurs generally in the area from A street north to I-80 at controlled intersections. It is largely due to the number of trucks moving through Dixon on SR 113, rather than because of local auto traffic. Since the 2008 MIS was adopted, the high school in Dixon has been relocated to a site east of SR 113, near the southern city limits. This has resulted in periodic congestion based upon the times just before school starts and just after it lets out.

From SR 12 north to Parkway Boulevard in Dixon, there are no Complete Streets facilities on SR 113. North of Parkway Boulevard, there sidewalks on one or both sides of SR 113, and designated bike lanes in some areas. There is adequate room for bus turnouts. In downtown Dixon, the presence and requent ue of parallel parking on SR 113 makes bicycle use of the rod more difficult, and the presence of many storefronts makes bicycle use of the sidewalks hazardous.

AADT ON SR 113 (2014)



Arterial Performance. The third major element of the Routes of Regional Significance consists of local arterials, and streets serving Transit Centers of Regional Significance and major employment and civic centers. There are 63 individual roadways in the Routes of Regional Significance network. However, the operational section of the State of the System report will focus on only 12 of them; those that provide inter-city connections or critical routes that parallel interstate freeways or state highways. Those roadways are:

- Midway Road, from SR 113 to I-505
- Jepson Parkway, from I-80 to SR 12
- Peabody Road, from Elmira Road to Airbase Parkway
- Hillborn Road/Waterman Blvd/Abernathy Road/Rockville Road/Suisun Valley Road, from I-80 to I-80.
- Cordelia Road, from Suisun Main Street to I-680
- Lake Herman Road, from I-680 to Columbus Parkway
- Columbus Parkway, from I-80 to I-780
- Military West, from I-780 to E. 5th Street
- Fry Road (Leisure Town Road to SR 113)
- McCormack, Canright and Azevedo Roads

STA's Travel Safety Report is being updated and will provide information on roadways that have the higher reported numbers of collisions, whether or not they are Routes of Regional Significance.

Midway Road, from SR 113 to I-505, is a two-lane roadway mostly in unincorporated Solano County; the western 0.6 miles (Leisure Town Road to I-505) are in the City of Vacaville. The road serves businesses and public facilities near the intersection with I-80, and will provide future access to Vacaville's North Village development project. Midway Road is also the access road for the Sacramento Valley National Cemetery, located just east of I-80. For most of its length, the road provides access to agricultural properties and widely-spaced rural residences. The roadway also acts as an alternative to I-80 for traffic between Vacaville and Dixon, or for those seeking to bypass freeway congestion on I-80 in the Dixon and Davis area.

Midway Road does not currently experience significant traffic congestion.

There are no Complete Streets facilities on Midway Road.

Jepson Parkway, from I-80 in Vacaville to SR 12 in Suisun City, is located in four jurisdictions: Vacaville, Solano County, Fairfield and Suisun City. Jepson Parkway is made up of several local roadways: Leisure Town Road, Vanden Road and Walters Road. For several years, Peabody Road will be a portion of Jepson Parkway until the northern extension of Walters Road is constructed.

In Vacaville, Jepson Parkway is a mix of two, three and four lane segments from I-80 to Alamo Drive. South of Alamo, it is a mix of three-lane and two-lane segments to Vanden Road. Vanden Road is a two-lane road from Leisure Town Road to Peabody Road. Peabody Road is a similar mix of two and three lanes. Air Base Parkway is a 4-lane express way, and Walters Road is a divided four-lane roadway.

Peak-hour congestion on the northern and central portions of the Jepson Parkway is episodic, rather than continuous. The southern segments, primarily Air Base Parkway and Peabody Road, often see significant peak-hour congestion. AM peak hour congestion is almost exclusively on southbound Peabody Road, and can extend as far north as the Putah South Canal. During the PM peak hour, the congestion is on Air Base Parkway east-bound at the Peabody Road intersection, and on Peabody Road northbound to the lane-drop at the Putah South Canal.

The Jepson Parkway is a highly-mixed complete Streets corridor, with bus shelters (and room for turn-outs), sidewalks and bike lanes in some areas and nothing but narrow shoulders on others. However, the Jepson Parkway Concept Plan identifies a comprehensive Complete Streets system for the entire length of the roadway when it is completed.

Peabody Road, from Elmira Road in Vacaville to Air Base Parkway in Fairfield, is a six to four lane arterial in the City of Vacaville, a two-lane arterial in the unincorporated portion of the county between the two cities, and a two- and three-lane arterial in the City of Fairfield. As discussed in the Jepson Parkway segment above, Peabody Road periodically experiences peak-hour congestion in the Fairfield segment. In the Vacaville segment, briefer periods of congestion occur at major intersections, but they typically resolve quickly. The two-lane county segment does not suffer from peak hour congestion.

Peabody Road has comprehensive Complete Streets aspects from Elmira Road south through the entirety of the City of Vacaville. In the unincorporated county, it has a designated bike lane. Once in the City of Fairfield, it once again has sidewalks, buke lanes and room for bus turnouts for most of its length, although the area just south of Waterworks Drive is lacking in facilities.

Hillborn Road/Waterman Blvd/Abernathy Road/Rockville Road/Suisun Valley Road is mostly in the City of Fairfield, although some portions are in the unincorporated county. This linked series of roads provides a parallel route to I-80, and can be used to bypass accidents or other major congestion points on the Interstate. This complicated network is broken down as follows:

- *Hillborn Road* runs for 2.2 miles from North Texas Street to Waterman Boulevard. It is a four-lane arterial that is primarily bordered by residences; other adjacent uses are an elementary school and open space.
- *Waterman Blvd* runs from Hillborn Road west to Abernathy Road. Its western segment is called Mankas Corner Road. Waterman Blvd. is, like Hillborn Road, a four-lane arterial that serves primarily residential areas, but also abuts open space and agricultural areas.

- *Abernathy Road* in Solano County runs for 1.8 miles from Mankas Corner Road to Rockville Road. It passes through largely agricultural areas in the Suisun Valley.
- *Rockville Road*, from Abernathy Road to Suisun Valley Road, is similar to Abernathy Road in all important aspects.
- *Suisun Valley Road*, from Rockville Road to I-80, is in both the unincorporated county and the City of Fairfield. It is a rural two-lane road in the north, but a four-lane arterial providing access to Solano College and other corporate campuses in the south.

An alternative at the southwest end is to follow Abernathy Road to the Suisun Parkway (a.k.a. the North Connector), and take this road to Suisun Valley Road.

As with many of the other most important Routes of Regional Significance, congestion on this roadway system is variable. The ends of the system are most likely to be congested, especially where the major roadways intersect and are controlled by traffic lights. At the southern end, congestion is most frequently associated with classes at Solano College and workers traveling to/from the office buildings in the area. The southern end is particularly impacted by irregular on-off ramp configuration for Suisun Valley Road and Green Valley Road, and the two-lane bridge that provides for access to east-bound I-80.

The provision of Complete Streets on this series of roadways is, as in other areas, variable. The initial segments of Hillborn Road and Waterman Boulevard have extensive bike lane and sidewalk facilities, with adequate room for transit vehicle stops. Once Waterman Boulevard becomes Mankas Corner Road, the corridor becomes rural, with no sidewalks or transit facilities and no shoulders. The more rural segments along Abernathy and Rockville have shoulders but no sidewalks. Suisun Valley Road does have shoulders and, in some areas, sidewalks and room for transit stops. The Suisun Parkway alternative has Complete Streets facilities for its entire length.

Cordelia Road, from Suisun Main Street to I-680, is located in Suisun City, Fairfield and the unincorporated County. It is a two-lane road of 6 miles length. Cordelia Road also provides an alternative route to the interstate system, allowing local traffic to bypass the I-80/I-680 interchange. It is primarily useful to residents of Suisun City.

Recent information on congestion on Cordelia Road is difficult to assess because of a multi-year closure of the road where it crosses the Union Pacific Railroad Tracks near Hale Ranch Road.

The roadway segment in Old Town Cordelia has sidewalks and bike lanes. The rest of the roadway does not provide Complete Streets facilities.

Lake Herman Road, from I-680 to Columbus Parkway. This 5 mile roadway starts in the City of Benicia, passes through unincorporated Solano County, and connects to Columbus Parkway in Vallejo. It is a two-lane road for almost its entire length, with a four-lane segment extending for a quarter of a mile

southeast from Columbus Parkway to. Lake Herman Road provides an alternative means of access from Vallejo into the Benicia Industrial Park. It does not experience significant recurring congestion.

Lake Herman Road has shoulders useable to bicyclists along its length, with wider shoulders at either end. There are no other Complete Streets facilities at this time.

Columbus Parkway, from I-80 to I-780, is in the City of Vallejo for almost its entire 5.4 mile length; the southern end is in the City of Benicia. It is a 4-lane divide arterial for most of its length, with a 1-mile segment of 2-lane divided roadway from Benicia Road to Regents Park Drive. Columbus Parkway provides access to numerous newer residences long its length, with commercial complexes at each end. It does not experience significant recurring congestion.

Complete Streets facilities on Columbus Parkway do not begin until the intersection with Admiral Callaghan Way. A sidewalk/bike path is then present until Aragon Way, along with shoulders that are adequate for bicycle use. From Aragon Way to the Benicia city limits, a shoulder adequate for bicycle use is present. Within the City of Benicia, there are sidewalks and marked bike lanes.

Military Road, from I-780 to E. 5th Street, is the shortest of the selected Routes of Regional Significance arterials. It is entirely within the City of Benicia, and has a changing configuration - two, three and four lanes. This roadway provides access to residences, schools, and downtown Benicia.

Military Road experiences periodic congestion on its western segment during the opening and closing hours of the adjacent schools, but otherwise uncongested. The downtown area (1st to 5th Street) is much more likely to be congested throughout the day due to high volumes of traffic and closely-spaced traffic signals.

Military Road is an example of a developed Complete Streets corridor, with pedestrian, bicycle and transit facilities along its length, and room for transit stops generally available. Limits on effective bicycle and transit access is found only in the eastern segment of the corridor, where parallel parking is used.

Fry Road (Leisure Town Road to SR 113), provides a link from the Fairfield/Vacaville area to SR 113, and from there to either Dixon to the north or SR 12 and Rio Vista to the south and east. Fry Road is six miles long, has two lanes with no turn pockets and stop signs at only 3 locations – Leisure Town Road, Meridian Road and SR 113. Aside from acting as a link from Vacaville to SR 113, Fry Road also provides access to agricultural areas in central Solano County. Fry Road is occasionally used by recreational bicyclists, but is not designated as a bike route.

McCormack Road, Canright road and Azevedo Road. These three roads in unincorporated Solano County provide a parallel route to SRS 12 between SR 113 and the City of Rio Vista. The form a 4.5 mile route that can be used when road repair work or a collision closes down SR 12. The roadway typically serves agricultural uses and a few rural residences, and is not usually used by bicycle riders.

The three segments are:

- McCormack Road, from SR 113 east for 3 miles to Canright Road. This is a gravel road for its entire length, and has no turn lanes, stop signs or shoulders.

- Canright road, from McCormack to Azevedo Road, is 1 mile long, and is paved, with gravel shoulders. There is a stop sign on Canright Road where it joins McCormack Road.
- Azevedo Road is 0.5 miles long, paved with no shoulders, and has stop signs at Canright Road and SR 12. There is no painted center line except at the intersection with SR 12.

How Well It Is Maintained

As with traffic congestion, there is a traditional measure of a roadway's physical condition. Another parallel between measures of roadway operation and roadway maintenance is that local agencies and Caltrans use different tools to measure maintenance and condition.

Arterials - For arterials and other local roads, the Pavement Condition Index, or PCI, is the tool to measure and grade roadway condition. PCI is a numeric score, with a PCI of 100 being a perfect, new road with no flaws in the pavement surface or substrata (such as the sand and gravel bed underlying the pavement). PCI also includes the smoothness of driving on the roadway.

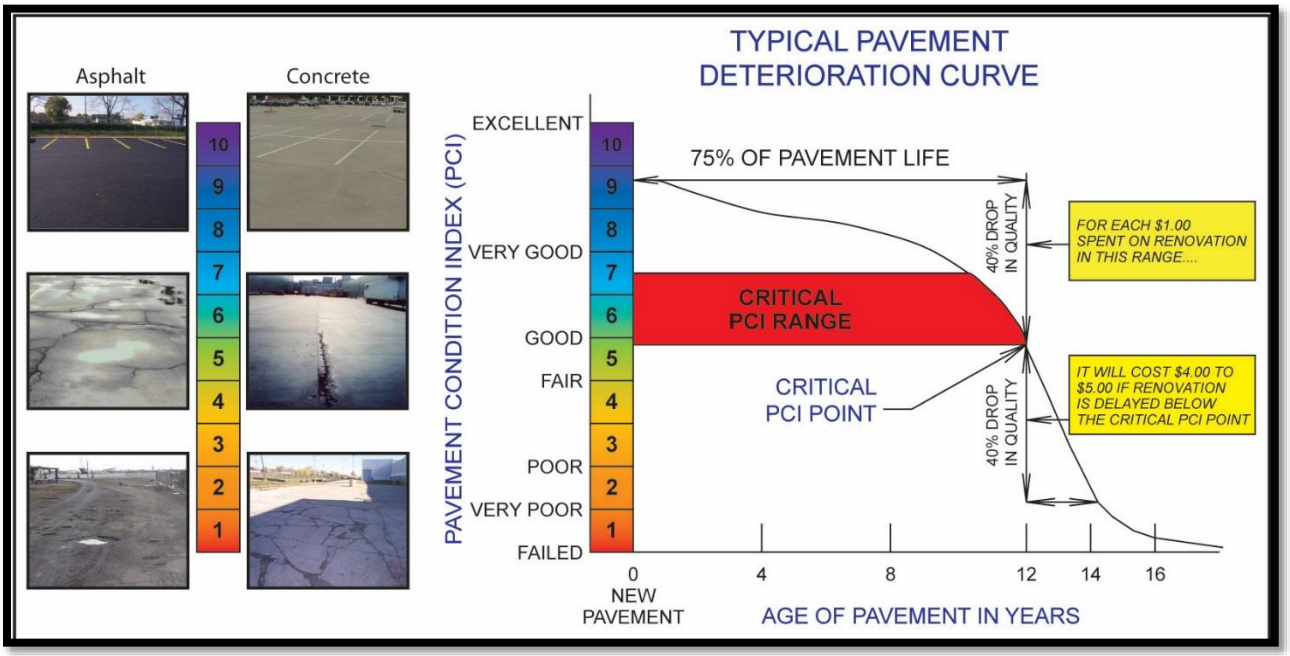
Very Good-Excellent (PCI = 80-100)	Pavements are newly constructed or resurfaced and have few if any signs of deterioration.
Good (PCI = 70-79)	Pavements require mostly preventive maintenance and have only low levels of distress, such as minor cracks or peeling or flaking off of the top layer of asphalt as a result of water permeation.
Fair (PCI = 60-69)	Pavements at the low end of this range have significant levels of distress and may require a combination of rehabilitation and preventive maintenance to keep them from deteriorating rapidly.
At Risk (PCI = 50-59)	Pavements are deteriorated and require immediate attention including rehabilitative work. Ride quality is significantly inferior better pavement categories.
Poor (PCI = 25-49)	Pavements have extensive amounts of distress and require major rehabilitation or reconstruction. Pavements in this category affect the speed and flow of traffic significantly.
Failed (PCI = 0-24)	Pavements need reconstruction and are extremely rough and difficult to drive on.

A roadway's PCI goes down as the surface deteriorates and cracks or holes appear in the pavement. This is especially important because surface flaws allow water to penetrate into and degrade the substrata, which then further accelerates deformation of the roadway surface.

As a result of the shortfall in available funds and the resultant deferral of maintenance and repair work, the 3-year rolling average of PCI in Solano County is:

	2014	2015	2016
BENICIA	59	57	54
DIXON	75	72	67
FAIRFIELD	71	71	71
RIO VISTA	57	57	56
SOLANO COUNTY	77	79	81
SUISUN CITY	59	55	64
VACAVILLE	69	69	68
VALLEJO	47	49	53
COUNTYWIDE	**64**	**66**	**67**

Roadway PCI deteriorates at a predictable rate, as shown in the following figure:



Early preventive maintenance of a roadway surface is a key, highly cost-effective method to reduce long-term repair costs. A dollar of maintenance expended when a roadway's PCI is in the Good range generally avoids $5 needed to repair not only the surface but also the substrata that becomes necessary when the roadway falls into the Fair category.

In 2014, STA adopted its first annual Pothole Report, which reports the PCI for individual roadways throughout the county. The overall PCI for all roadways in each jurisdiction is reported – individual roadways may have a higher or lower PCI than the overall jurisdiction average. A summary of the 2014 Porthole Report is provided below, with the entire report included as Appendix C.

As of June 2014, unincorporated Solano County and its 7 cities are cumulatively investing slightly less than half of the $44M needed annually to maintain local streets and roads with a Pavement Condition Index (PCI) of 60 "fair condition." To reach the higher PCI goal of 75 "good condition", the approved goal in the Solano Comprehensive Transportation Plan, $50M additional funds are needed annually over the next 15 years to reach a 'state of good repair' – two and a half times more than our current investment. Solano County needs a healthy investment in our roadway infrastructure or pavement quality will decline substantially. More money spent now in long-term roadway maintenance can save our communities millions in the future and strengthen our local economy.

Freeways and Highways - Caltrans rates pavement by visual inspection of the pavement surface and use high tech lasers mounted on a Caltrans vehicle to collect the International Roughness Index (IRI) data; a measurement relating to ride quality. For asphalt pavement visual inspection, samples are taken at the beginning of each highway post mile. For concrete pavement visual inspection, the concrete slabs are continuously rated by their number and type of faults in one mile segments.

Concrete slab faulting is determined by Caltrans engineers who measure the faulting height and number of faults. To monitor the pavement smoothness, a Caltrans vehicle gathers accurate data from speeds of 10 miles per hour (mph) up to 70 mph and the IRI is computed for every tenth of a mile. The IRI data measures the relative up and down movement of the vehicle. This IRI is collected in each wheel path on the road in inches per mile. The Federal Highway Administration (FHWA) standard of greater than 170 inches per mile is also the Caltrans standard for poor ride.

The following information and charts is taken from the 2013 Caltrans State of the Pavement (PCS) report, the most recent that is available. Because it is a statewide report, details for Solano County are not provided.

About 16% of California's highway miles (7,820 lane miles) are in poor condition, which is an improvement of 9% from the previous PCS, and 12,364 lane miles need low cost preventive maintenance to keep it in good condition. The remaining 29,534 lane miles had no distress. This examination shows that the system is recovering and continues to monitor the health of a 60-year-old system.

The SHS has about 15,000 centerline miles and 50,000 lane miles. In the past, Caltrans conducted the PCS once a year to measure the changes in the pavement condition. However, in 2008, the data collection method was changed to provide pavement performance data for the future Pavement Management System (PMS). The 2013 PCS was started in August 2011 and completed in April 2013.

To maintain the health of the system and assist in tracking pavement performance, the pavement condition data has been mapped to condition states. As shown in Figure 1, there are pictures of the three different pavement condition states with corresponding colors of green, yellow and red. These condition states are:

State 1: Green Pavement in good/excellent condition with no or few potholes or cracks. This pavement requires a preventive maintenance pavement project.
State 2: Yellow Pavement is in fair condition with minor surface distress that only needs corrective maintenance. The types of minor surface distress include minor cracking, slab cracking, raveling and potholes. The repair is a corrective maintenance pavement project.
State 3: Red Pavement includes major distress (pavement in poor condition with extensive cracks), minor distress (pavement in poor condition with significant cracks), and poor ride only. The severity of distressed pavement is defined by both the visual appearance of the pavement and the IRI. The ride quality is based on the FHWA standard that defines an acceptable IRI as 170 or less. The repair is a Pavement Rehabilitation or Reconstruction, lane replacement project or a Capital Preventive Maintenance (CAPM) project.

Table 1. 2013 Pavement Classification by Condition

Pavement Condition	2011			2013		
	Lane Miles*	Percent of Distressed Pavement	Percent of System	Lane Miles*	Percent of Distressed Pavement	Percent of System
Major Structural Distress	5,594	45	11	2,635	34	5
Minor Structural Distress	4,253	34	9	2,702	34	6
Poor Ride Quality (Only)	2,486	20	5	2,483	32	5
Total Distressed Pavement	12,333	100	25	7,820	100	16
Pavement Maintenance	11,053	–	22	12,364	–	25
Good/Excellent Pavement	26,132	–	53	29,534	–	59
Total System Lane Miles*	49,518	–	100	49,720	–	100

* Excludes bridges, ramps and frontage roads.

Using the 2011 and 2013 PCS, the health of each Caltrans district can be compared as shown in Figure 2. All districts have improved the health by targeting pavement projects at the right locations and reducing the distressed lane miles. The most notable improvements in distressed lane mile reduction were made by Districts 2, 3, 4, 6, 7 and 8.

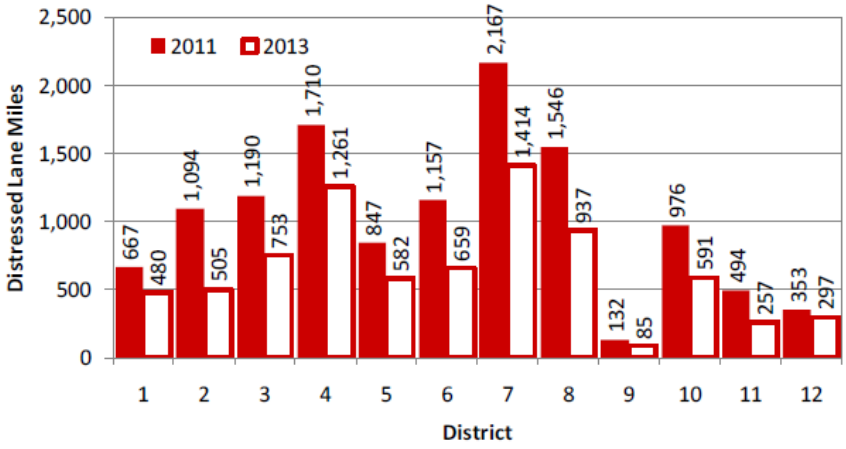
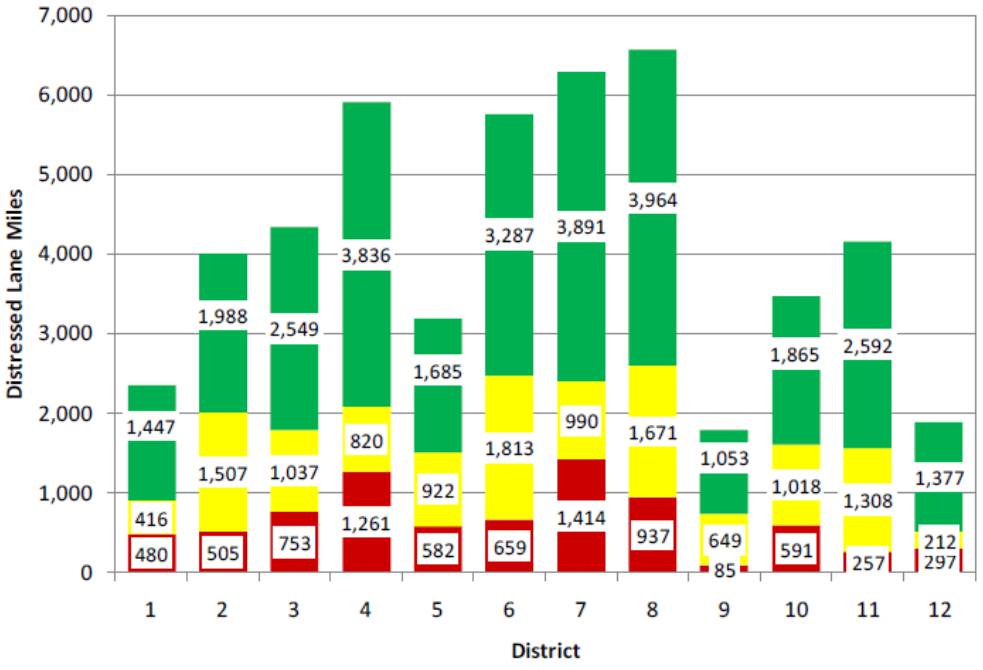


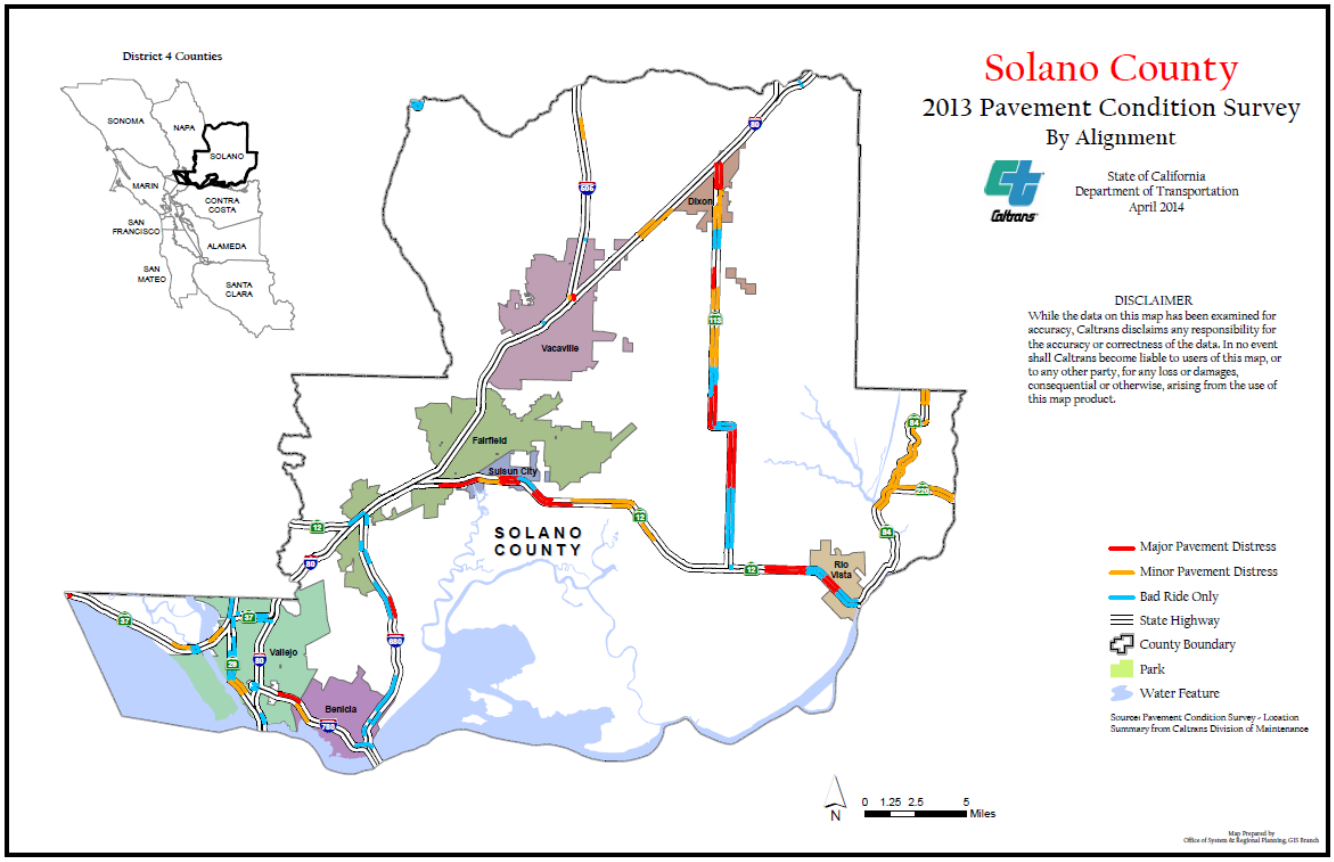
Figure 2. Distressed Lane Miles by District and Survey Year



District	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
System Lane Miles	2,343	4,001	4,339	5,917	3,189	5,759	6,295	6,571	1,787	3,474	4,158	1,886	49,720
Major Structural Distress	75	248	308	218	217	328	414	385	7	302	93	40	2,635
Minor Structural Distress	212	208	289	332	268	247	403	319	78	191	87	69	2,702
Poor Ride Quality	193	49	155	711	97	85	597	233	0	98	77	188	2,483
Distressed Lane Miles	480	505	753	1,261	582	659	1,414	937	85	591	257	297	7,820
Pavement Maintenance	416	1,507	1,037	820	922	1,813	990	1,671	649	1,018	1,308	212	12,364
Good/Excellent Pavement	1,447	1,988	2,549	3,836	1,685	3,287	3,891	3,964	1,053	1,865	2,592	1,377	29,534
% Distressed Lane Miles	20%	13%	17%	21%	18%	11%	22%	14%	5%	17%	6%	16%	16%

Figure 4. Pavement Condition by District (2013)

As noted in the above-information from Caltrans' 2013 report, District 4, including Solano County, has seen an improvement in pavement condition. Such projects as the new Jameson Canyon segment of SR 12, the completed repavement of I-80 and I-505 and the on-going repavement of I-680 have substantially improved the average condition of the highways in freeways in Solano County. The most notable exceptions to this are the segment of SR 12 from Somerset drive to Durin Drive in Rio Vista, and SR 113 from SR 12 north into the City of Dixon. Segments of SR 12 in the Fairfield/Suisun City area are also distressed. The following map shows the results of Caltrans' 2013 Pavement Condition Survey for Solano County.


District 4 Counties
SONOMA
NAPA
SOLANO
MARIN
CONTRA COSTA
SAN FRANCISCO
ALAMEDA
SAN MATEO
SANTA CLARA
Solano County
2013 Pavement Condition Survey
By Alignment
State of California
Department of Transportation
April 2014
DISCLAIMER
While the data on this map has been examined for 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.
Vacaville
Dixon
Fairfield
Suisun City
SOLANO COUNTY
Rio Vista
Vallejo
Benicia
Major Pavement Distress
Minor Pavement Distress
Bad Ride Only
State Highway
County Boundary
Park
Water Feature
Sources Pavement Condition Survey - Location Summary from Caltrans Division of Maintenance
N
0 1.25 2.5 5
Miles

Chapter 5 - AHF Goals and Goal Gap Analysis

Create an AHF System that improves mobility for all modes of travel.

- Prioritize funds for projects that improve Routes of Regional Significance.
    - Special emphasis should be given to roadways that support regionally important economic centers and goods movement.

As has been noted several times, the focus of both the Solano CTP and this Element is the RORS network, anchored by the I-80 network. Roadways that are not identified as a RORS should only receive STA administered funding in extraordinary circumstances.

STA and its member agencies have also identified the further development of the Solano County economy as a priority for a number of reasons, including additional tax revenues (which includes transportation funds) and shorter commutes for Solano residents. To advance this goal, STA has identified locations and projects that merit priority in investing transportation funds.

- Freeways – support development and operation of a comprehensive Express/HOV network on I-80 and I-680.

Express/HOV lanes support a variety of transit modes, help achieve both air pollution and congestion reduction goals, make goods movement easier and, in the case of express lanes, help pay for their own construction and operation. As such, they are one of the most effective tools available to improve mobility in and through Solano County.

- Seek consistent width to avoid congestion caused by reduction in number of lanes.

Traffic modeling, real-time congestion mapping and comments from citizens all identify congestion from lane reductions as both frequent and frustrating. Studies of traffic patterns related to Induced Demand also show that projects that eliminate lane reductions of fill in network gaps are examples of the rare project that does not induce new trips.
The major lane reduction back-up areas in Solano County re I-80 eastbound at North Texas Street, I-80 eastbound east of Leisure Town Road, I-80 westbound east of Dixon and I-80 westbound at I-505.

- Implement Complete Streets appropriate to the context of the roadway.

- Improve system efficiency through technology prior to adding lanes.

System efficiency technologies include advanced notification of congestion and alternative means and routes, arterial street prioritization for transit vehicles and ramp metering. These solutions

are notably less expensive than constructing and maintaining new travel lanes.

- Identify and preserve needed rights of way for future transportation projects.

- Develop and implement corridor plans for all interstate freeways and state highways, in conjunction with Caltrans. Develop corridor plans in cooperation with STA member agencies for multi-jurisdictional arterials on the RORS network. Use these corridor plans to prioritize improvements within each corridor.
  Periodically update the corridor plans and adjust project priorities as needed. Due to the long timeframes needed to deliver roadway projects, priority should generally be assigned to projects that have already been initiated.

  The various forms of corridor plans allow for sufficiently detailed examination of project locations, features and relationships to act as the best means of assigning funding priorities. Using priories identified in these Plans can also provide the needed long-term commitment to projects that justifies the early investment in planning and design that leads to a project ready for development funds. The STA Board may need to periodically review priorities that come from different corridor plans.

Improve system safety

- Identify locations on local arterial streets with above-average number or rates of collisions, and fund improvements to reduce collisions to average.

Maintain the system at an appropriate level

- Invest funds to maintain a minimum Pavement Conditions Index (PCI) of **Fair** and an average rating of **Good** on the RORS network. Work with Caltrans to ensure that a similar standard is maintained on the State system.

  Pavement conditions are rated by their PCI score with the following ranks:

Score	Rating
80-89	Very Good
70-79	Good
60-69	Fair
50-59	At-Risk
25-49	Poor

The STA currently allocates federal Surface Transportation Program funds for Local Streets and Roads projects through a funding distribution formula. Funding amounts are determined based on a formula using population, lane mileage, arterial and collector maintenance shortfall, and preventative maintenance activity. This is different from the MTC regional formula established in Plan Bay Area, which is based upon population and housing production.

Support the creation of Solano County jobs and other locally-decided land uses

- Identify roadway improvements that improve goods movement or reduce the impact of goods movement in Solano County.

- Identify roadway improvements that support retention or expansion of regionally important employment centers, retail centers and civic facilities.

- Prioritize available funds to support PDAs and PCAs, with special emphasis being given to support for Transit Facilities of Regional Significance.
    - All TFORS are in or adjacent to PDAs

Anticipate and mitigate system construction and operation impacts

- Special emphasis should be given to projects and designs that reduce emissions of criteria pollutants and greenhouse gasses.

    - Support projects that reduce emissions of criteria pollutants in sensitive communities or Communities of Concern.

- Where possible, use the avoidance and mitigation standards from the Solano Habitat Conservation Plan for STA transportation projects.

GOAL GAP ANALYSIS

PURPOSE STATEMENT: The Solano Comprehensive Transportation Plan will help fulfill the STA's mission by identifying a long-term and sustainable transportation system to provide mobility, reduce congestion, and ensure travel safety and economic vitality to Solano County.

Arterials, Highways, and Freeways Element Purpose Statement: Identify existing and future safety, capacity, and enhancement needs for the major arterials, highways, and freeways in Solano County that serve inter-city and interregional travel.

Measuring Goals. The following criteria are used to measure the progress on meeting the goals of the Arterials, Highways and Freeways Element:

- **Completed** – this is a goal with a specific end-point that has been reached, such as the construction of a facility or the identification of Transit Facilities of regional Significance. This also includes studies that have been adopted (even if recommendations have not yet been implemented) and the initiation of an on-going program.
- **Significant Progress** – this is a project with substantial completion; typically, more than 10% Plans, Specifications and Estimates (PS&E) but not yet into construction or completion. It also includes studies where data collection and analysis has started, but final recommendations have not been adopted.
- **Preliminary Proposal** – finally, this category covers projects that have less than 10% PS&E, plans that have not started data collection, and programs that have no administrative and/or financial commitments and no start date.

For some AHF Goals, the Gap analysis is mixed: **Significant Progress** in terms of policy establishment, but only **Preliminary** implementation. This is largely a function of the on-going significant shortfall of funding for both new projects and maintenance of existing facilities.

Goals. Goals are the milestones by which achievement of the Purpose Statement are measured. In order to implement the Arterials, Highways, and Freeways Element of the overall purpose of the Solano CTP, the following goals are established:

Create an AHF System that improves mobility for all modes of travel.

- Prioritize funds for projects that improve Routes of Regional Significance. This goal has seen **Significant Progress**. STA funding choices have been focused on RORS, but STA staff reports and recommendations do not routinely identify to the TAC and Board whether or not a roadway is an RORS.
    - Special emphasis should be given to roadways that support regionally important economic centers and goods movement. **Preliminary Proposal** – Formal identification of a goods movement (aka freight) network is a relatively new task, both at a local and a regional level. However, the National Freight Strategic Plan was recently completed and does include I-80 on the National Highway Freight Network. Additionally, the **California Freight Mobility Plan** was adopted in December 2014. I-80 and State Route 12 corridors are on the State freight network. In addition, MTC has recently completed a regional goods movement plan, and this complements goods movement investments

efforts at the state and national level. STA has significantly invested in goods movement infrastructure in the past, notably the I-80 Eastbound truck scales in Cordelia and the first construction Package of I-80/I680/SR 12 Interchange. As the routes of regional significance definition has been expanded to include roadways serving major economic centers in Solano County, this will increase the ability of STA to make future investment decisions in projects that support goods movement. STA will use information from these plans to help further identify and seek funding for goods movement facilities. It should be noted that goods movement also includes rail and ship born traffic, and not just vehicles on roadways.

- Freeways – support development and operation of a comprehensive Express/HOV network on I-80 and I-680. **Preliminary Proposal**. A HOV lane extends for 8.7 miles in each direction on I-80 (Red Top Road to Air Base Pkwy), and design funds have been allocated to convert the existing HOV lanes to Express lanes and extend them past I-505. In addition, the Express Lane connector ramps in the I-80/I-680/SR-12 Interchange complex and the actual construction of Express Lanes is proposed for regional funding in Plan Bay Area. The remaining portions of the network are from Vacaville to the Yolo County line, through the City of Vallejo, and along the length of I-680 in Solano County. MTC has indicated that the project will be included in Plan Bay Area, but currently no additional funding for project implementation has been approved.

- Seek consistent width to avoid congestion caused by reduction in number of lanes. **Preliminary Proposal**. This goal is a direct response to comments received during the public outreach performed by STA in May – October of 2015 and to observations included in the Arterials, Highways and Freeways State of the System report. Most of the significant areas of recurring delay on the interstate freeway and the state highway system are found where the number of lanes is reduced. One major drop lane location is along Eastbound I-80 at Air Base Pkwy. This drop lane will be removed one the I-80 Express Lanes are constructed past I-505. This project will reduce the congestion caused by the drop lanes at this location.

- Implement Complete Streets appropriate to the context of the roadway. This goal has seen **Significant Progress in terms of Policy**. Most Solano jurisdictions have complete streets Incorporated into their General Plan, Zoning Ordinance, or have a resolution committing to complete streets implementation. This means new development proposals have the opportunity to fully incorporate complete streets standards. ~~However~~, No jurisdiction in Solano County has chosen to adopt a Complete Streets Plan that designates specific streets that will require which facilities in order to implement the ideals of complete streets. Implementing this goal will be an on-going activity for the County.
  Preliminary Proposal in terms of implementation. Complete Streets features have been incorporated into the construction of roadways such as Military West, Wilson Avenue, Suisun Parkway and Jepson Parkway. Most Routes of Regional Significance were constructed before Complete Street became a requirement, and require some sort of retrofit to properly accommodate all forms of transportation. Jurisdictions have typically not updated their standard specifications to include a complete streets standards.

- Improve system efficiency through technology prior to adding lanes. **Significant Progress**. In 2010 the STA adopted the Solano Highways Operations Plan. This Plan identified ITS strategies to improve operations along the I-80 corridor through lower cost capital investments.

Implementation of the Plan has been on-going through the investments of Ramp Metering from Fairfield through Vacaville. Further, pavement detection loops along I-80 were installed as part of the major roadway rehabilitation work that was completed. Recently MTC is developing a Managed Lanes Implementation Plan (MLIP) that will link transit through the corridor to increase through put.

- Identify and preserve needed rights of way for future transportation projects. **Significant Progress for four projects**. Right-of-Way has been identified and/or set aside for the Jepson Parkway, North Connector, Vaca Valley Parkway and I-80/I-680/SR-12 projects.

  Preliminary Proposal for other projects. Even though this is a Goal in the adopted Solano CTP – Arterials, Highways and Freeways element, no specific steps have been taken to implement this Goal for projects aside from those listed above. ~~However, the I-80/I-680/SR-12 Interchange environmental Document has been completed, that can serve as the basis for land development restrictions within the identified foot print of the project~~.

- Prepare and periodically update corridor studies to identify and prioritize specific projects. This goal has seen **Significant Progress.** Corridor plans have been completed for I-80, -680 and -780: SRs 12 and 113; and some corridor planning work has been done for SR 29. Planning work is underway for SR 37. The only major roadway lacking recent corridor planning is I-505, and the conditions and volumes on I-505 place this route on a low priority for a corridor study; the existing Caltrans Interstate 505 Corridor Plan is sufficient at this time. Similarly, roadways such as SRs 84, 128 and 220 are adequately covered by Caltrans documents, and do not require additional work by STA. A schedule or set of conditions to trigger updates of these plans has not been developed. Staff is recommending that each corridor plan be reviewed for minor updates every five years to update traffic volumes and the status of implementation with a more detailed update every ten years.

Improve system safety

- Identify locations on local arterial streets with above-average number or rates of collisions, and fund improvements to reduce collisions to average. This goal has seen **Significant Progress.** The STA adopted a Solano Travel Safety Plan in January of 2016; this was an update to the 2005 Solano Travel Safety Plan. Forty-five projects identified in the 2015 plan have been completed. Recent corridor studies, such as the SR 12 multi-jurisdictional study, have gathered and analyzed safety and accident data. However, there is not a standard format for gathering and analyzing such data, and not all corridor plans of other studies have up-to-date safety information. In addition, STA will continue to work with Caltrans to identify and address portions of the freeway and highway system with above-average collision rates or conditions that can increase the likelihood of severe or frequent collisions.

Maintain the system at an appropriate level

- Seek to fund an average PCI rating of all RORS as 75, with no RORS being rated below 60. This goal has seen **Significant Progress in terms of policy and focus**. The adopted 2005 Solano CTP – Arterials, Highways and Freeways element does not have a PCI Goal. MTC's 2013 Plan Bay

Area has a PCI goal of 75. The Solano County Pothole Report, first adopted in 2014, also contains information on the PCI of local roadways and the funds needed to maintain or improve that PCI, but does not call out the PCI of the RORS.

This is a **Preliminary Proposal in terms of implementation**. Establishing a target PCI is only a first step. The next task is to identify those roadways that fall below the target PCI. The 2014 Solano pothole report, which is based the identification of each segment using Street Saver Software.

The 2014 Solano pothole report also identifies the trend in PCI over the last five years. Those communities building new roadways have seen an increase or steady PCI. Those strictly seeking to maintain existing roadways, without the new roadways associated with new construction, have seen their PCI decrease. PCI decreases can be largely attributable to a substantial reduction in state gas tax revenues provided to the cities and county needed to achieve the PCI targets established in the Solano CTP. Information in the 2014 pothole report shows that, at the current funding levels, the existing PCI for local streets and roads and arterials cannot be maintained. The Solano Pothole Report shows an annual shortfall of $24 million dollars per year simply to maintain current PCI of 65.

In order to improve the PCI and eventually gain the target of 75, an additional $50 million per year in new revenue for local streets and roads maintenance would be required.

- Work with Caltrans to ensure that a similar standard is maintained on the State system. This goal has seen **Significant Progress in terms of Policy and Implementation**. Caltrans rates pavement by visual inspection of the pavement surface and use lasers mounted on a Caltrans vehicle to collect the International Roughness Index (IRI) data, and has set a target of an IRI of 170 inches or less per mile.

  Funding for maintenance of the state highway system is done throughout the SHOPP. While the SHOPP faces a situation similar to local roads maintenance; namely, lack of funding. Caltrans does not currently have adequate funding to maintain the entire state freeway and highway system at the desired level. Solano County has however, had recent significant SHOPP investment along I-80, and I-680, and SR 12 in recent years.

Support the creation of Solano County jobs and other locally-decided land uses

- Identify roadway improvements that improve goods movement or reduce the impact of goods movement in Solano County. **Preliminary Proposal**. Both MTC and the Alameda County CMA have completed Goods Movement plans, and there are freight plans at state and federal levels as well. These plans cover the gamut of goods movement modes – road, rail, port and air. All four of these modes are present in Solano County. At every level of goods movement planning (Federal, State and Regional), the I-80 / I-680 / SR-12 interchange is identified as a key facility. In addition, the I-80 Cordelia Truck Scales are also key goods movement facilities. The Westbound Truck facility need to be replaced and has been identified as a project in MTC's Regional Goods Movement Plan. The I-80 corridor is identified in the National Freight Plan and the SR 12 corridor is recognized as a Goods Movement corridor along with I-80 in the State Freight Plan.

While STA has identified individual projects that are important to local and regional goods movement, it has not undertaken a comprehensive study to identify these facilities in a single document. An initial list of goods movement priorities will be included as part of the CTP.

- Identify roadway improvements that support retention or expansion of regionally important employment centers, retail centers and civic facilities. This goal has seen **Significant Progress**. STA has identified regionally significant employment centers, and designated the major roads that serve them as Routes of Regional Significance. STA has not identified those improvements to the roadways that are needed to support each center's continued economic viability. This task will be undertaken has part of the Solano County's Moving Solano Forward (MSF) Phase 2 effort. . MSF is a multi-agency effort to identify and find users for major industrial sites in Solano County while still keeping existing employers in the county.

- Prioritize available funds to support PDAs and PCAs, with special emphasis being given to support for Transit Facilities of Regional Significance. This goal has seen **Significant Progress**. STA has assisted local agencies in funding road and transit projects in PDAs in each of the seven Solano cities, and has designated PCA funding (both planning and project construction) in Solano County. The requirements of the OBAG 2 funding program require that at least 50% of those funds be spent on projects located in or directly supporting PDAs. In addition, the STA Board has approved a list of priority Managed Lanes Implementation Program (MLIP) facilities. These facilities include express Lanes that directly support carpool, vanpool and express bus services. Large facilities such as the Curtola Park and Ride and Fairfield Transportation Center expansions and upgrades, which serve both carpool and express bus services, are located in or directly adjacent to the PDAs.
    - All TFORS are in or adjacent to PDAs

Anticipate and mitigate system construction and operation impacts

- Special emphasis should be given to projects and designs that reduce emissions of criteria pollutants and greenhouse gasses. **Preliminary Proposal**. Analysis of GHG emissions occurs during the environmental phase of a project, but so far has not been an explicit quantative criteria in the early prioritization and selection of projects or programs. New state requirements require projects to use Vehicle Miles Traveled (VMT) as a measure of assessing a project's traffic impacts, rather than the traditional Level of Service (LoS). This change will how project GHG emissions are calculated at an early stage in the project's development, and may serve as an effective tool to implement this policy. STA can use the VMT or other Best Available Technology to assess GHG emissions and reduction strategies.

  STA has elected to focus funds for recapitalization of express buses on alternative fuel vehicles to meet federal and state low and zero emission requirements. STA has also adopted an Alternative Fuels plan and sought Cap and Trade funds for projects to reduce GHG emissions.

    - Support projects that reduce emissions of criteria pollutants in sensitive communities or Communities of Concern. **Preliminary Proposal**. STA has not done a statistical or

mapping project to identify projects with Communities of Concern.

- Where possible, use the avoidance and mitigation standards from the Solano Habitat Conservation Plan for STA transportation projects. **Preliminary Proposal**. The Solano HCP has not yet been adopted nor is the STA a signature to the HCP. STA regularly mitigates projects in accordance with the draft HCP's mitigation ratios.

CHAPTER 6 – Arterials, Highways and Freeways Element Resources

Roads of all types are expensive to build. Once they are built, they are also expensive to operate and maintain, although how they are built has a significant impact on their long-term maintenance costs. The purpose of this Chapter of the Solano CTP Arterials, Highways and Freeways element is to:

- look at the financial resources STA has received since 2010 to pay for road construction, operations and maintenance;
- look at the anticipated revenue over the next 5 years to pay for road construction, operations and maintenance; and,
- project the difference between anticipated revenues and needs.

It is important at this point to remember that the Element focuses on Routes of Regional Significance – those roadways that connect the communities of Solano County to each other and to the broader region, and within Solano County to downtowns, transit centers and major employment centers. Many local roadways, such as collector streets in a residential subdivision, are built and maintained solely with local resources.

What is a Roadway?

When people talk about roads, they most typically think of the surface upon which they drive. Actual roadways are much more than this. The right of way – the land on which the roadway is located – extends out beyond the pavement area. Right-of-way can include landscaping, control boxes for traffic lights, street lights and, in some cases, the edge of the right-of-way is demarcated by a fence or soundwall. Beneath the pavement is found sand, gravel and rock that acts as the base for the roadbed. Also under the roadway are facilities to collect and carry away stormwater and utilities such as water and wastewater lines, and conduits for power, phone and internet cables. Adjacent to almost all arterial roadways, and some state highways, are curbs and in most cases sidewalks.

Building or expanding a roadway network is expensive. The actual construction of the driving surface is only part of the story. The need for and general location of a roadway must be established in a document such as a city General Plan or an STA or Caltrans corridor study. Environmental impacts of the project must be assessed, and any negative impacts either avoided or mitigated. The land on which the roadway is built must be acquired. The project must be designed by registered engineers. Only when all these steps have been completed can the roadway be built.

Depending upon the size of the roadway project, it can take several years to complete. The longer the roadway, or the more major structures such as bridges that are involved, the longer the construction time. The amount of time it takes to build a project is often delayed by conditions such as winter weather and the need to avoid environmentally sensitive areas during some

portions of the year or the breeding and nesting season for sensitive bird species living in the project area.

Roadway Construction – Past Revenue

It is rare for a roadway project to be built with money from a single fund source because of how extensive the projects are. Rarely can a single source cover all of a project's costs. Because of this, nearly every road is built with money that comes from multiple sources, whether they be Federal, state, regional or local.

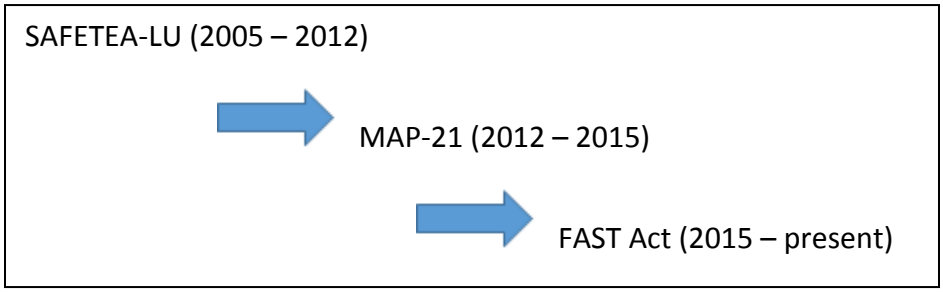
So, if the roadways that are the skeleton of the transportation system, connecting everything to everything else, are expensive and time consuming to build, what are the financial resources that are available to build (and maintain) them?

Federal

Federal transportation funds come from a tax on gasoline sales. The Federal gasoline tax has been fixed at $0.184 per gallon since 1994. One result of this has been a reduction in the purchasing power of this tax by some 40% due to inflation. Because of the Federal government's ability to shift money between funds and to run a deficit, it is difficult to say that the only source of Federal transportation funds is the Federal gasoline tax. Some of it is also from deficit borrowing, which is a tool unavailable to state and local jurisdictions. In the most recent Federal transportation bill, the $305 billion in authorized funds included $140 billion in general federal revenues.

Federal funding for transportation projects is determined by legislation approved and periodically renewed by Congress. Federal transportation funding was guided by what was known as SAFETEA-LU (Safe, Accountable, Efficient Transportation Equity Act: A Legacy for Users) from 2005 until September 2012. SAFETEA-LU was originally intended to guide transportation funding for four years but was repeatedly extended. SAFETEA-LU continued some longstanding funding programs and created some new ones.

In 2012, a new two-year transportation bill was approved, known as Moving Ahead of Progress in the 21st Century, or MAP-21. Subsequent to MAP-21's original expiration date of September 30, 2014, Congress enacted short-term extensions through the end of October 2015. In December 2015, a new five-year transportation funding bill was approved and became known as the FAST (Fixing America's Surface Transportation) Act. The FAST Act is the current Federal transportation bill.



Federal funds come in one of two ways. First of all, "formula funds" are distributed from the Federal government to states and, from there, to large metropolitan regions. In the Bay Area, the recipient of Federal formula funds is the Metropolitan Transportation Commission.

The second way that Federal funds are distributed is through competitive grant programs. These include the Transportation Investment Generating Economic Recovery (TIGER) and Fixing America's Surface Transportation Long-term Achievement of National Efficiencies (FAST LANE) grants, both of which are explained below and have been the subject of Solano county applications. In 2010, the old system of congressional earmarks, where members of the House and Senate could assign funds to priority projects in their districts, was discontinued.

When MTC receives federal formula funds, they first take a portion of them for regional programs, such as MTC planning activities and support of future programs addressing climate change. MTC usually claims about 60% of these funds. The remaining funds are distributed to the CMAs based upon a formula adopted by MTC. In previous years, the MTC formula was based upon roadway factors such as the total lane miles and the maintenance backlog in each county. Starting with the OneBayArea Grant (OBAG) cycle 1 in 2012, MTC changed the basis of the formula to population and housing, in order to better reflect the priorities found in one of the state's signature climate change bills, known as SB 375.

MTCs federal funds distribution formula for 2017's OBAG 2 is based 50% on current population, 30 % on actual housing production from 1999 to 2014, and 20% on the Regional Housing Needs Allocation from 1999 to 2014. Within the two housing allocations, extra weight is given to the production or commitment to produce affordable housing.

Federal formula funds have been generally split into two categories over the time period covered by this Element, along with several smaller funding categories that have been changed. The current split of Federal surface transportation funding is expected to continue at least until the expiration of FAST Act in 2020. The categories of Federal transportation funding are:

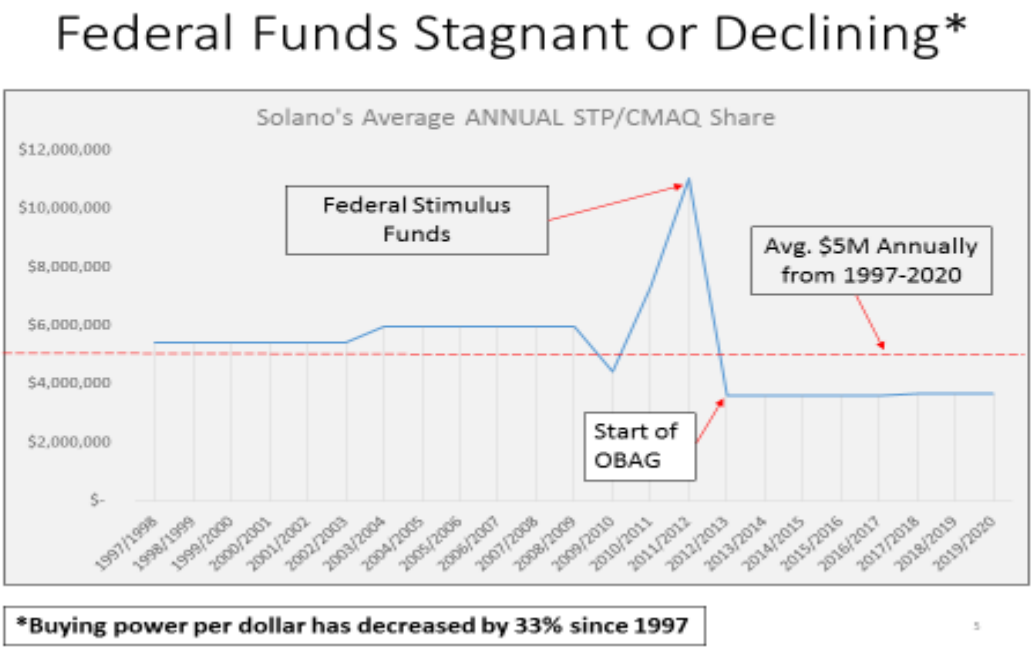
- Surface Transportation Block Grant Program (STBG) – formerly the Surface Transportation Program or STP. STBG funds can be used for a broad variety of purposes, including adding capacity to roadways, roadway maintenance and repair, safety projects and transportation planning.
- Congestion Mitigation and Air Quality (CMAQ). CMAQ funds must be used for projects that reduce congestion or improve air quality. The sorts of projects that qualify for CMAQ include active transportation (bike lanes are an example), programs that promote and support transit use, pilot transit programs and zero emission vehicle support.
- Transportation Enhancement (TE). This fund category was discontinued when MAP 21 was passed, but was previously used for roadway enhancements such as lighting and landscaping.

The FAST Act contains the following competitive grant programs that are applicable to Solano county projects:

- FAST LANE funds specifically designed to support the interstate movement of cargo. The FAST Act authorizes $800 million in funding for the FASTLANE program for fiscal year 2016, with 25 percent reserved for rural projects, and 10 percent for smaller projects.
- The TIGER grant program is another Federal transportation grant program that is designed to "support innovative projects, including multi-modal and multi-jurisdictional projects, which are difficult to fund through traditional federal programs."

The American Recovery and Reinvestment (ARRA) of 2009 augmented funds available to STA member agencies for roadway construction and maintenance. Maintenance funds will be discussed later on in this chapter. ARRA provided $31.2 million over a three year period to fund ready-to-build construction projects in Solano County.

Federal funds for road construction and maintenance have been stagnant for the last decade; when inflation is factored in, the actual purchasing power of those funds has been in decline. This is illustrated by the following figure.



The table below shows federal funds provided to Solano County since 2010 for roadway construction.

Table 1: Federal Construction Funds FY 2009-10 to FY 2015-16

Actual (in $1,000s)							
SOURCE – Federal	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
STP	$3,835	$2,650	$8,651	$2,120	$4,982	$1,717	$784
CMAQ	$580	$4,658	$2,365	$1,875	$3,270	$908	$1,260
TE	$400	$77	-	$1,141	-	-	-
Earmark	$2,452	$895	$880	$1,030	$907	$5,302	$2,020
ARRA	$10,431	$10,431	$10,431	-	-	-	-
TOTAL	**$17,698**	**$18,711**	**$22,327**	**$6,166**	**$9,159**	**$7,927**	**$4,064**

The average over this 7 year period is $12.3 million per year, but the large addition provided by the ARRA in the 2009-2012 time period distorts this amount.

State

State transportation funds come from two primary sources: on-going fuel taxes and periodic state bond measures.

Fuel Tax

California's fuel tax system is complex. Originally, there were two taxes on gasoline and an excise tax on diesel fuel. The gasoline taxes consisted of the general sales tax applied to all purchases in the state, and a specific tax on gasoline sales. The state sales tax on gasoline has been 2.25% since mid-2010, and the fuel excise tax has been in the range of $0.36 to $0.278. The tax rates are shown in the following table:

Table 3: State Fuel Tax Rates (Fiscal years 2010-11 through 2016-17)

Fiscal Year	Base Tax	Price-Based Tax	Total Gas Tax Rate
2010-2011	$0.18	$0.17	$0.35
2011-12	$0.18	$0.18	$0.36
2012-13	$0.18	$0.18	$0.36
2013-14	$0.18	$0.22	$0.40
2014-15	$0.18	$0.18	$0.36
2015-16	$0.18	$0.12	$0.30
2016-17	$0.18	$0.10	$0.28

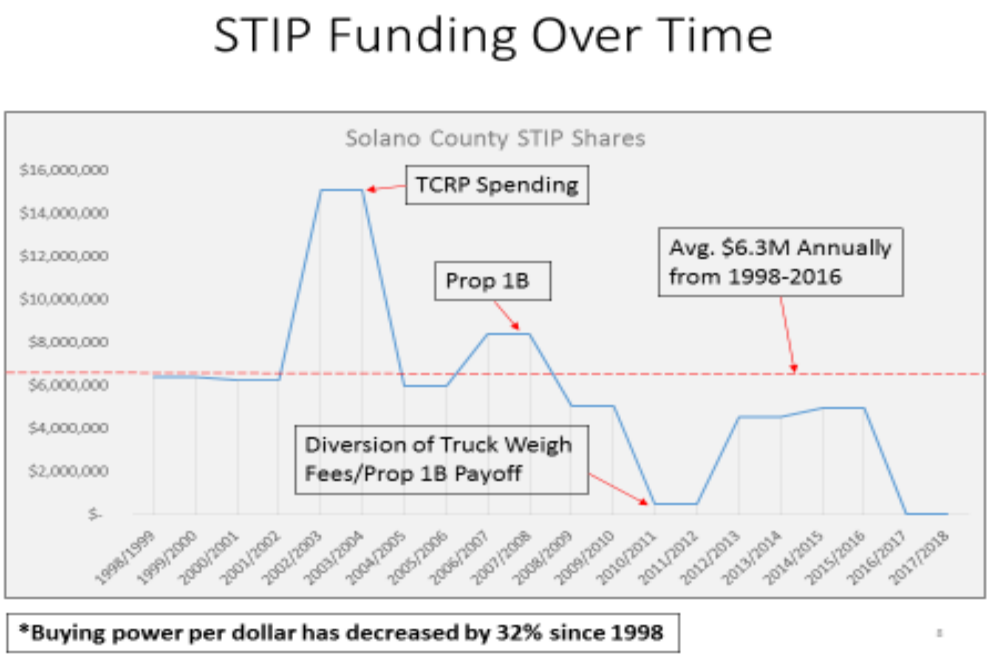
The table above lists an excise tax rate. In the California system, this is not a traditional excise tax. Instead it is an estimation of what the sales tax would be if the state legislature have not shifted the gasoline sales tax calculation and terminology in 2010.

The state also charges an excise tax on motor vehicle fuel at a rate of $0.18 per gallon.

State gas tax funds are distributed directly to local agencies, and do not go through regional agencies such as MTC or STA. These funds are primarily used for local streets and roads maintenance, but can also be used for new roadway capacity.

Gas tax funds that are collected at the state level are put into the State Transportation Improvement Program (STIP) and the State Highway Operation and Preservation Programs (SHOPP) accounts. SHOPP projects are for operation and maintenance projects focused on state highway system prioritized by Caltrans, and are addressed in that section of this Chapter. The STIP account is the primary state funding source for the construction of new capacity in California, and is programmed by regional agencies and the California Transportation Commission.

As with federal funds, the funds from the STIP for Solano projects have been decreasing, as shown in the following figure.



Highway Safety Improvement Program (HSIP)

The HSIP is a program created under MAP 21, but administered by the state. The purpose of HSIP is "for the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads". HSIP projects must be identified on the basis of crash experience, crash potential, crash rate, or other data-supported means. For the time period of FY 2009-10 through FY 2015-16, Solano cities have been awarded $6.14 million in HSIP funds. $2.6 million of those funds have been obligated to projects, with the remaining scheduled for obligation and construction in FY 16-17 and FY 17-18.

Highway Bridge Program (HBP)

The purpose of the federal HBP is to "replace or rehabilitate *public highway* bridges over waterways, other topographical barriers, other highways, or railroads when the State and the Federal Highway Administration determine that a bridge is significantly important and is unsafe because of structural deficiencies, physical deterioration, or functional obsolescence." As with HSIP, it is administered on a competitive basis by the state. The County of Solano has aggressively pursued HBP funds, and $37.5 million has been received since the time period of FY 2009-10 through FY 2015-16.

Bonds

State bonds are debt instruments sold on the open market in order to generate a large amount of funds at a single time. The bonds (principle and interest) are then repaid over time with funds generated from the state property tax. Other fund sources, such as fuel taxes or road tolls, can also serve as the basis for bond repayment funds. Bond sales to either have specific expenditure plans and listed projects, or guidelines for what sort of projects can be funded.

Within the last decade, there has only been one California transportation bond – Proposition 1B, approved by California voters in November of 2006. Proposition 1B was designed to finance a major transportation infrastructure program in California. Project selection was done by the California Transportation Commission, based upon criteria that were included in the bond package approved by voters. In Solano County, Proposition 1B funds were used to fund the Jameson Canyon (SR 12) widening, the Eastbound Truck Scales on I-80 and several projects that are part of the I-80/I-680/SR-12 interchange (I-80 HOV lanes, North Connector and construction package 1 of the Interchange) as well as transit operations support.

The table below shows state funds provided to Solano County since 2010 for roadway construction.

Table 4: State Funding for Construction

Actual (in $1,000s)							
	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
Prop 1B	$4,998	-	-	$309	-	$15,500	$12,259
Gas Tax	-	-	-	-	-	-	-
STIP	-	-	$3,800	-	$13,874	$4,400	$23,800
HSIP	-	-	-	-	$220	$47	$2,387
HBP	$330	$200	$3,680	$17,338	-	$11,285	$4,615
TOTAL	**$5,328**	**$200**	**$7,480**	**$17,647**	**$14,094**	**$31,618**	**$42,670**

Regional Funding

Regional funds for roadway construction come from bridge toll funds, referred to as Regional Measure 2 (RM 2) and RM 3 approved by Bay Area voters (the latter also referred to as

AB1171-AB144 funds), which are limited to projects that reduce traffic on one of the Bay Area toll bridges. The sorts of projects that qualify for these funds include express lane improvements and local roadways that improve access for Express buses from a local transit center to the freeway system.

The table below shows regional funds provided to Solano County since 2010 for roadway construction. It is important to note the capital program from RM 2 was for 10 years and began to conclude in FY 2015-16.

Table 6: Regional Funding for Construction

Actual (in $1,000)							
	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
	$47,619	$46,775	$10,708	$23,403	$22,645	$18,591	$10,950
	-	**-**	$7,000	$36,863	$29,276	$34,039	**-**
TOTAL	**$47,619**	**$46,775**	**$17,708**	**$60,266**	**$51,921**	**$52,630**	**$10,950**

Local Funding

There are several local sources of construction money for roadways. The most substantial source of funds for local roadway construction are development impact fees. Impact fees are collected at the time building permits are issued, and they are intended to pay some or all of the costs of improvements needed to offset the traffic impact of new development. Each city, and the county, establishes its own impact fee using what is known as an AB 1600 process. Impact fees can also be covered by a developer installing a new roadway themselves. Impact fees are usually spent on local roadways and occasionally paid to Caltrans for improvement on the state highway system.

Sometimes, because of the size and nature of the project, its transportation impacts are not fully covered by collection of impact fees. In these cases, the impact is usually identified in the project's environmental documentation. At this time, a mitigation measure can be identified and required as a condition of the project's approval. While this process is different from the collection of impact fees, the practical result is the same – a developer-funded or -built new roadway.

In 2013, Solano County began collecting a Regional Transportation Impact Fee (RTIF), as part of the County's Public Facility Fee, to help cover some of the costs of projects that benefit multiple jurisdictions. The RTIF is administered by STA. Since its inception in 2013 (FY 2013-14), the RTIF has collected $3 million; 91% of these fees have already been allocated to project design and construction.

Finally, 7 of the 8 jurisdictions in Solano County have locally approved sales tax measures. While these measures are all general fund measures, allowing the city to spend the money as the

City Council sees fit, local streets and roads are typically identified as one of the local priorities for the local sales tax measure.

Local sales tax funds spent on roadway construction may be on strictly local streets or on Routes of Regional Significance, so they are not reported below.

The Whole Funding Picture

Based the tables and figures above, the table below show overall construction funding for Routes of Regional Significance in Solano County from FY 2009-10 through FY 2015-16.

Table 8: Total Construction Funding FY 209-10 through FY 2015-16

Actual (in $1,000s)							
	2009-10	**2010-11**	**201112**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
Federal	$17,698	$18,711	$22,327	$6,166	$9,159	$7,927	$4,064
State	$5,328	$200	$7,480	$17,647	$14,094	$31,232	$43,061
Regional	$47,619	$46,775	$17,708	$60,266	$51,921	$52,630	$10,950
RTIF	0	0	0	0	$383	$1,374	$1,287
TOTAL	**$70,645**	**$65,686**	**$47,515**	**$84,079**	**$75,557**	**$93,163**	**$59,362**

Conclusions – Construction Funding

There are few roadway projects that can be constructed with a single fund source, and those projects that can be are typically smaller, local-serving roads. The Routes of Regional Significance that connect the communities of Solano County, and that connect Solano to the broader Northern California region, are by definition multi-jurisdiction and almost always multi-fund-source projects.

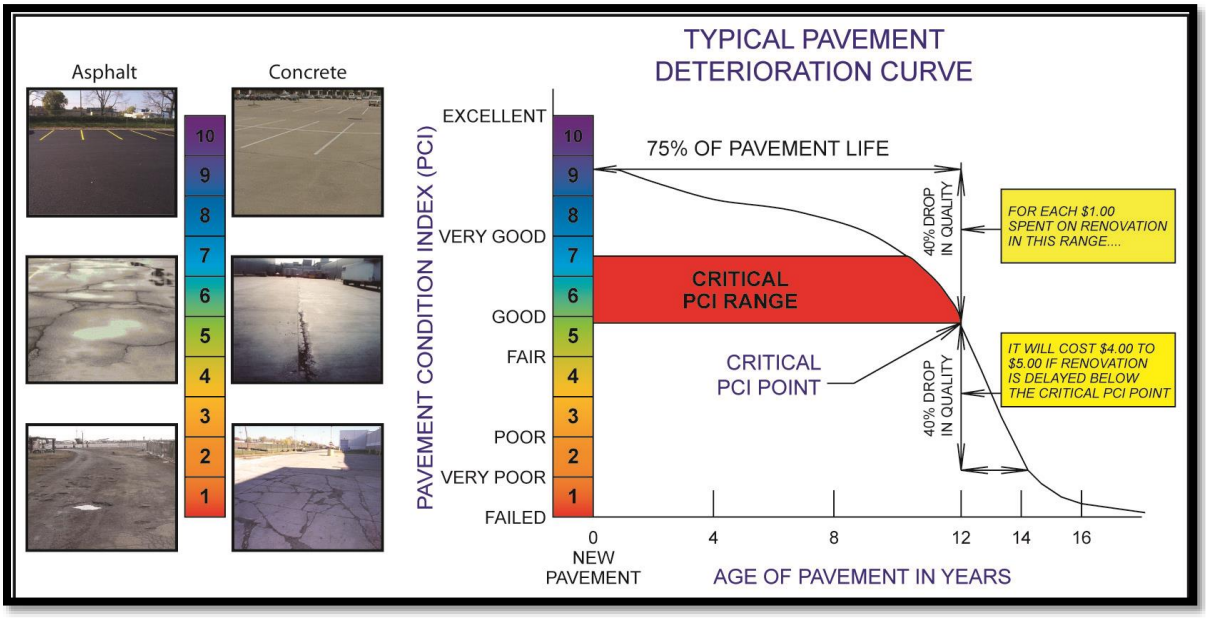
That broad range of funding needs is matched by the broad range of funding sources, and that is a source of difficulty for delivering projects. Federal, state and regional funding providers want to see funds spent quickly, while multi-sourced projects take time to assemble funding packages (much less obtain project permits). Local funds, which can be spent with fewer of the procedural restrictions than those funds from other sources, are often the best way to get a project "shovel ready." Shovel ready projects are those that have all environmental, right-of-way and design work completed, and need only adequate funding to be ready for shovels to begin moving dirt (i.e. construction started). The lack of a dedicated countywide transportation fund source makes construction of major roads in Solano County much more difficult.

Roadway Maintenance– Past Revenue

Building or expanding a roadway network is expensive. Once it is built, the maintenance expenses kick in. Depending upon the type of construction and the volume and nature (proportion of cars, buses and trucks) of the traffic, the early maintenance can range from cleaning and keeping gutters clean to patching cracks and dealing with subsidence.

In general, one of the most significant factors in a road's maintenance needs is simply its age. Pavement dries and it cracks, it bears loads unevenly, water seeps in and washes away the underlying sand and rock, leading to more cracking that allows in more water – all things that lead to the accelerating deterioration of a road. The wet winter of 2016-17 has been a reminder that sometimes non-scheduled maintenance and repair of roadways is needed due to extreme events such as flooding.

The condition of a road is measured by the Pavement Condition Index (PCI), as explained earlier in the State of the System chapter. The chart below shows how the cost to maintain a road goes up over time.



Unlike construction funding, maintenance resources do not come from a large variety of sources. Instead, there are two primary sources of maintenance funding: gas tax funds returned to the local community, and locally-adopted sales taxes. State gas tax revenues are reported below by calendar year rather than fiscal year.

Table 10: State Gas Tax Funds for Solano Road Operations and Maintenance

Actual (in $1,000)						
2010	2011	2012	2013	2014	2015	2016
$13,751	$19,781	$22,074	$18,981	$ 23,980	$23,507	$17,333

In addition to the yearly sales tax receipts, there were two one-time infusions of money for roadway maintenance since 2010: The American Recovery and Reinvestment Act of 2009 (ARRA), which provided money in 2010, and the One Bay Area Grant (OBAG) funds from the 2013 Regional Transportation Plan (RTP).

As noted above, the American Recovery and Reinvestment (ARRA) of 2009 augmented funds available to Solano County's seven cities and the County for roadway construction and maintenance. ARRA provided $31.2 million over a three year period to fund ready-to-build construction and rehabilitation projects in Solano County.

OBAG is a block grant program administered by MTC, and includes CMAQ and STBG funds. During the time period of FY 2011-12 through FY 2016-17, STA allocated $5,863,000 of federal STBG funds for local streets and roads maintenance. The funds were spent on the following projects:

Table 11: OBAG 1 Local Streets and Roads Projects

Agency	Project	OBAG Funds	Total Cost	Amount of Miles Reconstructed/Overlay/ Sealed
Benicia	East 2nd St	$495,000	$495,000	1.94 Miles Sealed
Dixon	West A St	$584,000	$659,663	.95 Miles Overlay
Fairfield	Beck Ave	$1,424,000	$1,800,000	.6 Miles Overlay
Suisun City	Walters Rd and Pintail Dr	$356,000	$402,123	.66 Miles Overlay
Vacaville	2014 Pavement Resurfacing	$1,231,000	$1,525,000	6.2 Miles Resurfaced
Vallejo	Georgia St from Santa Clara to Sacramento	$384,000	$2,556,000	0.1 Miles Overlay
Solano County	STP Overlay 2013	$1,389,000	$1,654,600	14.3 Miles Sealed/Overlay
Total		**$5,863,000**	**$9,092,386**	**24.8 Miles Sealed/Overlay**

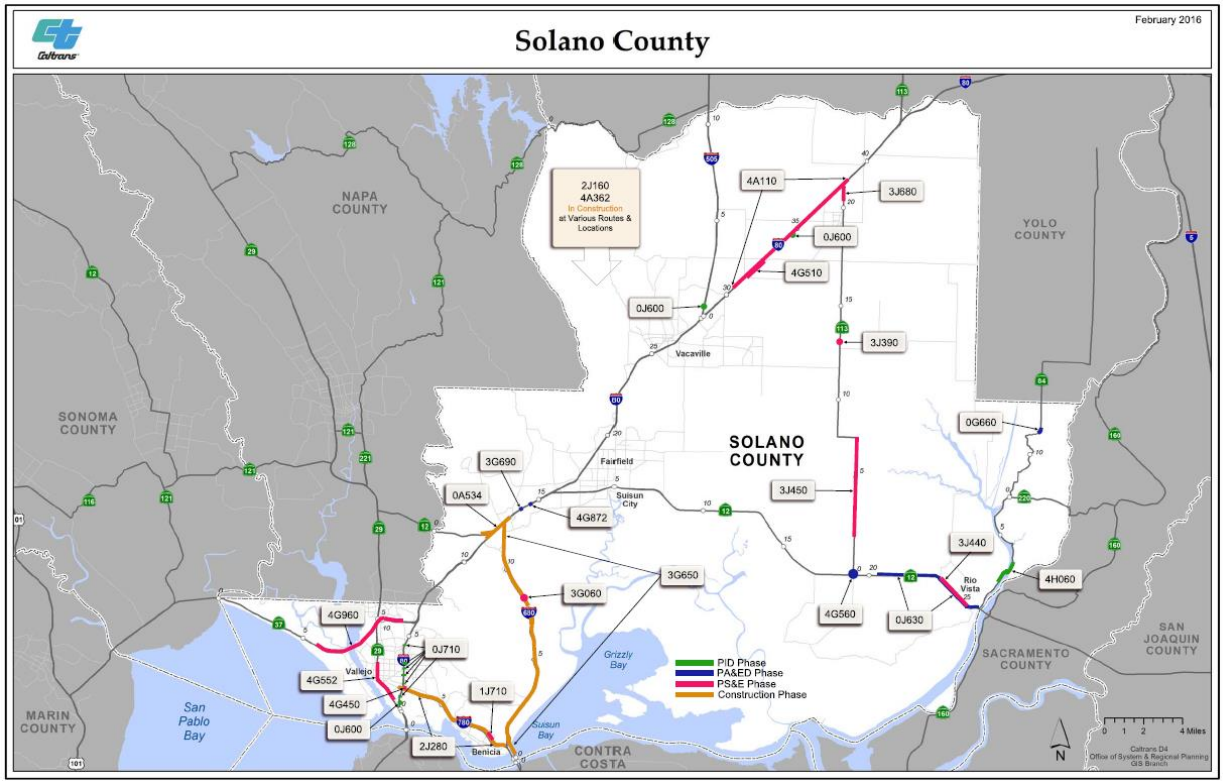
Local sales tax funds spent on roadway maintenance may be on strictly local streets or on Routes of Regional Significance, so they are not reported below.

Improvements to the freeways and highway comes from the SHOPP account. SHOPP projects range from repaving and other typical maintenance to new shoulders and turn lanes that improve operations but do not add to roadway capacity. The recent history of SHOPP funding in Solano County is shown in the table below and the two maps on the next page.

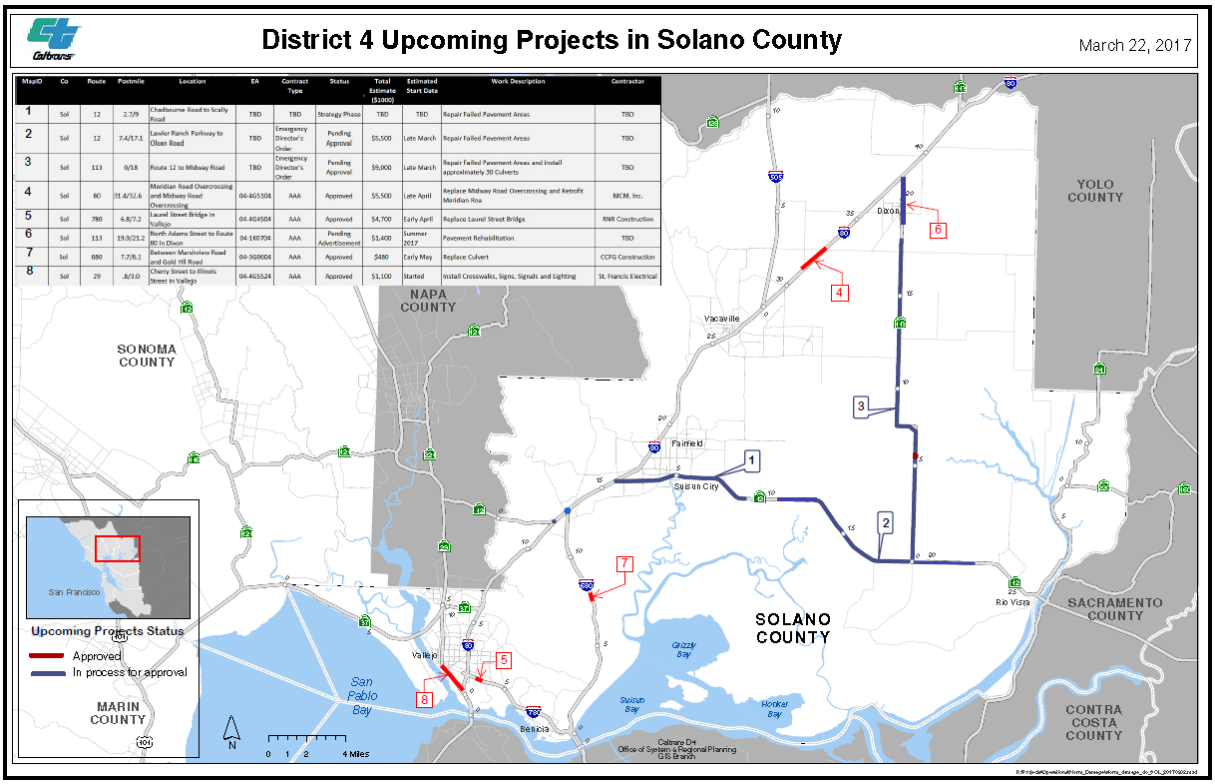
Table 12: SHOPP Funds

Actual (in $1,000s)							
	2009-10	2010-11	201112	2012-13	2013-14	2014-15	2015-16
SHOPP	$4,400	$689	$1,550	$80,345	$36,516	$2,201	$25,797

SHOPP Projects as of 2016.



SHOPP Projects including 2016-2017 storm damage repair.



Taken together, the gas tax, SHOPP and OBAG 1 funds for the last seven fiscal total:

Table 13: Total Operation and Maintenance Funds

Actual (in $1,000s)							
	2009-10	**2010-11**	**201112**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
Gas Tax	$13,751	$19,781	$22,074	$18,981	$ 23,980	$23,507	$17,333
SHOPP	$4,400	$689	$1,550	$80,345	$36,516	$2,201	$25,797
OBAG 1	$977	$977	$977	$977	$977	$977	$977
TOTAL	**$19,128**	**$21,447**	**$24,601**	**$100,303**	**$61,473**	**$26,685**	**$44,107**

Future Revenue

Some of the future funding stream for local streets and roads construction and maintenance can be predicted, but much of it cannot. There are few stable funding sources.

One thing that can be predicted about the funding is that, barring a major change, it will not be enough to meet either construction or maintenance needs.

This important point bears repeating. There is not enough funding for new roads to handle existing congestion. There is not enough funding to build new roads to handle expected growth in housing and jobs. There is not enough funding to improve the condition of existing roads to an acceptable PCI, much less properly maintain new roads as they begin to age.

There are several fund sources that have at least some level of predictability. Other are based upon variables such as economic performance, and therefore tax or building permit revenues. As with the Past Revenue section of this chapter, the Future Revenue section will examine construction and maintenance funds separately.

With the approval by the California Legislature of SB-1 on April 6, 2017, the funding picture is somewhat improved. Additional funds will start being collected in the fall of 2017, and likely find their way into regional and local accounts starting in early 2018. The state-wide tax and fee increases that will fund SB-1 are:

- Base excise tax raised by $0.12/gal and tacked to inflation thereafter. (November 1, 2017)
- Excise tax on diesel fuel raised by $0.20/gal. (November 1, 2017)
- Annual vehicle fee ranging from $25 to $175, depending on value of the car. (January 1, 2018)
- Price-based excise tax raised to $.17/gal; currently $.098/gal (July 1, 2019)
- Electric cars pay a $100 fee (January 1, 2020.)

Roadway Construction – Future Revenue

Federal funds

As discussed above under roadway construction, Federal formula funds are split into two categories. The categories of Federal transportation funding are:

- Surface Transportation Block Grant (STBG). STBG funds can be used for a broad variety of purposes, including adding capacity to roadways, roadway maintenance and repair, Safety projects and planning.
- Congestion Mitigation and Air Quality (CMAQ). CMAQ Funds must be used for projects that reduce congestion or improve air quality. The sorts of projects that qualify for CMAQ include active transportation (bike Lanes are an example), Programs that promote and support transit use, pilot transit programs and zero emission vehicle support.

The predictable federal funds come to STA through MTC's OBAG 2 program, which covers FYs 2017-18 through FY 2021-22. During that time period, OBAG 2 will provide $7,397,027 of STBG funds (including $1,500,000 of Federal Air Secondary funding reserved exclusively for projects in the unincorporated County) that can be used for either construction or maintenance of roadways.

Also as discussed above, the FAST Act contains the following competitive grant programs that are applicable to Solano county projects. These are competitive grant programs, and there is no assurance that any projects in Solano County will receive funding.

- FASTLANE. Fixing America's Surface Transportation Long-term Achievement of National Efficiencies (FAST LANE) funds specifically designed to support the interstate movement cargo.
- TIGER. The Transportation Investment Generating Economic Recovery (TIGER) grant program is another Federal transportation grant program that is designed to "supports innovative projects, including multi-modal and multi-jurisdictional projects, which are difficult to fund through traditional federal programs."

There may be other federal grant programs in future years, but the existence, funding and requirements of such programs is dependent upon federal legislative action and administrative rule making. Similarly, the federal fuel tax could be updated (raised and/or indexed) in a manner that would provide supplemental STBG or CMAQ funds. These are not reliably predictable actions.

State funds

Future state revenues have been an unreliable source of future funds. The primary state construction funding mechanism is the STIP, and the maintenance fund is the SHOPP, both discussed above. The source of these funds is state fuel tax/excise tax.

Over the 2010-2016 time period, changes made by the state government made the STIP a much less reliable stream of funding. The reasons for these changes have ranged from a desire to encourage less driving by creating fewer lane miles, to a response to the financial crash of 2008 and the resultant drop in fuel tax revenues, to a desire to pay off state transportation bonds quickly. A specific example of this is the diversion of truck weight fees collected by the state. Previously, these fees had been allocated to the State Highway Fund and used to fund the SHOPP. In 2010, the state shifted these fees to paying off Proposition 1B bond debt. The result has been about $1 billion per year that should be but is not, programmed into the SHOPP.

As a result, prior to the April 2017 approval of SB-1 the identified STIP for allocation to Solano County in FY 2016-17 is $33,197,300 – all of which is already committed to the Jepson Parkway project, which is designed and ready for construction.

With the passage of SB-1, the Solano County STIP share is expected to be restored, at a rate of about $9 million per year, starting in 2018-19.

There are two other state fund sources for future roadway work in Solano County. Funds for both programs are awarded on a competitive basis rather than distributed according to a formula, so they are not reliable revenue sources.

> HSIP – This is as program created under the FAST Act but administered by the state. The purpose of HSIP is "for the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads". HSIP projects must be identified on the basis of crash experience, crash potential, crash rate, or other data-supported means. There are currently two HSIP awards for Solano jurisdictions - $3,269,600 for FY 2016-17, and $1,651,400 for FY 2017-18.
>
> HBP – The purpose of this federal program is to "replace or rehabilitate *public highway* bridges over waterways, other topographical barriers, other highways, or railroads when the State and the Federal Highway Administration determine that a bridge is significantly important and is unsafe because of structural deficiencies, physical deterioration, or functional obsolescence." As with HSIP, it is administered on a competitive basis by the state. The County of Solano has aggressively pursued HBP funds as noted previously, and currently has one HBP award of $3,400,000 for FY 2017-18.

Regional fund sources are all described under the existing revenues section. At this time, STA and its member agencies cannot predict any roadway construction funding from existing regional fund sources for fiscal years 2016-17 and beyond. A new bridge toll program has been discussed, but no legislation to enable such funding has been introduced, and the amount of funds and/or specified projects are also not known.

Local funds for roadway construction are one of the few areas where some level of predictability exists, but dependent upon a factor that is outside of local control: the health of the construction market, which directly translates into collection of the RTIF. Based upon development predictions from the County and seven Cities, STA estimates it will receive $11.7 million during the period of 2017 through 2021.

State gas tax subvention to local governments for maintenance work has been severely reduced in the last few years by legislative action. From FY 09-10 through FY 2014-15, the gas tax receipts to Solano County averaged $20.3 million per year. For FY 2015-16, that amount dropped to $16 million, to $27 million in FY 2015-16, $15.7 million in FY 2016-17, and a projected $13.2 million in FY 2017-18. Since this fund source is dependent upon either legislative action (or inaction) and on the performance of the economy, projecting revenues beyond one to two years is problematic.

Support for SHOPP funds for Solano County projects by the CTC and Caltrans have been positive in recent years. There are two SHOPP allocations for Solano County in future years - $17,300,000 for FY 2017-18, and $29,200,000 for FY 2018-19. However, SHOPP funds are awarded based on project need, and there is a tremendous need across the state for highway and freeway maintenance, even before the damage from the early-2017 storms is accounted for.

With the approval of SB-1, local agencies are expected to see an across-the-board increase in gas tax funds of 94%, starting in FY 18-19. Initial projections show $8.5 million going to Solano County and the remainder distributed to the cities based upon the proposed state formula.

Revenue Gap

There are two types of new road capacity construction needed: new capacity to address existing traffic congestion, and new capacity to handle new development. While both of these have funding gaps, the lack of resources to add capacity for existing traffic is more substantial.

Road capacity to address growth has an identified funding source, even if it is sometimes inadequate. That source is the impact fees collected by local jurisdictions, including the Solano RTIF. In theory, an impact fee can be set to collect 100% of the costs of new capacity needs, although in reality they are often lower.

Local impact fees are traditionally directed towards projects on local roads, and not on the highway and freeway system. Impact fees collected by the cities and the county can be spent on a roadway that is impacted by growth and, in Solano County, this includes Routes of Regional Significance (RORS) identified in this Element as well as strictly local roadways. As a result, it is difficult to know what resources are truly available to address the funding gap for RORS.

Development impact fees can only be used to build capacity that addresses growth. They cannot be used to correct existing capacity deficiencies.

The most common fund source for dealing with existing deficiencies is the STIP, combined with a local sales tax. Solano County is the only Bay Area County without a voter approved local sales tax dedicated to transportation, and with no projected STIP funding. This combination is leading to a large gap between need and capacity to address that need. The provision every five years of Federal STBG funds that can be used for additional capacity provide a small amount of funds for meeting a growing need for local road construction, and STBG funds can be used for either maintenance or new capacity. In addition, MTC rules restrict the ability of STBG funds to be used for new capacity.

The main cause for this gap is a lack of locally-controlled funding source that can be used for projects that address existing capacity shortfalls. Every Bay Area county except for Solano has a countywide sales tax dedicated to transportation improvements. These funds can be used for new capacity, maintenance, transit support and active transportation. The uses depend upon the local measure that is approved by the county voters. Because these are local funds, they cannot be

diverted by the state. In Solano County, this fund source does not exist. Individual cities have locally-approved sales tax measures, but these are multi-purpose measures that also fund law enforcement and fire personnel and road maintenance. New capacity gets few or none of these funds.

A second cause for the lack of new funds for existing shortfalls is the rapidly diminishing STIP. As discussed above, the state has substantially changed the way the STIP is funded and directed. Fewer dollars are coming to Solano County, and there is now more pressure from the CTC to spend those dollars that we do receive on the state highway or interstate freeway system.

Federal rules allow STBG funds to be used to expand capacity that addresses current shortfalls, although MTC regulations disallow this. STBG funds can also be used for local streets and roads maintenance. This makes it a valuable and flexible fund source. Unfortunately, it only comes in small amounts allocated every five years.

There is an additional program that can deal with existing capacity issues. The program is the bridge toll program known as RM 2. This funding source is particularly important for roadway projects that directly support Solano CTP Transit and Rideshare Element projects, such as arterial roadways that connect transit centers to the freeway system and the extension of regional express lanes.

Finally, there are Federal grant programs such as the FAST LANE and TIGER programs, and state and federal goods movement grant programs, that can provide funds for new capacity. As has been discussed earlier in this chapter, those are highly competitive – and therefore unreliable – fund sources.

What then are reasonable expectations of funding in comparison to the expected demand for funds over the next five years?

Construction Funds

Projecting roadway construction funding is challenging. There are a variety of sources, and their funding amount is unpredictable. State and federal sources have been subject to legislative action or inaction that makes them difficult to rely upon, although the passage of SB-1 gives hope that this may be changing. Aside from FY 2018-19, there is now the prospect of $9 million per year in STIP funding for Solano County. In the case of OBAG funds, they are further subject to state and local restrictions, amount to only $4.6 million (for CMAQ), and come around only on a 5-year cycle. Regional funds have been useful but are nearing the end of their expenditure plans, and new funds are not guaranteed. Local funds are limited to the RTIF, which can be used only on growth-related facilities.

There are some trends that can reasonably be expected to continue, including the local success with the HSIP and HBP programs. Given these facts and possibilities, the following tables show reasonably-projected construction funds for the next five years:

Table 12: Projected Federal Funds for Road Construction

FEDERAL FUNDS Projected (in 2017 $1,000)					
SOURCE - Construction	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
STBG	-	-	-	-	-
CMAQ	-	$4,600	-	-	-
TOTAL	**$0**	**$4,600**	**$0**	**$0**	**$0**

Table 13: Projected State Funds for Road Construction

STATE FUNDS Projected (in 2017 $1,000)					
SOURCE - Construction	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
Prop 1B	-	-	-	-	-
Gas Tax	-	-	-	-	-
STIP	-	-	$3,300	$9,000	$9,000
HSIP	$2,533	$200	$863	$400	$2,160
HBP	-	-	-	-	-
TOTAL	**$2,533**	**$200**	**$4,163**	**$9,400**	**$11,160**

Table 14: Projected Regional Funds for Road Construction

REGIONAL FUNDS Projected (in 2017 $1,000)					
SOURCE - Construction	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
RM 2	$0	$0	$0	$0	$0
TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**

Table 15: Projected RTIF Funds for Road Construction

LOCAL FUNDS Projected (in 2017 $1,000)					
SOURCE - Construction	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
RTIF	$1,678	$2,313	$2,642	$2,427	$2,160
TOTAL	**$1,678**	**$2,313**	**$2,642**	**$2,427**	**$2,160**

Table 16: Projected Total Funds for New Capacity Road Construction (best case)

TOTAL FUNDS Projected (in 2017 $1,000)					
	2016-17	**2017-18**	**2018-19**	**2019-20**	**2020-21**
Federal (CMAQ)	$0	$920	$920	$920	$920
State (STIP)	$34,627	$203	$3,296	$400	$400
Regional	$0	$0	$0	$0	$0
Local	$2,068	$2,556	$2,726	$2,127	$2,191
Total	**$36,695**	**$3,679**	**$6,942**	**$3,447**	**$3,511**

This amount totals almost $43.3 million, and could increase, perhaps substantially, if a new bridge toll and/or a federal infrastructure bill that includes transportation infrastructure is approved. Both of the later pieces of possible legislative sources remain, as of early 2017, exactly that – possible. Possible funds don't finance projects. They are also actions that can only be taken by others. They might also have limited direct impacts on Solano County transportation needs. For example, a federal infrastructure bill could emphasize ports, or water treatment facilities, or states other than California.

Maintenance Funds

The ability to maintain what we already have is also drastically underfunded. Using the past five years of funding to predict the next five years for maintenance, and adding $18 million per year for local funds from SB-1, the following are the predicted available maintenance funds in thousands of 2017 dollars. SHOPP funds will increase state-wide, but there is no indication of how much, if any, of that money will come to Solano County.

Table 18: Projected Total Funds for Road Operation and Maintenance

TOTAL FUNDS Projected (in 2017 $1,000)					
	2017	**2018**	**2019**	**2020**	**2021**
Gas Tax	$17,680	$36,033	$36,394	$36,762	$37,137
SHOPP	$26,313	$26,839	$27,376	$27,924	$28,482
OBAG 1	$256	$256	$256	$256	$256
TOTAL	**$44,249**	**$53,128**	**$53,026**	**$53,941**	**$55,875**

As with construction funds, this does not include local agency sales tax funds that may (but not necessarily that must) be used for roadway maintenance, and it does not include any future funds from legislative actions that have not yet been taken. For roadway maintenance, best we can reliably predict over the next 5 years is $260.2 million. Based on figures provided by MTC and contained in the 2014 Solano Pothole Report, countywide local streets and roads face a funding

shortfall over the next 28 years of $1.7 billion to maintain current conditions and $2.7 billion to reach a state of good repair. The revenues and costs over this 28-year period are shown below:

Table 4: Draft 28-Year Plan Bay Area LS&R Needs and Revenues (Millions)

Draft 28-Year Plan Bay Area LS&R Capital Needs and Revenues (In Millions)							
County	Revenues for Capital Pavement Rehab Needs*	Cost to "Maintain Existing PCI" Scenario	Cost to reach a "State of Good Repair, PCI 75"	Shortfall, "Maintain Existing PCI" Scenario	Shortfall, "State of Good Repair, PCI 75" Scenario	Ratio of "Maintain Existing PCI" Cost to Revenues	"State of Good Repair, PCI 75" Cost to Revenues
Solano	**488**	**2,186**	**3,195**	**1,699**	**2,707**	**4.5**	**6.5**
Napa	219	872	1,516	653	1,297	4.0	6.9
Sonoma	994	2,858	5,018	1,863	4,023	2.9	5.0
Marin	393	1,054	1,506	661	852	2.7	3.8
Santa Clara	3,374	8,817	10,894	5,443	7,519	2.6	3.2
Alameda	2,153	5,332	7,798	3,179	5,650	2.5	3.6
San Mateo	1,368	3,317	3,913	1,950	2,471	2.4	2.9
Contra Costa	2,868	4,863	5,786	1,995	2,871	1.7	2.0
San Francisco	2,299	3,263	4,778	965	2,480	1.4	2.1
REGION	14,156	32,563	44,404	18,407	29,869	2.3	3.1
* Revenues include committed sources such as gas taxes, sales taxes, registration fees and other local revenues							

How much of a demand is there over the next five years for $43.3 million of roadway construction money and $260 million of roadway maintenance funds?

In preparing this Element and submitting projects to MTC for the 2017 update of the RTP, the STA developed the list below of major projects on the RORS, and identified the existing gap between project costs and committed funds:

Table 19: Identified Projects on Routes Of Regional Significance

Project	Needed funds (in $1,000)
I-80/I-680/SR12 Interchange Improvements (Packages 2-7), including new connections, ramps and direct-connect Express Lanes	$ 630,000
Construct 4-lane Jepson Parkway from Route 12 to Leisure Town Road at I-80	$84,700
Improve interchanges and widen roadways serving Solano County Fairgrounds, including Redwood Parkway, in Vallejo	$3,000
Parkway Blvd Overcrossing, in Dixon	$10,000
Provide auxiliary lanes on I-80 in eastbound and westbound directions from I-680 to Airbase Parkway	$57,000
Relocate the westbound I-80 Truck Scales	$170,000
Widen Columbus Parkway to a consistent 4-lane width for its entire length, and construct Class I or Class II bike facilities where they do not currently exist.	$2,930

Project	Needed funds (in $1,000)
Reconfigure I-80 Eastbound Off Ramp to West Texas Street and Fairfield Transportation Center. The improvements would provide bus direct access into FTC, eliminate the current free right onto EB West Texas, connect to the Linear Park along the I-80 embankment and provide controlled pedestrian access across West Texas Street	$2,950
Replace the existing SR 12/Beck and SR-12/Pennsylvania at-grade intersections with a new grade-separated interchanges.	$65,000
Improve Fairgrounds Drive and Redwood Parkway, including the Redwood Parkway – I-80 Interchange, from SR 37 to Redwood Parkway.	$121,000
Widen Peabody Road to 2 lanes in each direction, plus a Class 2 bike/ped facility. Project location is from Vacaville City Limits to Fairfield City Limits	$4,500
Intersection and roadway improvements to Midway and Porter roads in unincorporated Solano County in order to improve roadway performance and safety	$600
Widen Vaca Valley Parkway in Vacaville from I-80 to I-505 and improve the Vaca Valley Parkway interchange with I-505.	$22,700
In Rio Vista, improve the SR 12 and Church Road intersection. The project includes shoulder widening and protected turn lanes on SR 12 and dedicated turn lanes on Church Road, and is intended to improve operations rather than increase capacity.	$3,100
Improve major roadways on and connecting to Mare Island in Vallejo, including the Mare Island interchange with SR 37 and the Mare Island causeway bridge.	$15,000
SR-12 Capacity Improvements in Solano County from the SR 12 I-80 to I-5 Corridor Study	$103,000
SR-113 Safety and Capacity Improvements from the SR-113 MIS	$58,000

Additional projects that could largely be funded through tolls/fees associated with the project are:

Table 20: Identified Projects on RORS that may be Self-Funded

Project	Needed Funds (in $1,000)
SR-37 Sea Level Rise and Congestion Improvements	*$2,000,000*
New Rio Vista Bridge	*$1,500,000*
I-80 Express Lane conversion, extension and construction	*$280,000*
I-680 Express Lane construction	*$150,000*

All totaled, these projects, excluding the Rio Vista Bridge replacement, come to $5,283,480 million. Eliminating the $3,930,000 of potentially self-funded projects, the need still remaining is $1,353,480. This is ***73*** times greater than the identified available revenue.

The situation for maintenance funding is equally bad. The Solano County Pothole Report of 2014 reported a 10-year maintenance shortfall of $544 million to reach a PCI of 75. Translating that into a comparable time frame, the County and seven cities have only half of the funds they need just to maintain the currently low PCI average of 60. In order to improve the PCI to a "good condition" rating of 75, available funds would have to double again.

Transportation is underfunded across the board. There is not enough money to build or to maintain needed Active Transportation links, Transit and Rideshare facilities, rolling stock and programs and, most dramatically, not enough for the fabric that binds the system together – the Arterial, Highways and Freeways system.

That significant disconnect between needs and resources leads to the next chapter of the Arterial, Highways and Freeways Element: policies.

Chapter 7 - Making choices - policies and milestones

Chapter 8 - Priorities

Chapter 9 - Assessing Implementation

Chapter 10 - Conclusion

I - Definition and Examples:

1. Solano County Congestion Management Program (CMP) Network
   The Solano County CMP includes a defined roadway system used for monitoring mobility in the county. The system consists of all State highways and principal arterials, which provide connections from communities to the State highway system and between the communities within Solano County. The STA monitors Level of Service (LOS) impacts to the CMP system from proposed development projects considered by each of the seven cities and the County of Solano.

2. Access to Existing and Planned Transit Centers Serving Intercity Trips
   Intercity transit services enhance travel mobility to/from and within Solano County as well as providing increased transportation capacity. SolanoExpress buses, Capitol Corridor trains and WETA ferries provide this mobility, and operate from a set of major transit hubs.

   Prioritizing transportation funding for roadway segments that provide access to existing and planned intercity transit services is an important option to address congestion. Therefore, roadway segments that provide access to intercity transit services can be considered Routes of Regional Significance. Examples of existing/planned transit centers serving intercity trips include:

   - Fairfield Transportation Center
   - Vacaville Transportation Center
   - Existing Amtrak/Capitol Corridor Station in Suisun City and the new Fairfield/Vacaville station which is under construction
   - Vallejo Ferry Terminal

3. Access to a Major Employment Center with Higher Traffic Volumes
   According to the 2005 Bay Area Commuter Profile, Solano County commuters have the longest average commute trip compared to any other Bay Area County. Approximately 40% of Solano County residents commute outside the county for employment purposes. Providing sufficient transportation capacity supports the location of additional employment in Solano County. Major employment centers located in Solano County will take advantage of employees currently commuting long distances and will add to the economic vitality of the County.

   Roadway segments that provide access to major Solano County based employment centers with existing or projected traffic volumes on arterials that justify a separated 2-lane roadway can qualify as a Route of Regional Significance. Employment centers should take into account the total amount of traffic generated by employee trips or

patron trips utilizing services within the employment center. Examples of existing major employment centers in Solano County are:

- Kaiser Permanente- Vallejo and Vacaville
- Six Flags Discovery Kingdom- Vallejo
- Genetech (Vacaville and Dixon Facilities)
- Westfield Shoppingtown- Fairfield
- Travis Air Force Base
- Benicia Industrial Park

4. Intercity and Freeway/Highway Connection

   Improving intercity mobility is one of the overall goals of the Solano CTP. Roadways that accommodate intercity trips, freeway to freeway trips, and freeway to highways connections can qualify as a Route of Regional Significance. These include roadway facilities with existing or projected traffic volumes arterials that justify a separated 2-lane roadway. Examples of roadways that provide intercity and freeway/highway connections are:

   - Jepson Parkway
   - North Connector
   - Columbus Parkway
   - Fry Road between Leisure Town Road and SR 113

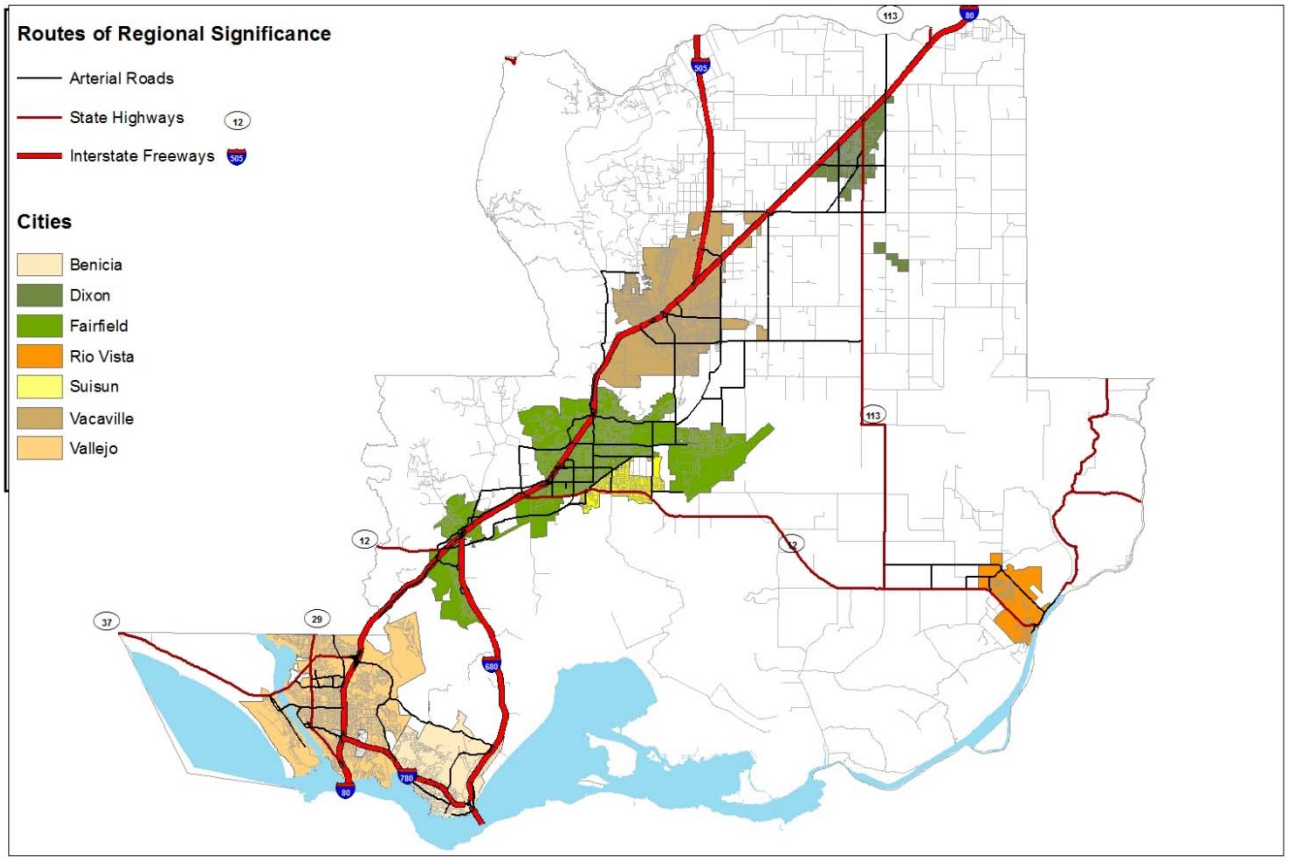
5. Improves Countywide Emergency Response

   In case of emergencies or road closures, emergency vehicles need to have adequate alternative access to respond to incidents. Solano County has experienced major incidences of grass fires, flooding, and traffic accidents that were extreme enough to close a freeway or highway corridor for hours. It is important to maintain frontage roads and parallel routes that are alternative options if freeway or highway corridor remains closed for long periods of time. Examples of roads that fit this description are:

   - Lyon Road (Solano County near I-80)
   - Lopes Road (Solano County near I-680)
   - McGary Road (Fairfield and Solano County near I-80)
   - North Connector (near I-80 and SR12)
   - McCormack, Canright and Azevedo Roads north of SR 12

II - Maps:

Overview



Solano CMP Network

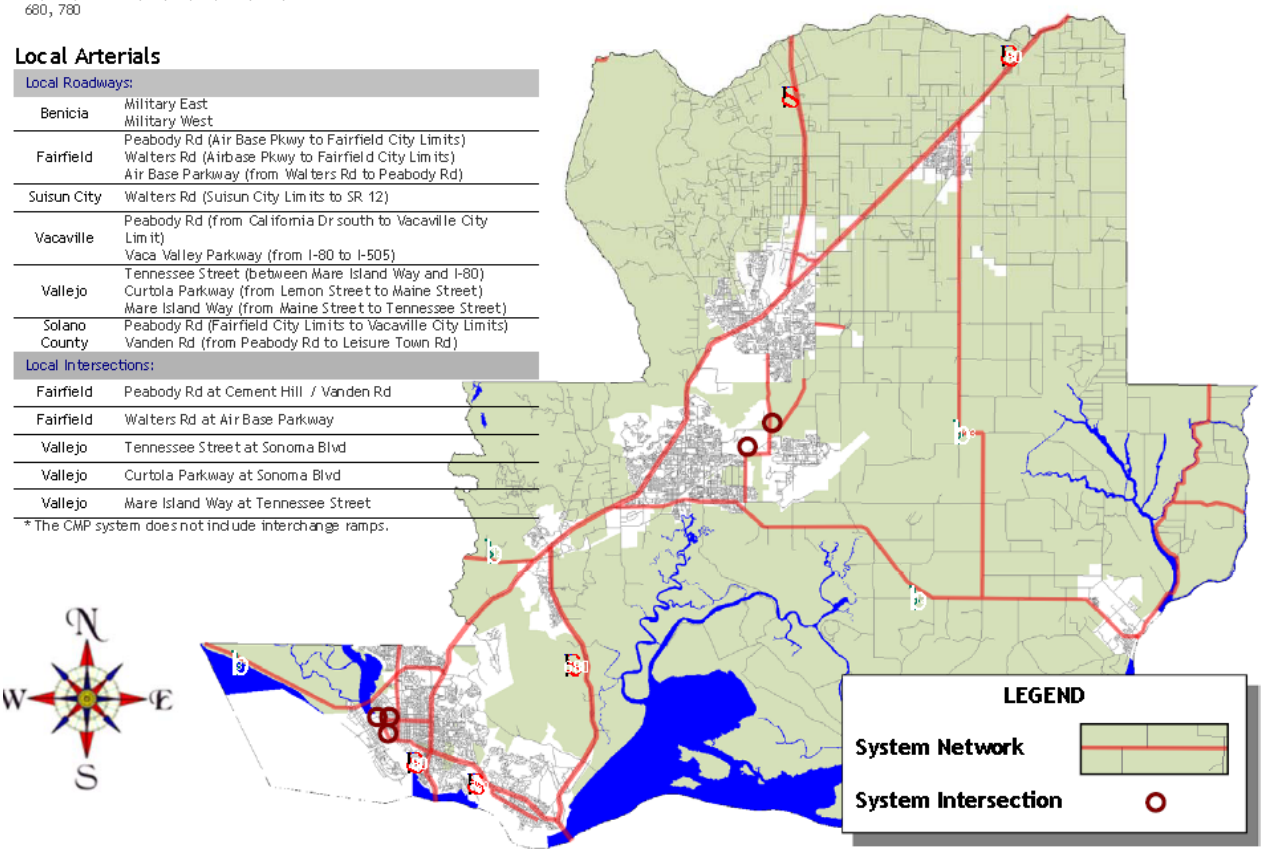
State Routes

Interstates:	State Routes:
80, 505, 680, 780	12, 29, 37, 84, 113, 128, 220

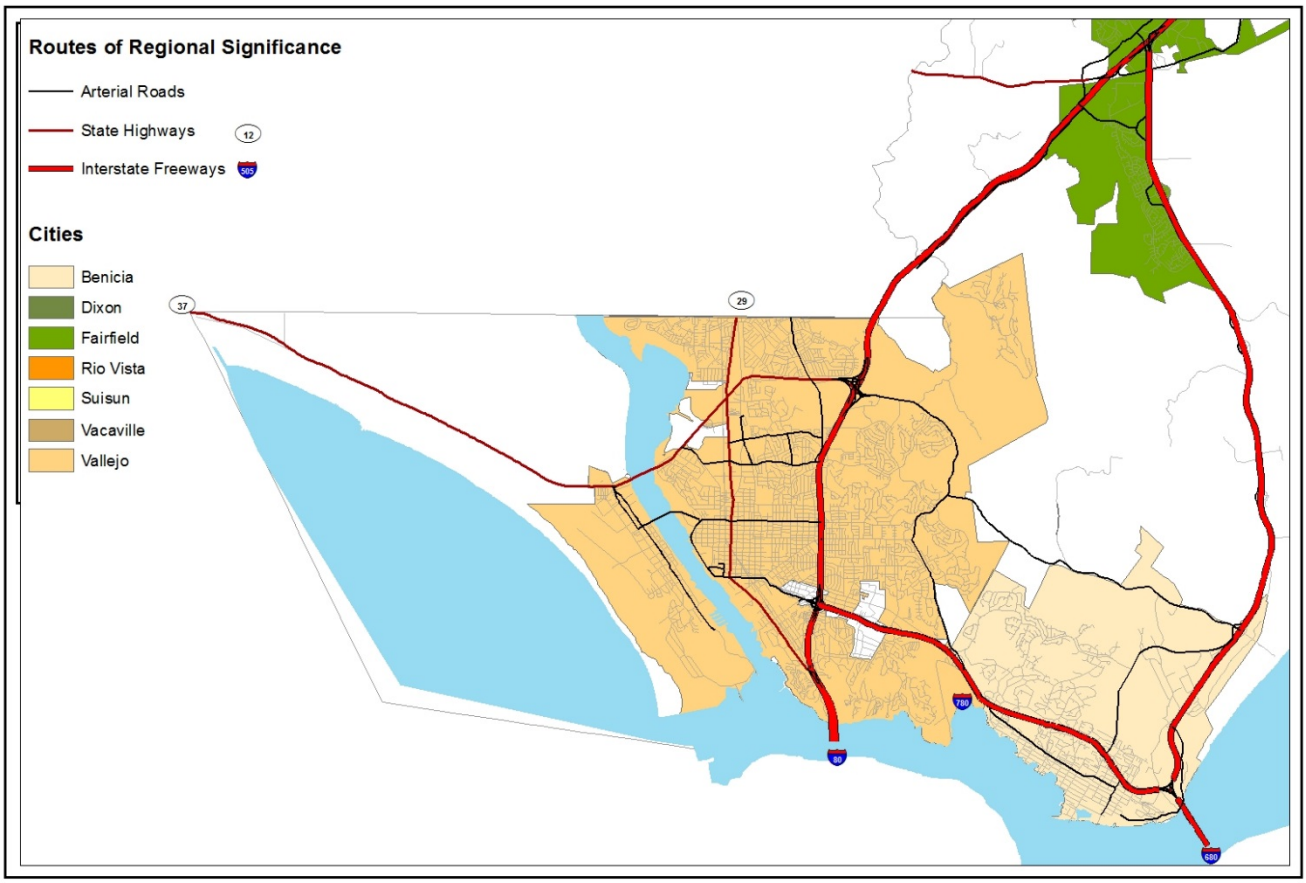
Local Arterials

Local Roadways:	
Benicia	Military East Military West
Fairfield	Peabody Rd (Air Base Pkwy to Fairfield City Limits) Walters Rd (Airbase Pkwy to Fairfield City Limits) Air Base Parkway (from Walters Rd to Peabody Rd)
Suisun City	Walters Rd (Suisun City Limits to SR 12)
Vacaville	Peabody Rd (from California Dr south to Vacaville City Limit) Vaca Valley Parkway (from I-80 to I-505)
Vallejo	Tennessee Street (between Mare Island Way and I-80) Curtola Parkway (from Lemon Street to Maine Street) Mare Island Way (from Maine Street to Tennessee Street)
Solano County	Peabody Rd (Fairfield City Limits to Vacaville City Limits) Vanden Rd (from Peabody Rd to Leisure Town Rd)
Local Intersections:	
Fairfield	Peabody Rd at Cement Hill / Vanden Rd
Fairfield	Walters Rd at Air Base Parkway
Vallejo	Tennessee Street at Sonoma Blvd
Vallejo	Curtola Parkway at Sonoma Blvd
Vallejo	Mare Island Way at Tennessee Street

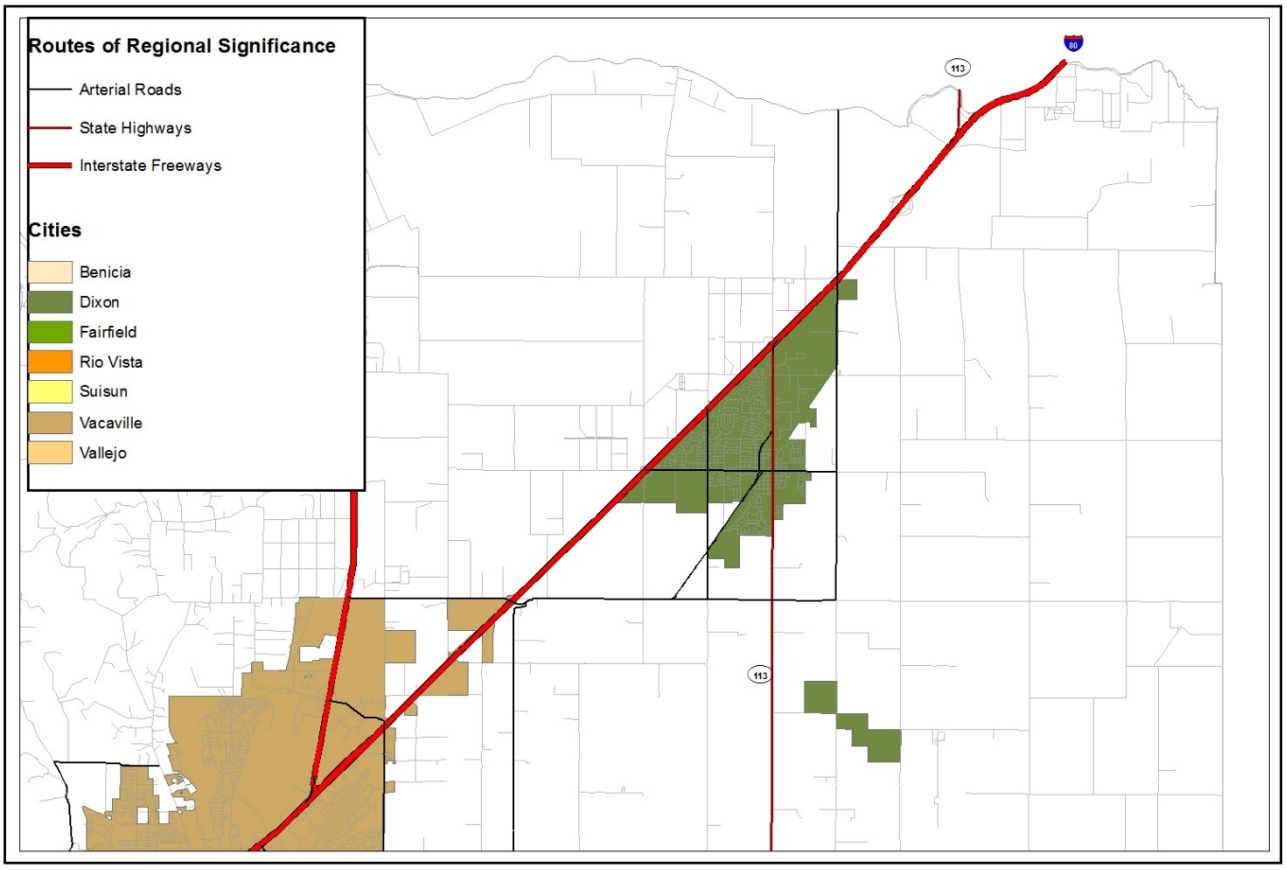
* The CMP system does not include interchange ramps.



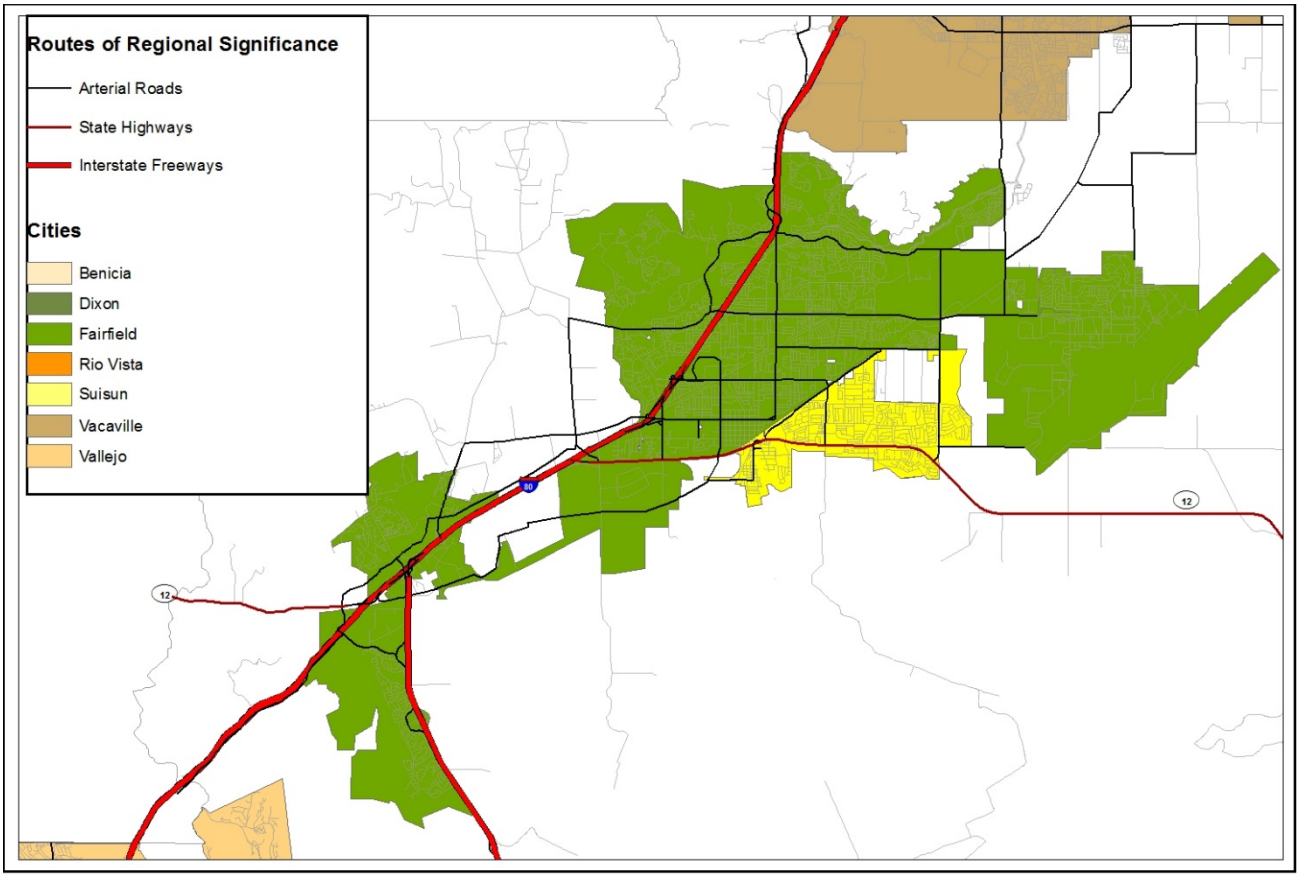
Benicia and Vallejo



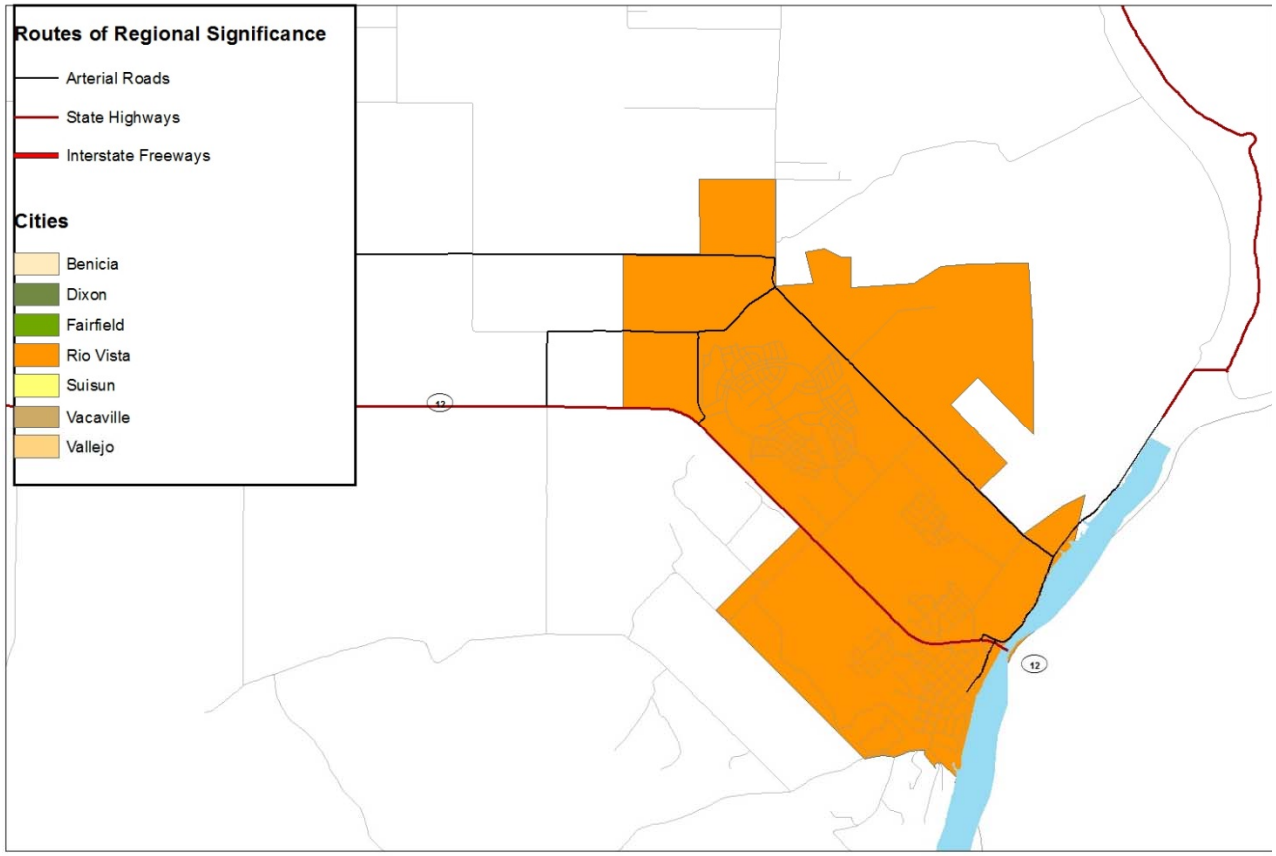
Dixon


Routes of Regional Significance
Arterial Roads
State Highways
Interstate Freeways
Cities
Benicia
Dixon
Fairfield
Rio Vista
Suisun
Vacaville
Vallejo
113
80
113

Fairfield and Suisun City



Rio Vista


Routes of Regional Significance
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State Highways
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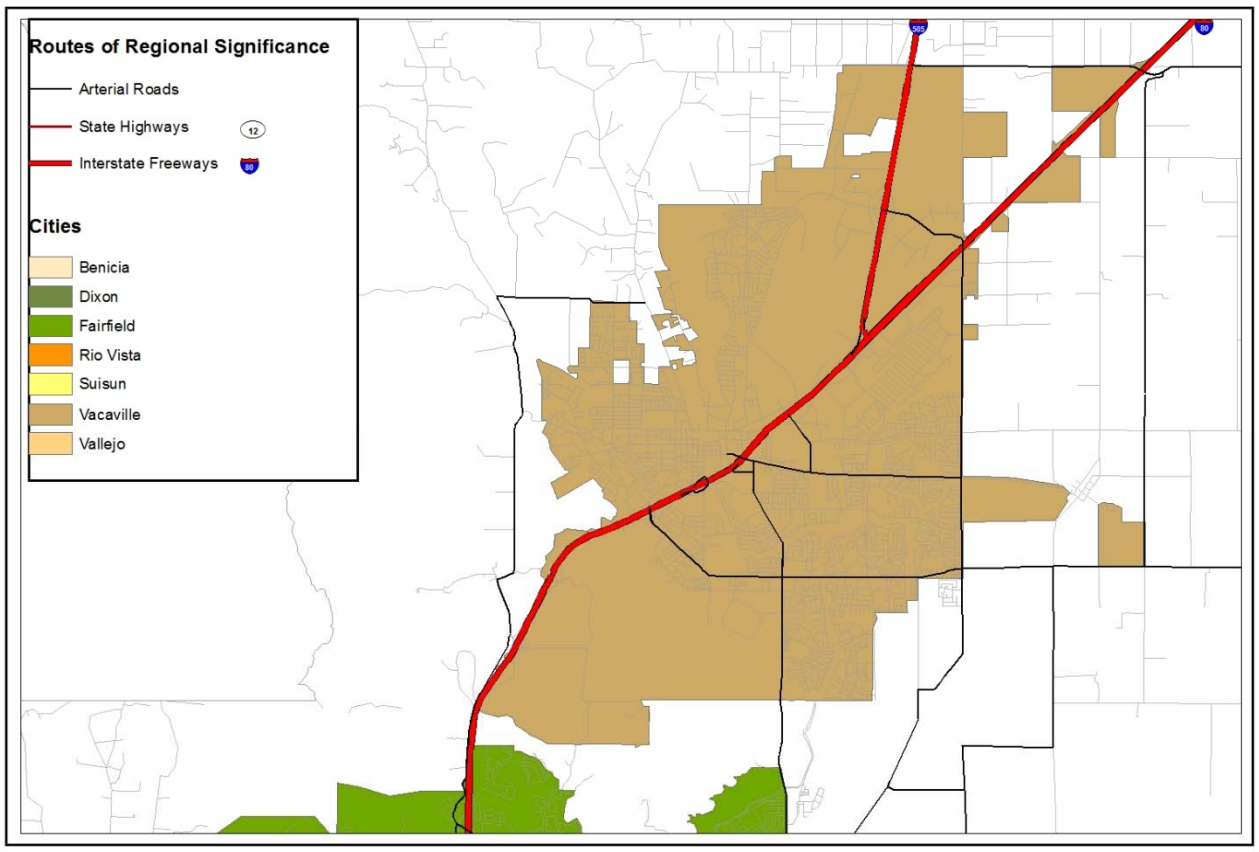
Vacaville


Routes of Regional Significance
Arterial Roads
State Highways
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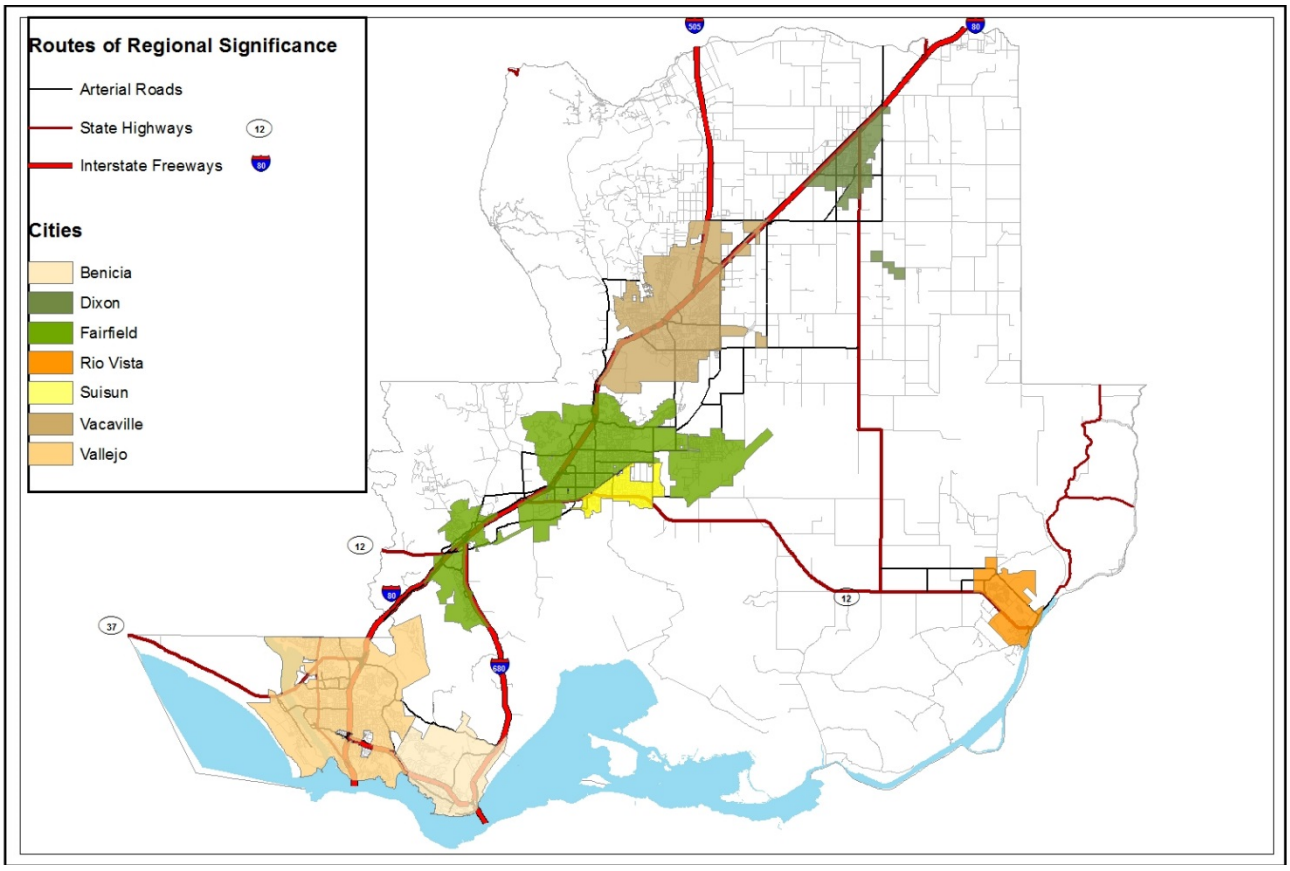
Vacaville
Vallejo

Unincorporated Solano County



III – List of Roads:

Roads in italics are in multiple jurisdictions, and are listed in each jurisdiction.

City of Benicia:

- Bayshore Road, from Park Road to its western terminus.
- East 2nd Street, from I-780 to Lake Herman Road.
- East 5th Street, from I-780 to water's edge.
- Lake Herman Road, from I-680 to the Benicia City Limits
- Military East, from 1st Street to East 5th Street
- Military West, from I-780 to 1st Street
- *Columbus Parkway, from I-80 to I-780 (includes roadway in the cities of Vallejo and Benicia)*

City of Dixon

- *Pedrick Road, from Midway Road to Putah Creek (includes roadway in both City of Dixon and unincorporated Solano County)*
- North Adams Street, from West A Street to North 1st Street
- *Porter Road, from Midway Road to West A Street (includes roadway in both City of Dixon and unincorporated Solano County)*
- West A Street, from I-80 to Pedrick Road
- *Pitt School Road, from I-80 to Midway Road (includes roadway in both City of Dixon and unincorporated Solano County)*

City of Fairfield

- Air Base Parkway, from I-80 to Travis AFB Main Gate
- Auto Mall Parkway, from Chadbourn Road to Cadenesso Drive
- Beck Avenue, from I-80 to SR-12
- *Suisun Parkway/Business Center Drive, from Abernathy Road to its western terminus(includes roadway in both City of Fairfield and unincorporated Solano County)*
- Cadenesso Drive, from Beck Avenue to Auto Mall Parkway
- *Cordelia Road, from Lopes Road to Pennsylvania Avenue (includes roadway in both City of Fairfield and unincorporated Solano County)*
- Cement Hill Road, from North Texas Street to Peabody Road
- Gateway Blvd, from Travis Blvd to Pennsylvania Avenue
- Green Valley Road, from Lopes Road to Business Center Drive
- Gregory Lane, from West Texas Street to Wolner Avenue
- Hillborn Road, from North Texas Street to Waterman Blvd
- *Lopes Road, from Green Valley Road to the Benicia City Limits (includes roadway in both City of Fairfield and unincorporated County)*

- *Lyon Road, from Hillborn Road to Cherry Glen Road (includes roadway in both City of Fairfield and unincorporated County)*
- North Texas Street, from Waterman Blvd to Union Avenue
- West Texas Street, from Union Avenue to Oliver Road
- Oliver Road, from West Texas Street to the I-80 WB off-ramp
- *Peabody Road, from Air Base Pkwy to the Vacaville City Limits (includes roadway in City of Fairfield, City of Vacaville and unincorporated County)*
- *Pennsylvania Avenue, from Gateway Blvd to Cordelia Road (includes roadway in both City, Suisun City and unincorporated County)*
- Red Top Road, from SR-12 to Lopes Road
- Travis Blvd, from I-80 to Sunset Avenue
- Walters Road, from Cement Hill Road to SR-12 (includes roadway in both Fairfield and Suisun City)
- *Waterman Blvd/Mankas Corner Road, from Hillborn Road to Abernathy Road (includes roadway in both City of Fairfield and the unincorporated County)*
- *Suisun Valley Road, from Rockville Road to I-80 (includes roadway in both City of Fairfield and unincorporated Solano County)*
- *McGary Road, from Hiddenbrook Parkway to Red Top Road 80 (includes roadway in both City of Fairfield and unincorporated Solano County)*

City of Rio Vista

- Airport Road, from SR 84 to Liberty Island Road
- Front Street, from SR-12 to Main Street
- Liberty Island Road, from SR-12 to Canright Road
- *River Road, from SR-12 to the Ryer Island Ferry (includes roadway in both City of Rio Vista and unincorporated Solano County)*

City of Suisun City

- Lotz Way, from Civic Center Blvd to Main Street
- *Petersen Road, from Walters Road to the Travis AFB South Gate (includes roadway in City of Suisun City, City of Fairfield and unincorporated Solano County)*
- Sunset Avenue, from SR 12 to Railroad Avenue
- Railroad Avenue, from SR-12 to Railroad Avenue
- Main Street, from Cordelia Road to SR-12 WB
- *Pennsylvania Avenue, from Gateway Blvd to Cordelia Road (includes roadway in both City, Suisun City and unincorporated County)*

City of Vacaville

- Alamo drive, from I-80 to Leisure Town Road
- Allison Drive, from Elmira Road to I-80
- Mason Street/Elmira Road, from Depot Street to Leisure Town Road

- *Leisure Town Road, from Vaca Valley Pkwy to Vanden Road (includes roadway in the City of Vacaville and unincorporated Solano County)*
- Vaca Valley Pkwy, from Leisure Town Road to I-505
- *Midway Road, from I-505 to Pedrick Road (includes roadway in the City of Vacaville and unincorporated Solano County)*
- *Peabody Road, from Air Base Pkwy to the Vacaville City Limits (includes roadway in City of Fairfield, City of Vacaville and unincorporated County)*

City of Vallejo

- Broadway Street, from Redwood Street to Ash Street
- *Columbus Parkway, from I-80 to I-780 (includes roadway in the cities of Vallejo and Benicia)*
- Curtola Parkway, from I-708 to Mare Island Way
- Fairgrounds Drive, from Redwood Street to Ave Yucatan (Napa county border)
- Mare Island Causeway, from Mare Island Way to Walnut Avenue
- Walnut Avenue/Railroad Avenue, from SR-37 to 10th Street
- Lemon Street, from Curtola Parkway to Carlson Street
- Maine Street, from Mare Island Way to Marin Street
- Marin Street, from Curtola Pkwy to York Street
- York Street, from Marin Street to Broadway
- Redwood Street, from I-80 to Sacramento Street
- Sacramento Street, from Redwood Street to SR-37
- Sereno Drive, from SR-29 to Fairgrounds Drive
- Tennessee Street, from I-80 to Mare Island Parkway
- Tuolumne Street, from Redwood Street to Sereno Drive

Unincorporated Solano County

- Abernathy Road, from I-80 to Mankas Corner Road
- Azevedo Road, from SR-12 to Canright Road
- Canright Road, from Azevedo Road to McCormack Road
- McClosky Road, from SR-12 to McCormack Road
- Canon Road, from Vanden Road to North gate Road
- North Gate Road, from the Travis AFB North Gate to McCory Road
- McCory Road, from North Gate Road to Meridian Road
- Meridian Road, from McCory Road to Fry Road
- Fry Road, from Leisure Town Road to SR 113
- Lewis Road, from Fry Road to Midway Road
- *Midway Road, from I-505 to Pedrick Road (includes roadway in the City of Vacaville and unincorporated Solano County)*
- *McGary Road, from Hiddenbrook Parkway to Red Top Road 80 (includes roadway in both City of Fairfield and unincorporated Solano County)*
- Rockville Road, from Oliver Road to Suisun Valley Road

- *Suisun Valley Road, from Rockville Road to I-80 (includes roadway in both City of Fairfield and unincorporated Solano County)*
- Vanden Road, from Leisure Town Road to Peabody Road
- *Pedrick Road, from Midway Road to Putah Creek (includes roadway in both City of Dixon and unincorporated Solano County)*
- *Porter Road, from Midway Road to West A Street (includes roadway in both City of Dixon and unincorporated Solano County)*
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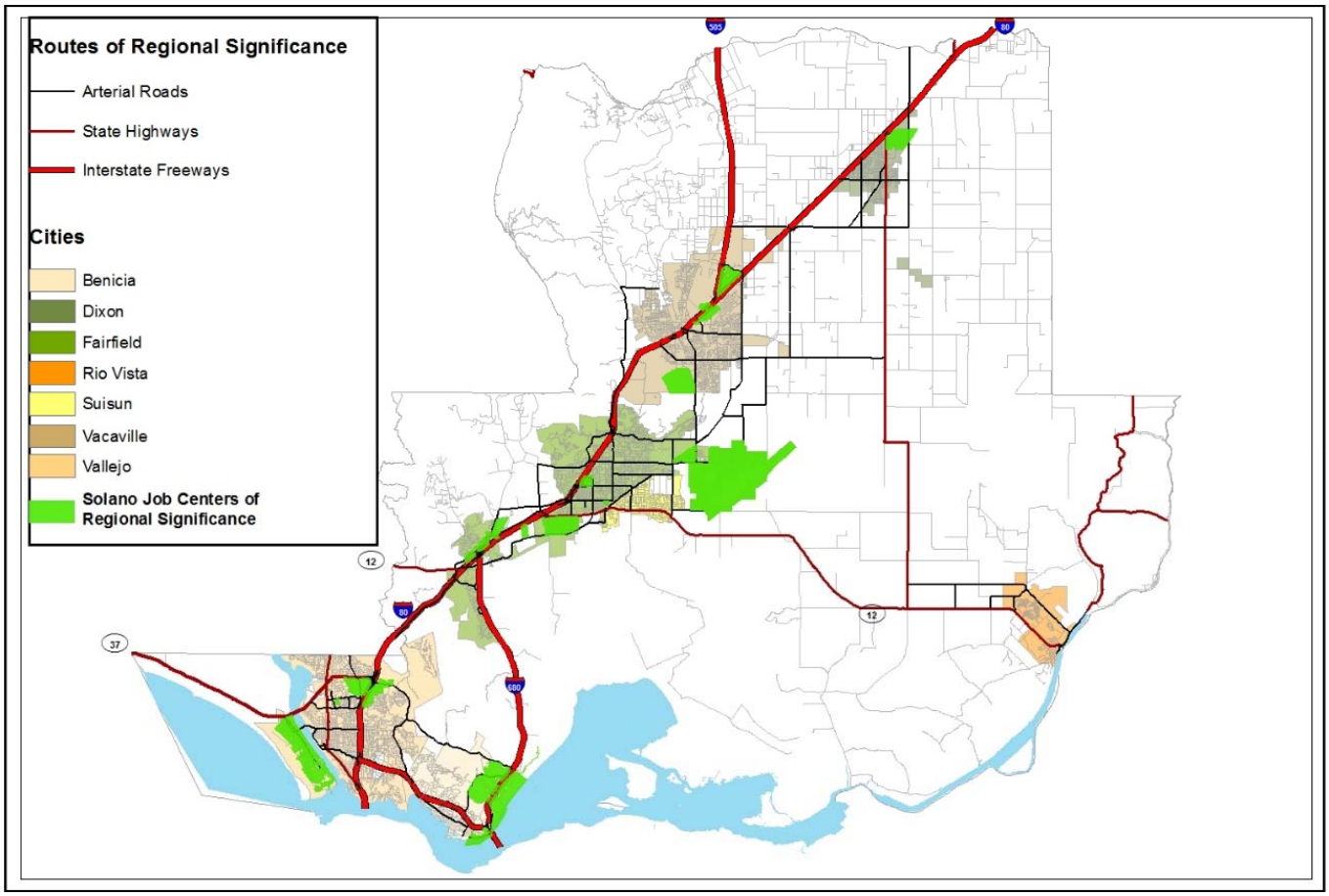
- *Pennsylvania Avenue, from Gateway Blvd to Cordelia Road (includes roadway in both City, Suisun City and unincorporated County)*

Regionally Significant Employment Centers, as defined by STA, are those employment centers of sufficient size and activity to attract employees and/or customers from multiple cities or from adjoining counties; and, have sufficient traffic to require access by a multi-lane arterial with close-by access to an interstate freeway or state highway.

The names of business and commercial centers can change over time. The area shown on the map, rather than the name, is the definition of the Regionally Significant Employment Center.

The following pages list and map each Regionally Significant Employment Center in Solano County.



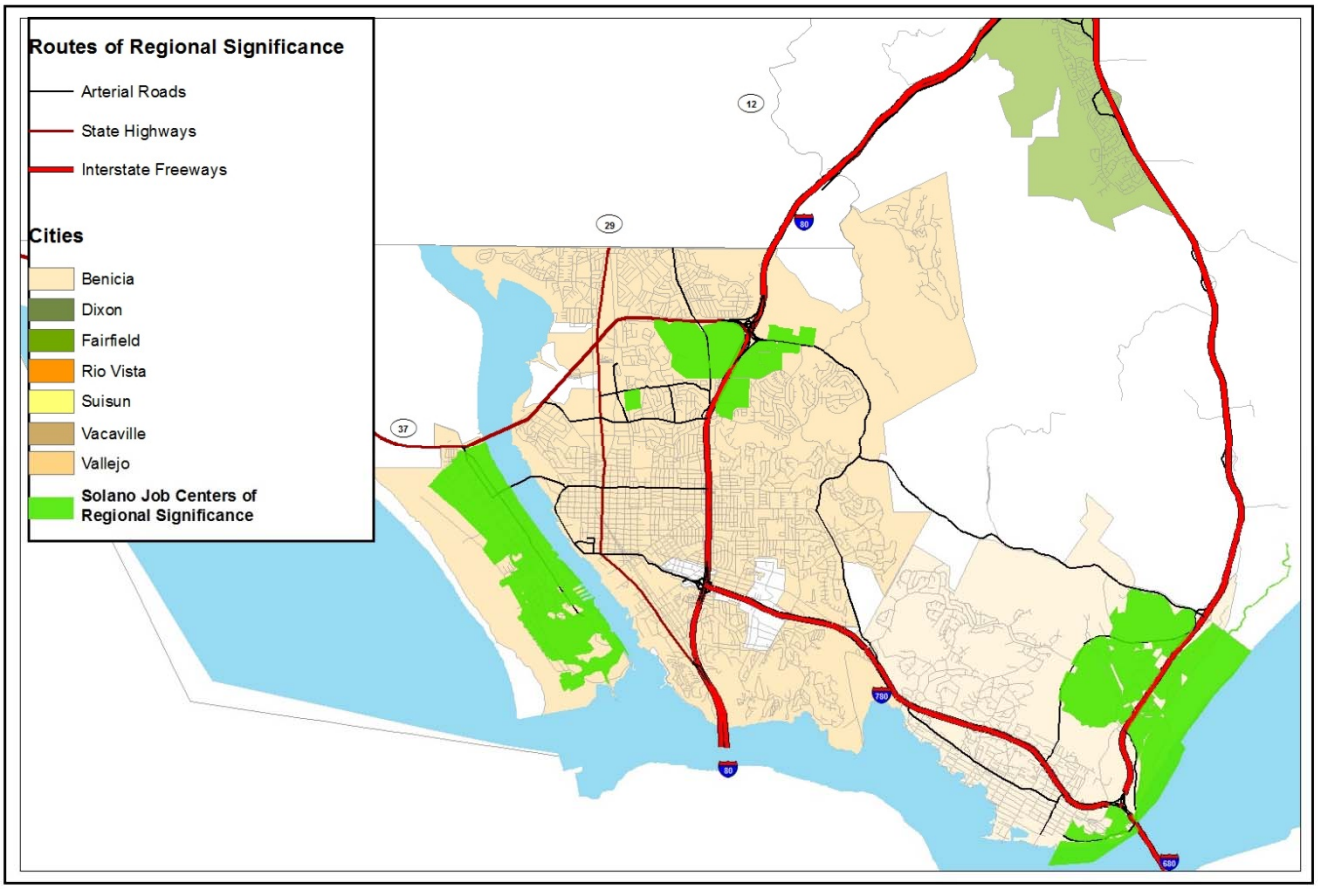
Benicia and Vallejo

Benicia:

- Port of Benicia
- Benicia Industrial Park

Vallejo:

- Mare Island
- Kaiser Medical Center
- Discovery Kingdom
- Solano County Fairgrounds
- Admiral Callahan/Columbus Parkway retail center



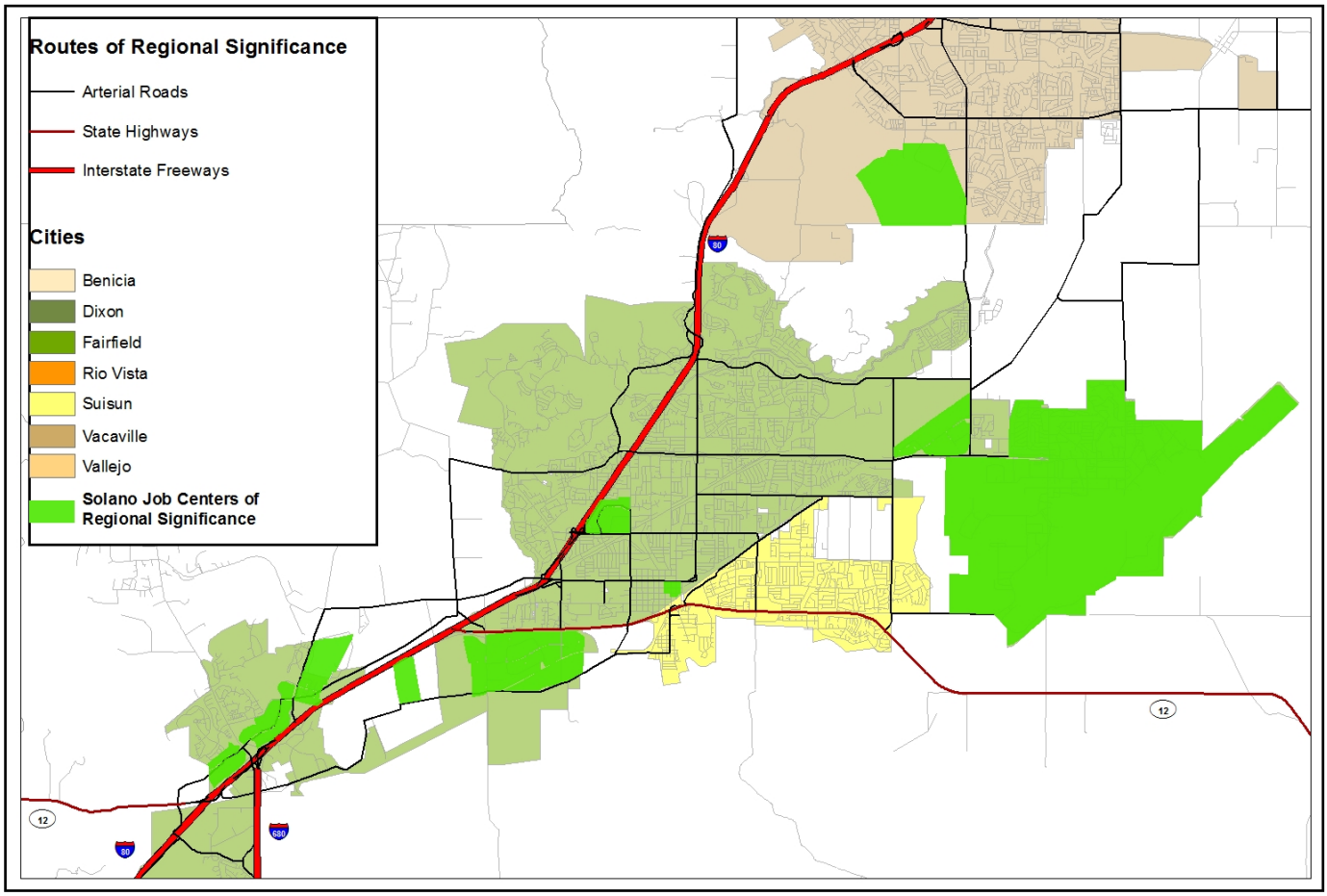
Fairfield and Suisun City

Fairfield:

- Travis AFB
- Huntington Drive industrial area
- Fairfield Town Center Mall
- Solano County Government and Courts Center
- Solano Business Park/Tolenas Industrial Park
- Anheuser Busch Brewery
- Solano College
- Green Valley Corporate Park/Office Park/Fairfield Corporate Commons

Suisun City:

- None



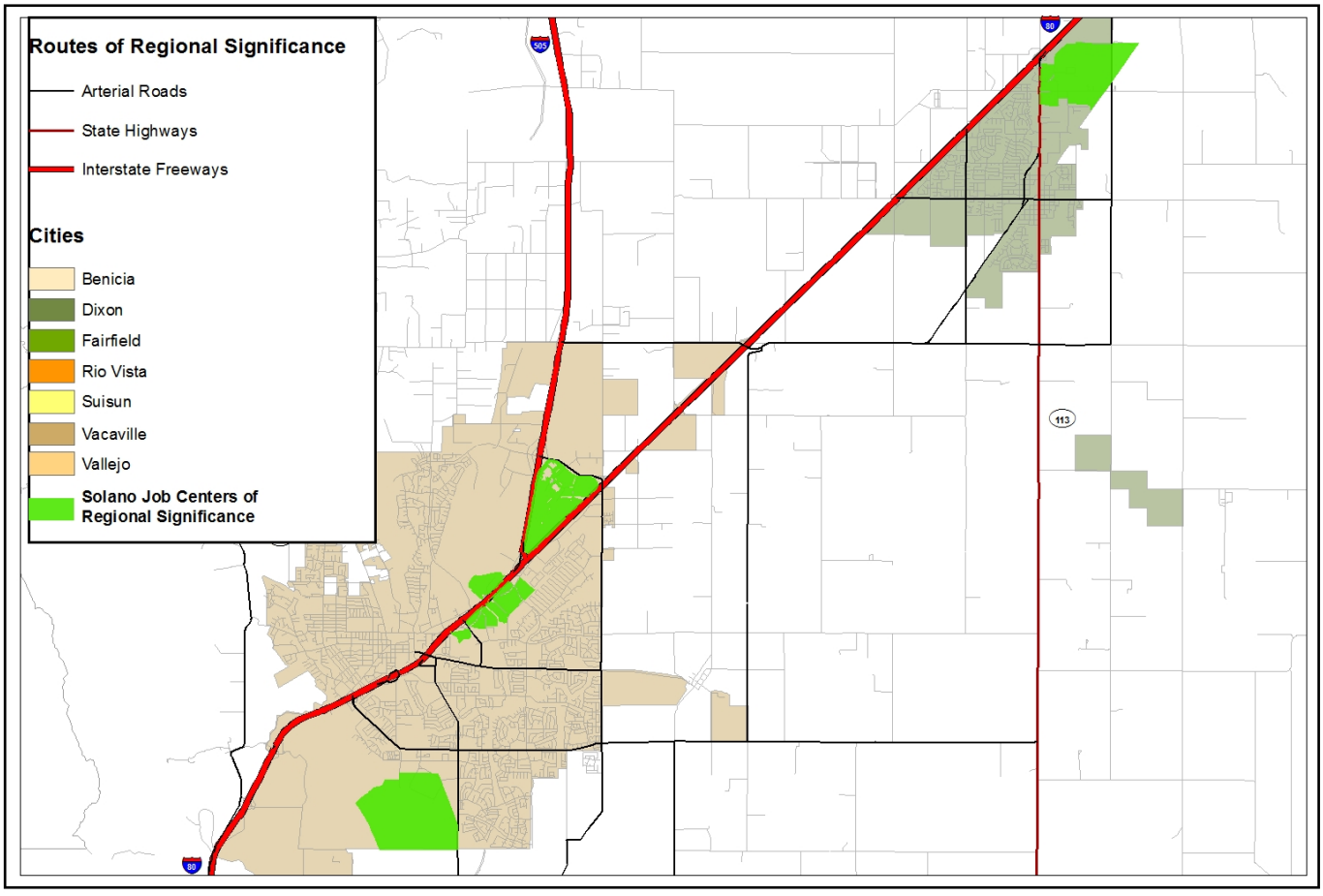
Vacaville and Dixon

Dixon:

- Northeast Industrial Park

Vacaville:

- Vaca Valley Business Park
- The Nut Tree/Nut Tree Outlet Stores
- California State Prison and Medical Center



Rio Vista and Unincorporated County

Rio Vista:

- None

Unincorporated County:

- None

Solano County Pothole Report

October 2014

Solano Transportation Authority,

Streets and Roads Pavement and Rehabilitation Report

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Executive Summary

How would you build a street and maintain its pavement?

Do you know how your public works department maintains your street? Do you know what they are doing to keep the roads in good condition? Do you understand the financial or technical constraints that they are under to perform this critical work?

Figure 1: Pothole Example

The purpose of this report is to produce a comprehensive description of the condition of Solano County's local streets and roads pavement rehabilitation efforts, and pavement conditions. Timely investment in roadway preservation can save cities millions of tax dollars in long-term maintenance costs. A municipality that spends $1 on timely maintenance to keep a section of roadway in good condition would have to spend $5 to restore the same road if the pavement is allowed to deteriorate to the point where major rehabilitation is necessary. (MTC, 2011) With this in mind, an analysis of Solano County's current roadway investment strategy is appropriate. This report will help to showcase financial shortfalls, which may assist public works staff with project planning and future funding requests.

While the Metropolitan Transportation Commission (MTC) and the California Association of Counties (CSAC) produce statewide and bay area wide local streets and roads annual reports, the broad focus of these reports lack the local detail that speaks to local elected officials and local residents about the state of their local agency's street pavement. For instance, how does Solano County's 10-year $544M and 28-year $2.7 B pavement rehabilitation shortfall compare to the state's 10-year $82.2 B shortfall or the Bay Area's 10-year $12.3B shortfall or 28-year $29.9 B shortfall? These long-term 10-year and 28-year shortfall projections are difficult to understand when a local government council or board is adopting a public works annual capital improvement program and weighing the pros and cons between another street rehabilitation project, a new community park, a fire station, or a water treatment pipeline. Producing a Solano County specific pothole report will help inform decision makers on the fiscal reality of our roadway infrastructure needs and provide city staff and Solano Transportation Authority (STA) staff valuable information to present to the public.

As of June 2014, unincorporated Solano County and its 7 cities are cumulatively investing slightly less than half of the $44M needed annually to maintain local streets and roads with a Pavement Condition Index (PCI) of 60 "fair condition." To reach the higher PCI goal of 75 "good condition", the approved goal in the Solano Comprehensive Transportation Plan, $50M additional funds are needed annually over the next 15 years to reach a 'state of good repair' – two and a half times more than our current investment. Solano County needs a healthy investment in our roadway infrastructure or pavement quality will decline substantially. More money spent now in long-term roadway maintenance can save our communities millions in the future and strengthen our local economy.

The appendix of this report provides a city-specific summary of pavement conditions for past years, present conditions, and projections for future roadway investment needs.

The Solano County Pothole Report is organized into the following chapters.

Why Care about Street Pavement?

General issues, PCI statistics and Images, Worst first vs. Best practices

6.5 Times More Funding Needed to Cost-effectively Maintain Local Streets and Roads

Bay Area vs. Solano County shortfalls by agency, New Technologies & Revenue Sources

Summary and Conclusion

Appendix of Local Agency Handouts Describing Pavement Conditions, Pavement Maps and Finances

Seven cities and the county's pavement investment info

Why Care about Street Pavement?

Your Trips, Your Roads

There are few local infrastructure investments used by almost every citizen, but nearly everyone benefits from local streets and roads (LS&R). From sidewalks and crosswalks, to neighborhood streets and 4-lane boulevards, effective LS&R promote mobility for Solano County residents traveling to their jobs, getting to school, and making local purchases. Every trip begins and ends with local streets and roads and every mode of surface travel relies on the local streets and roads infrastructure. Ignoring these critical facilities can affect quality of life and cost a city more than its roadway system.

Pavement Condition Index (PCI): What it Means & What it is in Solano County

The Pavement Condition Index (PCI) rates the condition of the surface of a road network. The PCI provides a numerical rating for the condition of road segments within the road network, where 0 represents the worst possible condition and 100 represents the best possible condition. The PCI measures two conditions: (1) The type, extent and severity of pavement surface distresses and (2) the smoothness and ride comfort of the road. The classifications used to rate LS&R pavements are shown in table 1 below.

Table 1: Pavement Condition Categories

Very Good-Excellent (PCI = 80-100)	Pavements are newly constructed or resurfaced and have few if any signs of deterioration.
Good (PCI = 70-79)	Pavements require mostly preventive maintenance and have only low levels of distress, such as minor cracks or peeling or flaking off of the top layer of asphalt as a result of water permeation.
Fair (PCI = 60-69)	Pavements at the low end of this range have significant levels of distress and may require a combination of rehabilitation and preventive maintenance to keep them from deteriorating rapidly.
At Risk (PCI = 50-59)	Pavements are deteriorated and require immediate attention including rehabilitative work. Ride quality is significantly inferior better pavement categories.
Poor (PCI = 25-49)	Pavements have extensive amounts of distress and require major rehabilitation or reconstruction. Pavements in this category affect the speed and flow of traffic significantly.
Failed (PCI = 0-24)	Pavements need reconstruction and are extremely rough and difficult to drive on.

(MTC, 2013)

The average condition of the Bay Area's LS&R network, which includes nearly 42,500 lane miles, was 66 as of 2013. This PCI rating places the region's roadway network in the "fair" category. The average condition of Solano County's LS&R network, which includes approximately 3,465 lane miles of roadway, is 65. This score is based on a 3-year moving average:

Table 2: 3 - Year Moving PCI Average

	2011	2012	2013
BENICIA	61	60	59
DIXON	78	77	77
FAIRFIELD	73	73	71
RIO VISTA	47	51	58
SOLANO COUNTY	68	71	75
SUISUN CITY	68	67	62
VACAVILLE	73	70	68
VALLEJO	51	51	49
COUNTYWIDE	**66**	**66**	**65**

Using a three-year average provides a more accurate picture, since not all jurisdictions submit their streets and roads data at the same time, and a single project can cause a significant jump in the annual PCI score for a small city with just a few miles of streets.

What PCI Looks Like

The photos displayed in figure 2 show streets and roads that represent a PCI rating of Excellent/ Good, At-Risk, and Very/Poor Failed. Most of the streets and roads in Solano County fall under the At-Risk (Fair) category. While this condition category may not look so bad on the surface, the costs associated with falling below this threshold can be rather significant.

Figure 2: PCI Rating and Visual Condition

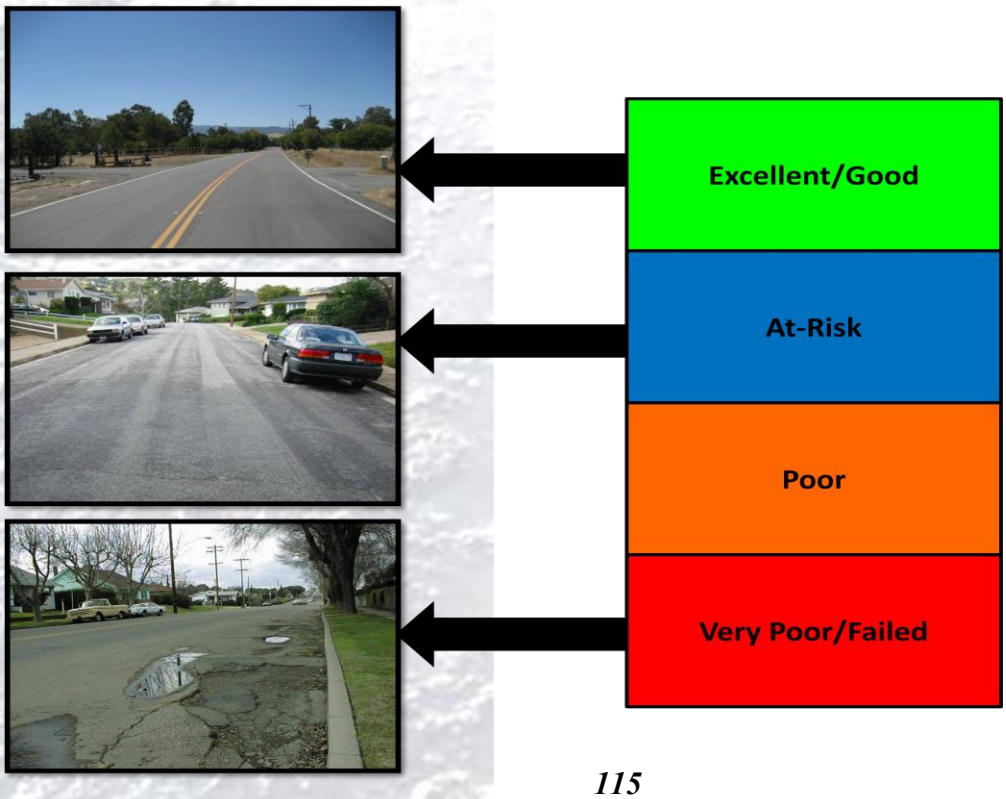
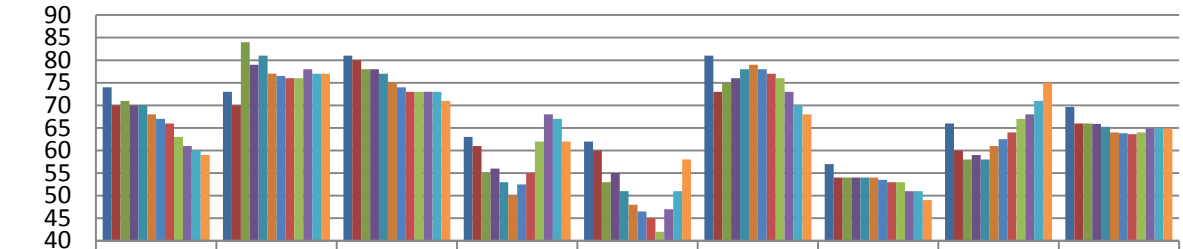


Table 3: Solano County Pavement Condition Index (PCI) from 2001-2013



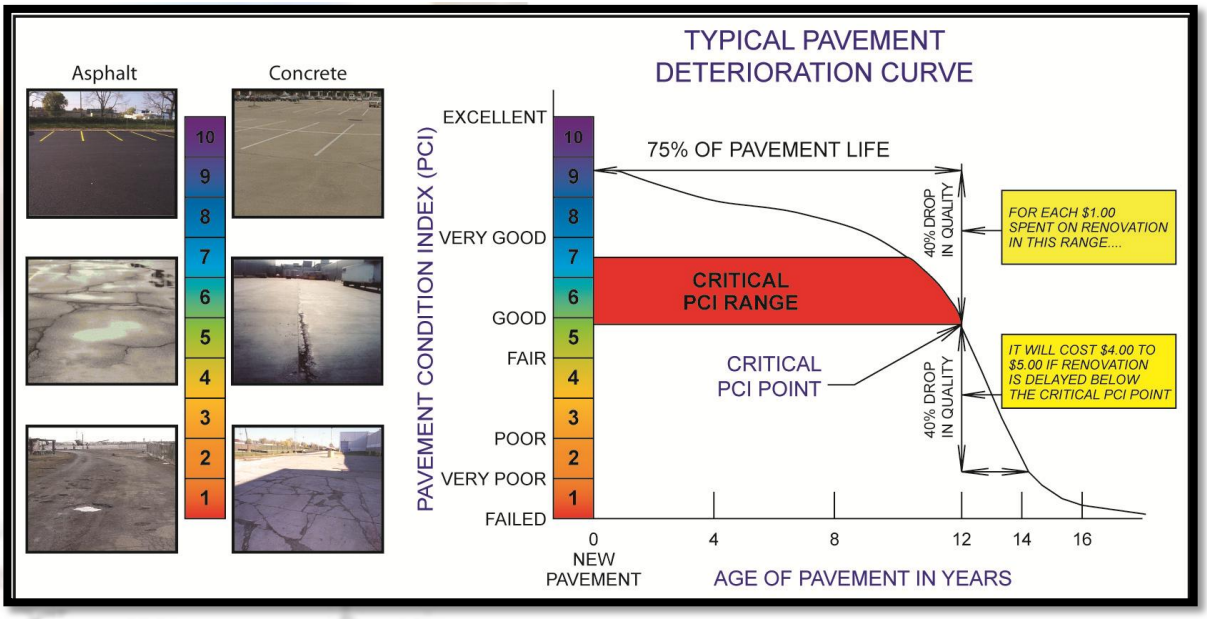
	Benicia	Dixon	Fairfield	Suisun City	Rio Vista	Vacaville	Vallejo	County of Solano	Average
2002	74	73	81	63	62	81	57	66	69.6
2003	70	70	80	61	60	73	54	60	66.0
2004	71	84	78	55	53	75	54	58	66.0
2005	70	79	78	56	55	76	54	59	65.9
2006	70	81	77	53	51	78	54	58	65.3
2007	68	77	75	50	48	79	54	61	64.0
2008	67	77	74	53	47	78	54	63	63.8
2009	66	76	73	55	45	77	53	64	63.6
2010	63	76	73	62	42	76	53	67	64.0
2011	61	78	73	68	47	73	51	68	64.9
2012	60	77	73	67	51	70	51	71	65.0
2013	59	77	71	62	58	68	49	75	64.9

Bad Roads Mean Big Bills

A PCI Score of 65 is considered "fair" (PCI 60-69), and indicates the critical need for maintenance because of the rapid increase in rehabilitation costs that occurs once below this threshold. Once a pavement's condition rating reaches 60, it will begin to deteriorate rapidly. As shown in Figure 3, a new pavement will deteriorate slowly for the first 12 years of its standard 20 year life span. Without any intervention, the pavement will drop from the fair category to the "failed" category in the next five years. This deterioration holds serious implications for the cost of system preservation. Pavements that are still in good condition (a PCI of 70 or above) can be preventively maintained at a low cost, whereas pavements that need significant rehabilitation or reconstruction require five to 15 times the amount of funding. Thus, a PCI of 65 should be viewed with caution, as it indicates that our local streets and roads are poised on the edge of a maintenance cliff. "Every dollar invested in maintenance saves taxpayers from future repairs that are 10 times more expensive," said Caltrans Director Malcolm Dougherty.

The cost of repairing roadways is not the only expense that drivers have to consider. A recent report by the Washington-based research and advocacy group TRIP estimated the additional cost of auto repairs and traffic due to bad roads to be $2,200 annually per vehicle. This large expense is largely not quantified when it comes to the costs and benefits of the quality of our roadways.

Figure 3: PCI Condition and Cost of Rehabilitation

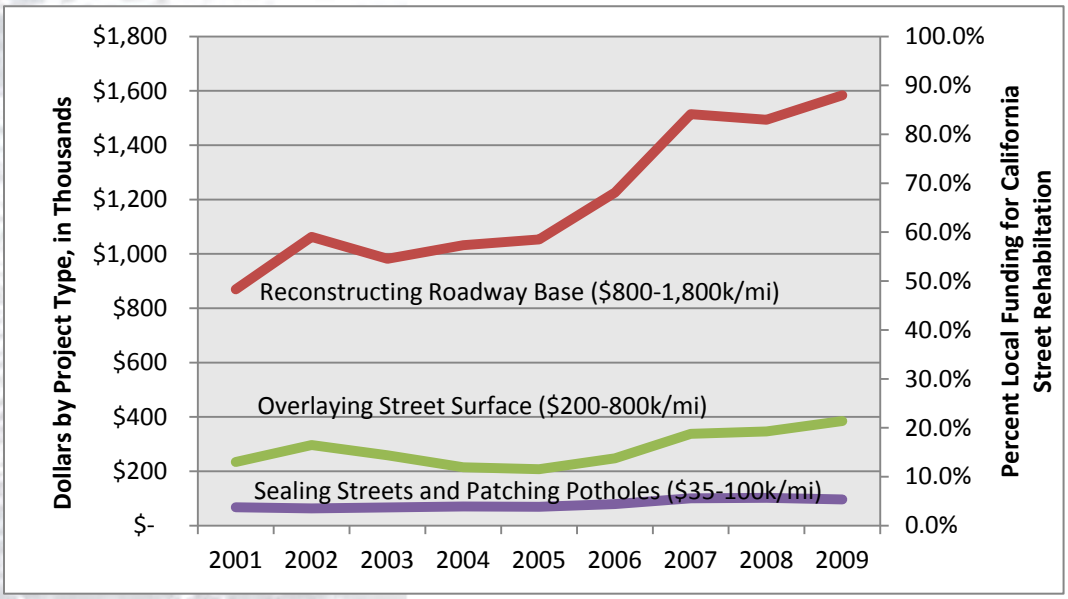


Street Pavement: Local Government Foundations or Credit Cards

By deferring maintenance, cities balloon the cost of street rehabilitation projects, resulting in uncomfortable tradeoffs for cities (e.g., building new community centers vs. repairing failed streets). When cities wait until streets reach critical and expensive maintenance needs, cities must pay for additional labor and materials to rebuild the road, potentially magnifying the cost.

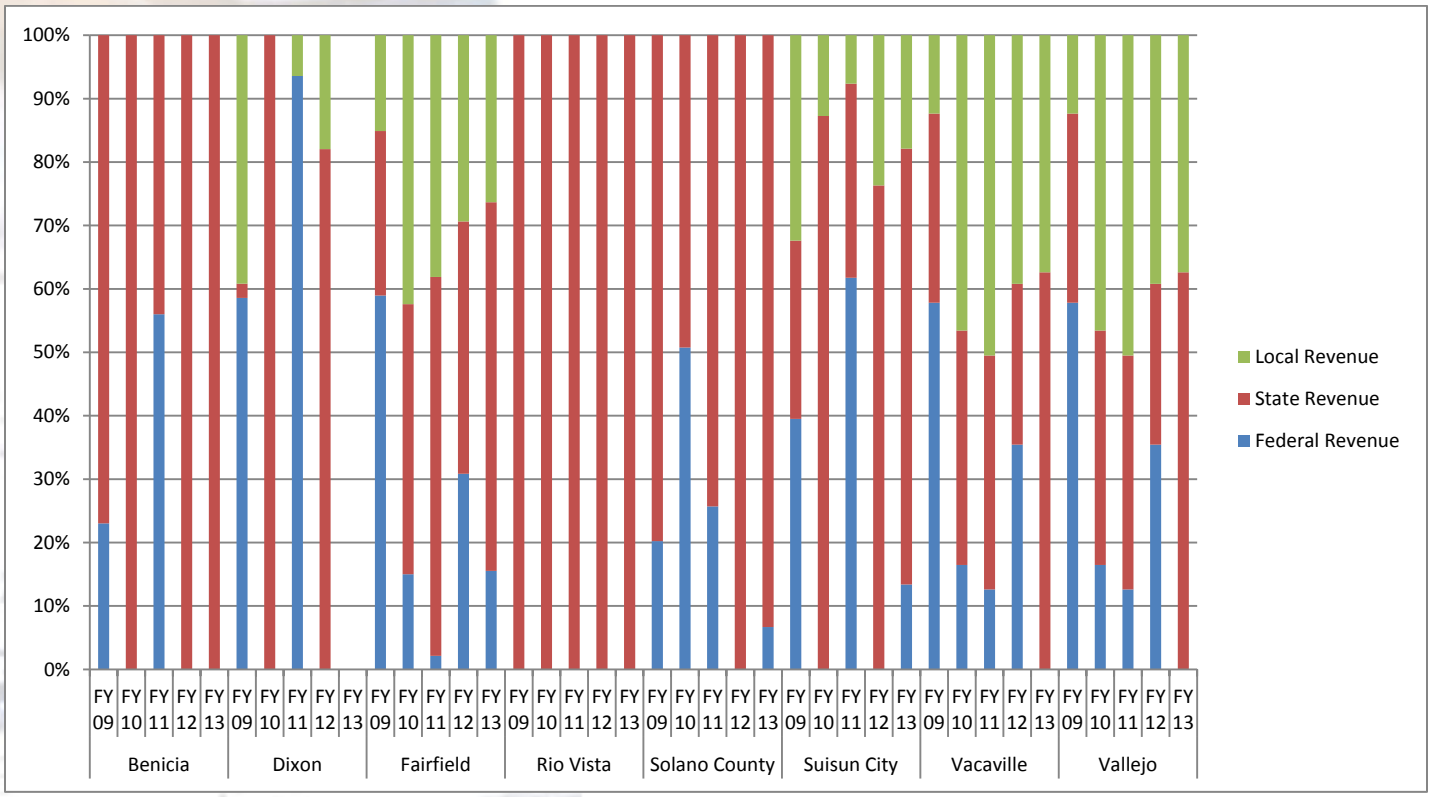
Between 2005 and 2009, California cities paid for a greater number of more expensive street repairs with local funding, not federal or state funds.

Figure 4: Local Funding Is Needed to Pay for an Increasing Number of Expensive California City Street Reconstruction Projects



In Solano County, the investments made between 2009 and 2013 reflect this trend. The chart below illustrates how the majority of city street rehabilitation funding came from state or federal sources. With state and federal sources decreasing, local funding sources may have to make up the difference.

Figure 5: Local, State and Federal Investments by Solano Jurisdictions, from 2009-2013



6.5 Times More Funding Needed to Cost-effectively Maintain Local Streets and Roads in Solano County

On December 5, 2011, MTC released "Final Draft Local Streets and Roads Long-Range Needs/ Revenue Assessment" for the Plan Bay Area Regional Transportation Plan (RTP). MTC estimated how much funding each Bay Area county needs to maintain current conditions or reach a state of good repair.

Table 4: Draft 28-Year Plan Bay Area LS&R Needs and Revenues (Millions)

Draft 28-Year Plan Bay Area LS&R Capital Needs and Revenues (In Millions)							
County	Revenues for Capital Pavement Rehab Needs*	Cost to "Maintain Existing PCI" Scenario	Cost to reach a "State of Good Repair, PCI 75"	Shortfall, "Maintain Existing PCI" Scenario	Shortfall, "State of Good Repair, PCI 75" Scenario	Ratio of "Maintain Existing PCI" Cost to Revenues	"State of Good Repair, PCI 75" Cost to Revenues
Solano	**488**	**2,186**	**3,195**	**1,699**	**2,707**	**4.5**	**6.5**
Napa	219	872	1,516	653	1,297	4.0	6.9
Sonoma	994	2,858	5,018	1,863	4,023	2.9	5.0
Marin	393	1,054	1,506	661	852	2.7	3.8
Santa Clara	3,374	8,817	10,894	5,443	7,519	2.6	3.2
Alameda	2,153	5,332	7,798	3,179	5,650	2.5	3.6
San Mateo	1,368	3,317	3,913	1,950	2,471	2.4	2.9
Contra Costa	2,868	4,863	5,786	1,995	2,871	1.7	2.0
San Francisco	2,299	3,263	4,778	965	2,480	1.4	2.1
REGION	14,156	32,563	44,404	18,407	29,869	2.3	3.1
* Revenues include committed sources such as gas taxes, sales taxes, registration fees and other local revenues							

Some Solano Cities need as much as 19.7 times more funding

Based on MTC's figures, countywide local streets and roads face a funding shortfall over the next 28 years of $1.7 billion to maintain current conditions and $2.7 billion to reach a state of good repair.

Table 5: Draft 28-Year Solano County LS&R Needs and Revenues (in Millions)

Draft 28-Year Solano County LS&R Capital Needs and Revenues (In Millions)							
Solano Agencies	Revenues for Capital Pavement Rehab Needs*	Cost to "Maintain Existing PCI" Scenario	Cost to reach a "State of Good Repair, PCI 75" Scenario	Shortfall, "Maintain Existing PCI" Scenario	Shortfall, "State of Good Repair, PCI 75" Scenario	Ratio of "Maintain Existing PCI" Cost to Revenues	Ratio of "State of Good Repair, PCI 75" Cost to Revenues
Dixon	5.7	100.2	112.2	94.5	106.5	17.6	19.7
Benicia	16.5	137.3	217.0	120.8	200.5	8.3	13.2
Vallejo	60.2	357.9	874.0	297.6	813.8	5.9	14.5
Fairfield	105.9	561.3	664.6	455.3	558.6	5.3	6.3
Vacaville	119.1	515.9	584.0	396.7	464.8	4.3	4.9
Suisun	35.6	116.4	176.7	80.7	141.0	3.3	5.0
Rio Vista	5.6	15.5	61.6	9.9	56.0	2.8	11.0
County	139.1	382.0	504.8	242.9	365.7	2.7	3.6
TOTAL	**487.8**	**2186.4**	**3194.8**	**1698.5**	**2707.0**	**4.5**	**6.5**

Funding Sources for Solano County Roadways

There are a limited number of funding sources that local jurisdictions can access to fund local streets and roads maintenance activities.

As showcased in Figure 5, the majority of funds used for LS&R investments come from state and local sources. Over the past decade the percentage of funds coming from the federal government has declined and the percentage coming from local sources has increased. The federal gas tax was last raised in 1993, nearly 21 years ago. According to the Federal Highway Administration, the purchasing power of the federal gas tax has dropped approximately 30 percent since 1997. This trend is important going forward as local agencies might have to rely on local funding measures for their roadway needs.

Federal (25%)

- Surface Transportation Program (STP) – This funding source has most recently been packaged as part of the OneBayArea Grant (OBAG) program. This program has increased the level of regulation and limited the use of funds, with at least 50% of funds in Solano County going to PDAs or must be used in complete streets projects.
- Federal Stimulus –These one-time funds were available for roadway projects during the recession of 2009-2012. While these funds were a boost to local agencies of federal revenues, they only served to fill the gap that occurred due to a decrease in local and state revenues.

State (44%)

- Prop 1B – This funding source has been used by local agencies to augment their local streets and roads maintenance budgets since it was passed by voters in 2006. A total of approx. $5M was allocated to Solano County jurisdictions for roadway maintenance. According to Caltrans Dept of Finance, nearly all funds have been allocated. This funding source is no longer available for roadway projects.
- Gas Tax – State gas tax revenues are collected by the State and then distributed to local jurisdictions by formula. This is important source of revenue that has held steady due to “Fuel Tax Swap” legislation enacted in 2011.

Local (31%)

- City or County General Fund
- Regional Transportation Impact Fee – Recently enacted by Solano Board of Supervisors with a $1,500 per dwelling unit equivalent. This resource is not guaranteed as it is limited to new development, and funds are allocated to specific projects, not just roadway improvements.
- Local Sales Tax - In order to address the need for more local funding, three cities within Solano County have passed local sales tax measures recently, of which a portion of the funds have been allocated to LS&R maintenance. Vallejo, Fairfield, Vacaville, and Rio Vista all have passed temporary sales tax measures, with only Vallejo and Fairfield currently budgeting a portion of the revenue to LS&R.

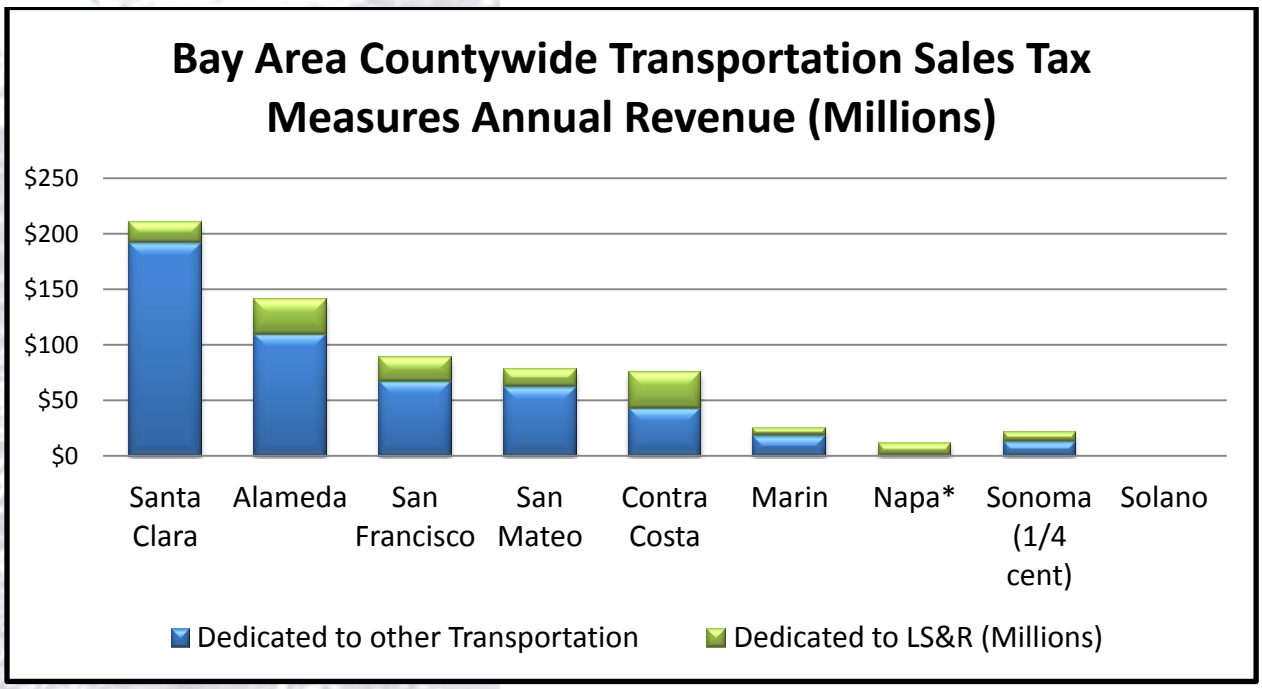
Table 6: Local Jurisdictions with Temp Sales Tax Measures

Municipality	Sales Tax Rate	Annual Budgeted to LS&R
Vallejo	1%	~$2M
Fairfield	1%	~$1M
Vacaville	.25%	N/A
Rio Vista	.75%	N/A

While four of the seven cities within Solano County currently have a sales tax, with some of the funds budgeting for LS&R, there is currently no countywide sales tax devoted to transportation improvements.

A local transportation funding source would help to alleviate some local funding shortfalls and would provide a reliable and steady source of revenue for roadway maintenance needs. In fact, Solano County is the only county within the 9 county San Francisco Bay Area that does not have a local countywide funding source dedicated to transportation improvements and roadway maintenance. Some Bay Area counties have also adopted a fee based on vehicle licensing through the Department of Motor Vehicles that directly funds transportation projects. How much revenue can a countywide funding source provide? Figure 6 and accompanying table 7 show that tens, or even hundreds of millions of dollars are generated annually for transportation projects through local voter-approved sales tax measures. Depending on how the measure was written, many of these local measures have a significant amount of funding dedicated to LS&R maintenance.

Figure 6: Bay Area Countywide Transportation Funding Source Annual Revenue Estimates (Millions)



*Napa's Measure T goes into effect in 2018.

Table 6: Bay Area Countywide Transportation Sales Taxes in Millions (All Counties 1/2% tax rate, except Sonoma)

County	Santa Clara	Alameda	San Francisco	San Mateo	Contra Costa	Marin	Napa*	Sonoma (1/4%)	Solano
Estimated 2014 Revenue	$ 211	$ 141	$ 89	$ 78	$ 75	$ 25	$ 11	$ 21	$ -
Dedicated to LS&R	$ 19	$ 31	$ 22	$ 16	$ 32	$ 7	$ 10	$ 8	$ -
Percentage to LS&R	9%	22%	25%	20%	43%	27%	92%	40%	0%

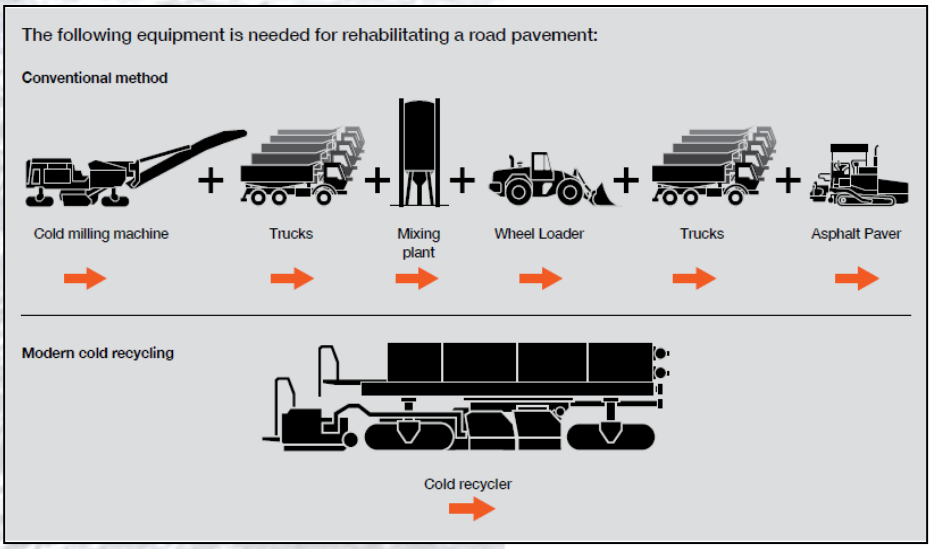
Most of the Bay Area counties have devoted between 20% and 40% of their transportation sales tax revenue to LS&R, with the exception of Santa Clara which dedicates a far lower percentage and Napa dedicating a much higher percentage. Solano County, as the only Bay Area County to not have passed a transportation sales tax measure, is currently not receiving any dedicated LS&R revenue; which has contributed to a higher back-log of roadway maintenance needs that will have to be addressed in future years, at increased cost.

Exploring New Technologies to Save Tax Dollars

New technologies, such as improved chip seal polymer, Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) pavement technology can recycle pavement and cut project costs in half. New polymer chip seals can have improved durability and have been shown to extend pavement life 7-12 years over pavements in good condition; 5-7 years on pavements in fair condition; 3-5 years for pavements in poor condition. This declining return on investment for this technology is another reason to address roadway maintenance before costs rise.

Unincorporated Solano County roads have experienced a gradual and steady increase in PCI over the last 7 years, lifting the County's index from 61 to 78. County staff primarily attributes the 3.6% annual average PCI increase to the County's aggressive chip seal program. Every year nearly half of the County's 460 centerline miles of paved roads are physically driven and 40 miles are identified for chip seal. County crews spend about 3 months each spring preparing the selected road segments by digging out failed pavement sections, blade patching, and crack sealing.

Figure 7: Conventional Method vs. CIR (Source: MTC)



Crews have successfully addressed structural distresses in advance of the surface treatment and paid equal attention to maintaining smooth profiles to make the (unincorporated) Solano County chip seal program a great success.

Several Bay Area municipalities already are experimenting with a relatively new technology known as Cold In-Place Recycling (CIR), which eliminates the need for the extraction and processing of raw materials, as well as the transportation and lay-down of finished asphalt-concrete. MTC previously awarded a $2 million grant through its Climate Initiatives Program to help finance a joint CIR demonstration project by Sonoma County and the city of Napa, with the intention of piloting the use of this technology for possible applications elsewhere in the Bay Area. Solano County and its cities can take advantage of available grant opportunities and explore the possibility of implementing CIR technology on its road rehabilitation projects. This process has the potential to save money and resources on roadway reconstruction projects.

Full depth reclamation is a recycling method where all of the existing asphalt pavement is pulverized, combined with underlying materials, and treated with asphalt emulsions and chemical agents such as calcium chloride, portland cement, fly ash and lime, to obtain an improved base. This method has been recommended by the US Department of Transportation for pavements with deep rutting, load-associated cracks, nonload associated thermal cracks, reflection cracks, and pavements with maintenance patches such as spray, skin, pothole, and deep hot mix. It is particularly recommended for pavements having a base or subgrade problem. The engineering costs are low for this method and allow for lower material expense during reconstruction.

Innovative Methods to Maintain or Increase PCI Scores

With state and federal investment in local LS&R decreasing, local agencies are using innovative methods to maintain their pavements. While these methods might be effective, they are not able to bridge the significant funding shortfall.

1. New Growth Communities – Certain cities within Solano County have a healthy growth rate, with new roads and houses being built on an annual basis. These newly constructed roads, with PCI around 100, help to boost the average PCI score for a city overall. There is a serious issue with this approach, as new residential roads only carry a small percentage of a city's traffic. A city's collector and arterial roads carry the bulk of traffic, yet are given the same average PCI weighting as a new residential road, which serves to skew the average PCI score of a city. This only raised the average and does nothing to maintain existing roads.

2. One-Time Funds – The most recent example of one-time funds is the Federal Stimulus that was passed in 2008. These funds helped to make up for a decrease in local streets and roads funding during the economic downturn. The Federal Stimulus assisted in funding projects for approximately two years, but these funds are no longer available.

   Another example of one-time funds is California's Prop 1B transportation bond. This transportation bond was approved by popular statewide vote in 2006 and a portion was allocated to local streets and roads maintenance. Over the course of the bond, Solano County was allocated a total of approximately $5M for LS&R projects. The remainder of the funds are allocated for transit use, and no more Prop 1B funds are available for LS&R projects.

Summary and Conclusion

Whether commuting to work, dropping the kids off at school, or making a quick stop at the grocery store, nearly every trip begins and ends on local roadways. This is arguably one of the most important infrastructure investments a city can make. How and when we invest in our roads can have major implications on future budgets. Spending $1 now on timely maintenance to keep a section of roadway in good condition would cost $5 to restore the same road if the pavement deteriorates to the point of needing major rehabilitation. A quality roadway network promotes the movement of goods and services, which has a positive effect on economic activity.

As of June 2014, Solano County and its 7 cities are cumulatively investing approximately $20M annually in maintaining local streets and roads. In order to achieve an average countywide PCI goal of 60, an additional $24M annually is needed over the next 15 years. This amount is more than twice as much as we are now spending just to maintain local streets and roads in "fair condition." Since the costs of roadway rehabilitation increase substantially when PCI drops below 60 (roads categorized as "at-risk"), having a countywide goal of 60 would poise our roads on the edge of a maintenance cliff. To reach the higher PCI goal of 75, the goal approved in the Solano Comprehensive Transportation Plan, $50M additional funds are needed annually over the next 15 years to reach a 'state of good repair' – two and a half times more than our current investment.

"Strategic investment in infrastructure produces a foundation for long-term growth."

-Roger McNamee

Without a healthy investment in our roadway infrastructure, Solano County will continue its downward trend in pavement quality. This deterioration hinders Solano County from attracting new jobs, housing, tourism, and business investment. More money spent now in long-term roadway maintenance can save Solano County and the seven cities millions in the future and strengthen our local economy.

State Route 37

Corridor Description

SR 37 follows 21 miles along the northern shore of San Pablo Bay linking US 101 in Novato, Marin County with Interstate 80 (I-80) in Vallejo, Solano County. It serves as a vital connection between Marin , Sonoma , Solano and Contra Costa and the Central Valley. It is the northernmost non-mountainous east-west link between US 101 and I-5 (via I-80 and I-505) in the State.

Congestion and Traffic Forecasting

Growing housing demand in the North Bay counties has produced a housing market that a high percentage of household cannot afford. Consequently, many have to live far away from their jobs. This jobs/housing imbalance is one cause of congestion Bay Area wide, and specifically for SR 37. Average Annual Daily Trips are projected to increase from 45,000 in 2013 to 58,000 by 2040.

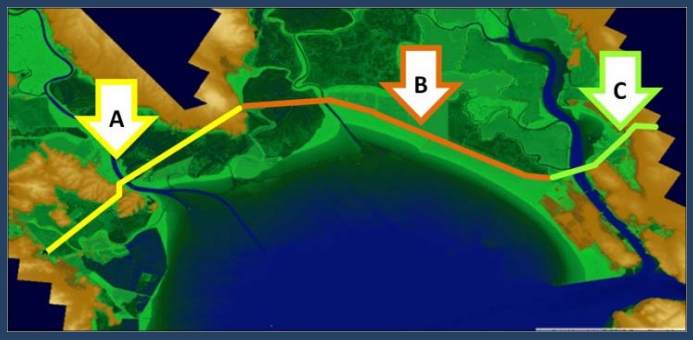
Sea Level Rise

SR 37 is protected by a complex system of interconnected levee which makes the corridor vulnerable to Sea Level Rise inundation and flooding now and in future.

SR 37 Policy Committee

In December 1, 2015, the Congestion Management Agencies (CMA) of Marin, Napa, Solano and Sonoma Counties have agreed to form the Policy Committee through a Memorandum of Understanding (MOU) to develop an expedited funding, financing and project implementation strategy for the reconstruction of SR 37 to withstand rising seas and storm surges while improving mobility and safety along the route.

The SR 37 Policy Committee membership include 3 elected officials from Marin, Napa, Solano and Sonoma Counties.



Source: UC Davis/Caltrans SR 37 Sea Level Rise Analysis)

January and February 2017 Corridor Closure

Corridor Characteristics

SEGMENT	A	B	C	COMMENTS
LANE MILES	7.1	9.3	4.4	
GENERAL PURPOSE LANES	4-E	2-C	4-F	(E=EXPRESSWAY, C=CONVENTIONAL HIGHWAY, F=FREEWAY)
NATIONAL HIGHWAY SYSTEM	YES	YES	YES	
STAA TRUCK RTE	YES	YES	YES	
POSTED SPEED LIMIT	65 mph	55 mph	65 mph	
IMPACTED BY SEA LEVEL RISE	YES	YES	YES	

Source: Caltrans SR 37 TCR

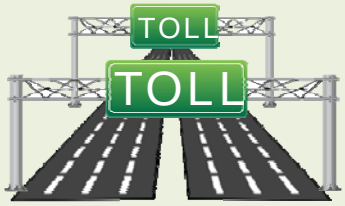
SR 37 Policy Committee Tasks Completed

- ✓ Reviewed Existing and Potential Transit Options on SR 37 Corridor
- ✓ Provided a Forum for regional agency presentations (BCDC, Caltrans, and BATA)
- ✓ Procured Consultants for Financial Expertise in Public and Private Financial Options (PFAL Inc.)
- ✓ Obtained $800k from MTC for Corridor Study and Alternatives Analysis
- ✓ Developed 6 State and National Transportation Lessons Learned Case Studies (PFAL)
- ✓ Adopted 25 Corridor Policy Questions and Considerations
- ✓ Developed Public Outreach Scope of Work
- ✓ Developed Traditional Public Financing Timeline, Corridor Fact Sheet and White Paper
- ✓ Complete initial corridor financial option assessment by PFAL
- ✓ MTC Corridor Study and Design Alternatives expected to be completed in December 2017

Toll Revenue Consideration

Even under optimal traditional transportation funding circumstances, **construction initiation will not likely begin until 2088**. Therefore, the SR 37 Policy Committee agreed to consider non traditional financing options such as a toll road or toll Bridge.

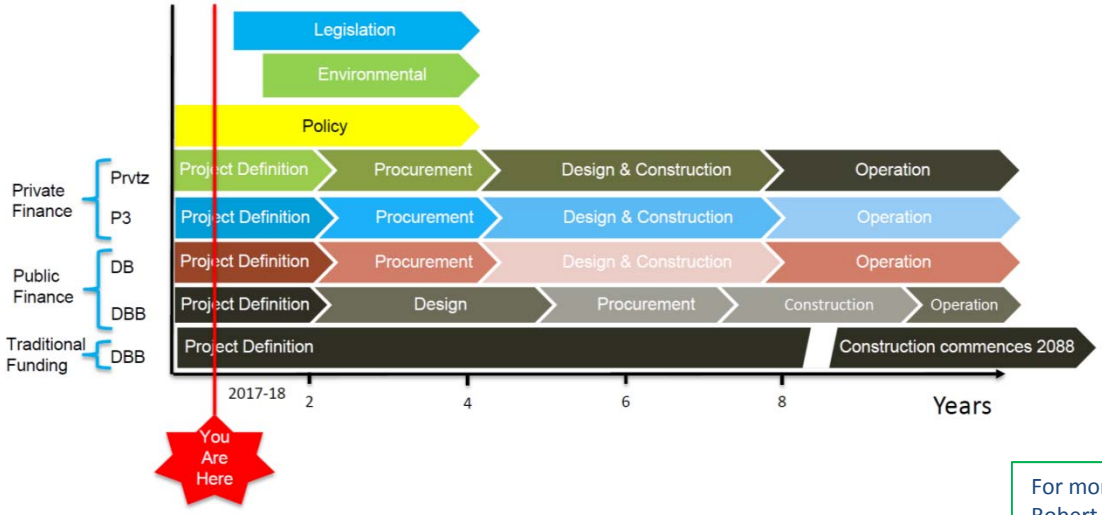
The recent **SR 37 Affordability Analysis** developed by Project Financial Advisory Limited (PFAL) estimated a potential toll revenue range of **$4.6 Billion** to **$16.9 Billion** based on several scenarios considered.



Toll Road Option

Toll Bridge Option

Financial Options and Estimated Timeline



Delivery models: Prvtz = Privatization, P3 = Public Private Partnership, DB = Design Build, DBB = Design Bid Build

Private finance means private debt/equity e.g. developer/infrastructure funds, bank debt, private placement, PABs;
Public finance means municipal/federal debt e.g. revenue bonds, TIFIA loan;
Traditional funding means the highway is not tolled e.g. federal/state/local funding such as STIP/ITIP;

For more information please contact:
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STA Senior Project Manager
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I-80/I-680/SR12 Interchange Project

Solano Transportation Authority

Construction Packages Cost Estimates			
Package	**Previous Investment**	**Remaining Need**	**Total Cost**
1	$110M	$0	$110M
2A	$0	$76M	$76M
2	$10.8M	$56.5M	$67.3M
3	$10.3M	$206.6M	$217M

Increase in Traffic Volume and Delay at I-80/I-680/SR12 Interchange		
Year	**Daily Volume**	**Vehicle-Delay**
2015	145,000	1,960 hours
2035 (Projected)	270,000 (86% increase)	11,200 hours (470% increase)

What's Being Planned - Long Term

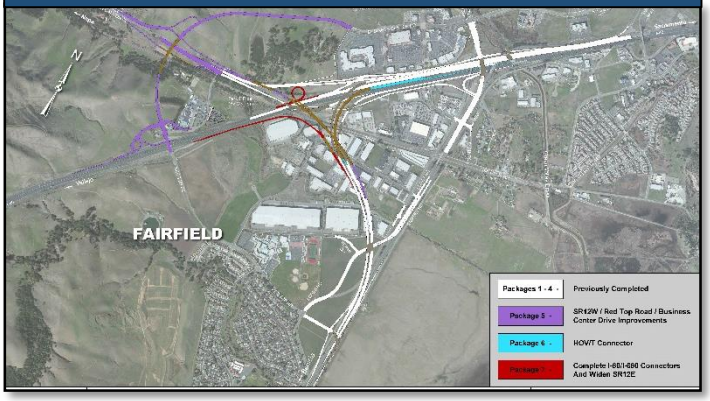
This multi-year, multi-phase project is located in Solano County. The southwest project limits are near Fairfield's Green Valley and Cordelia neighborhoods, the northeast project limits near Suisun City.

Once completed, the project will improve safety and travel times for motorists on I-80, I-680, Highway 12 and adjacent city streets. Features include a realignment of I-680, an improved direct connector route between I-80 and Highway 12, construction of new interchange overcrossings, new entrance/exit ramps, bike and pedestrian safety improvements, and the extension of some local streets leading to I-80 and Highway 12.

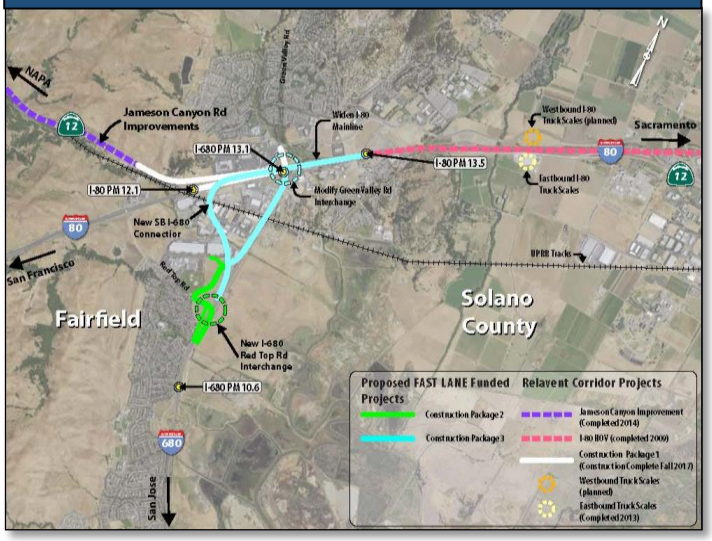
Project Phasing

The project is being implemented through seven individual construction packages, each with independent utility. Construction Package 1 ($110M) is currently finalizing construction and will be completed in early 2017. **Construction Package 2a, Package 2, and Package 3 are all designed, and are seeking construction funding through FASTLANE**.

Proposed Packages 1 through 7



Construction Packages 2 and 3



FASTLANE Freight Program Goals (I-80/I-680/SR12 Interchange Project Meets Goals)

1. I-80 is part of the National Freight Network

2. Economic generator located adjacent to existing business parks and manufacturing

3. Job creation – Construction of Packages 2a, 2, and 3 will create approx. 4,407 jobs (13,000 per $1B invested)

I-80/I-680/SR12 Interchange Congestion and Truck Traffic

I-80 WESTBOUND CORDELIA TRUCK SCALES IMPROVEMENTS

The proposed project will replace the existing Cordelia Truck Scales along Westbound I-80 in Solano County. The existing truck scales facility was constructed in 1958 to inspect trucks entering the San Francisco Bay Area from locations nationwide, and accommodates a between 500 and 700 trucks per day. It consists of two dynamic and one static scale, four inspection bays, and limited parking. The existing facility is outdated, under capacity, and does not include state of the art technology required for truck inspections today. Existing access from I-80 consists of short on and off ramps, resulting in truck traffic backing up onto I-80 and increasing the potential for rear-end accidents. During peak traffic periods experienced several times per week, the facility is closed to incoming trucks to prevent this queuing.

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. Direct access to the facility will also be provided from westbound State Route 12 (East). The new facility will have the capacity to inspect all westbound I-80 trucks passing the facility 24 hours per day, seven days a week.

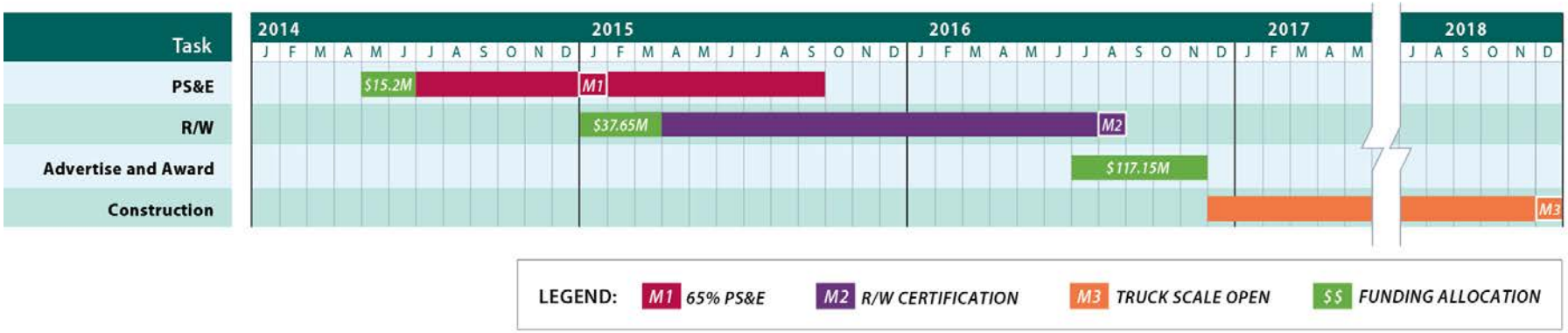
The new facility will be a Class B Commercial Vehicle Enforcement Facility (CVEF), which is defined as an independent command facility of the CHP. Key aspects of the facility will consist of the following:

- Seven covered inspection areas with configurations to accommodate long vehicle combinations.
- Inspection areas with the capability to inspect the underside of low-clearance vehicles.
- Elevated structures to enable inspectors to check the domes and top portions of cargo trucks.
- "Weigh In Motion" scales with the capability to sort truck traffic into the appropriate lane along the approach roadway.
- A minimum of four sets of scales to accommodate two lines of empty and loaded trucks.

Constructing and opening the full Westbound Cordelia Truck Scales will result in the following enhanced benefits:

- Increased processing capacity of the truck scales to up to 1000 trucks per hour
- Increased queue capacity and a reduction in congestion
- Reduction in rear-end accidents along I-80
- A fully modernized and state of the art truck scales facility for westbound I-80
- Auxiliary inspection areas for potentially hazardous trucks will improve public safety
- Improved corridor operations by increasing weaving distances between adjacent interchanges

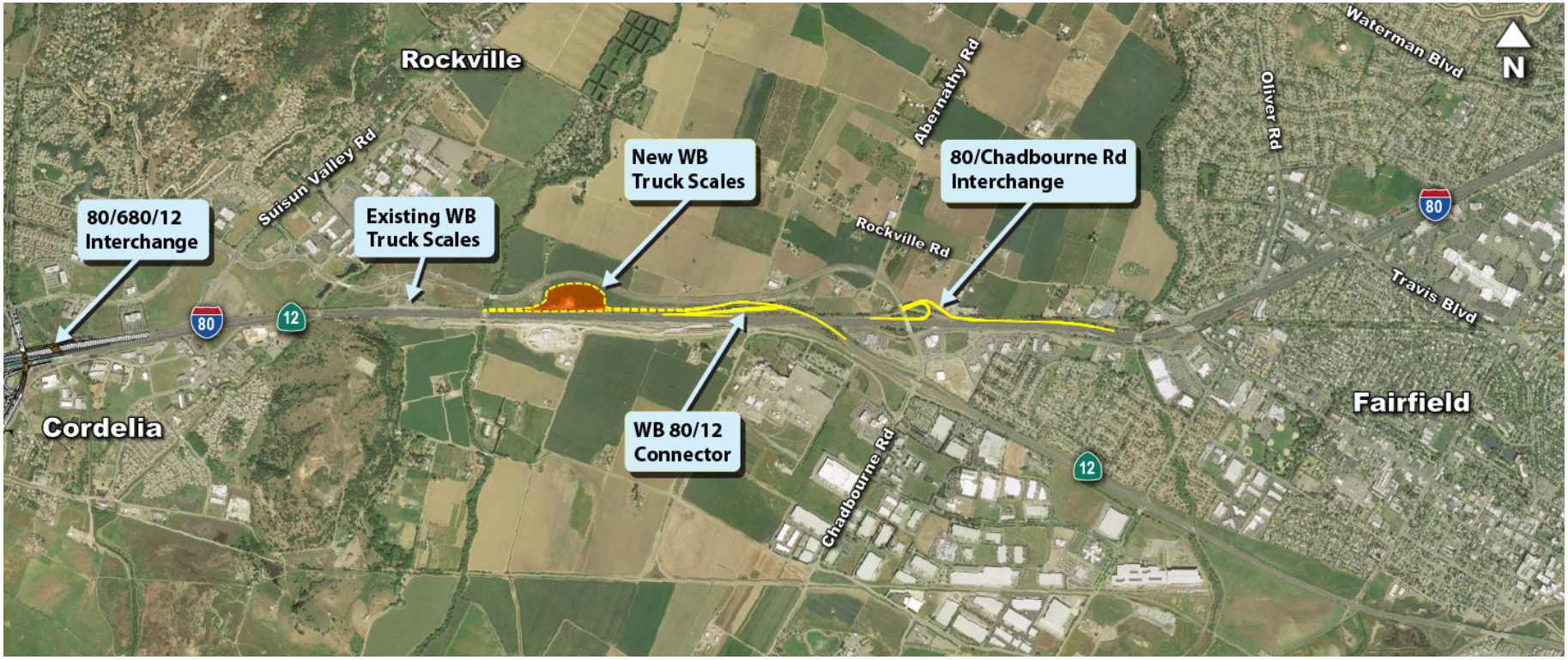
PROJECT SCHEDULE:

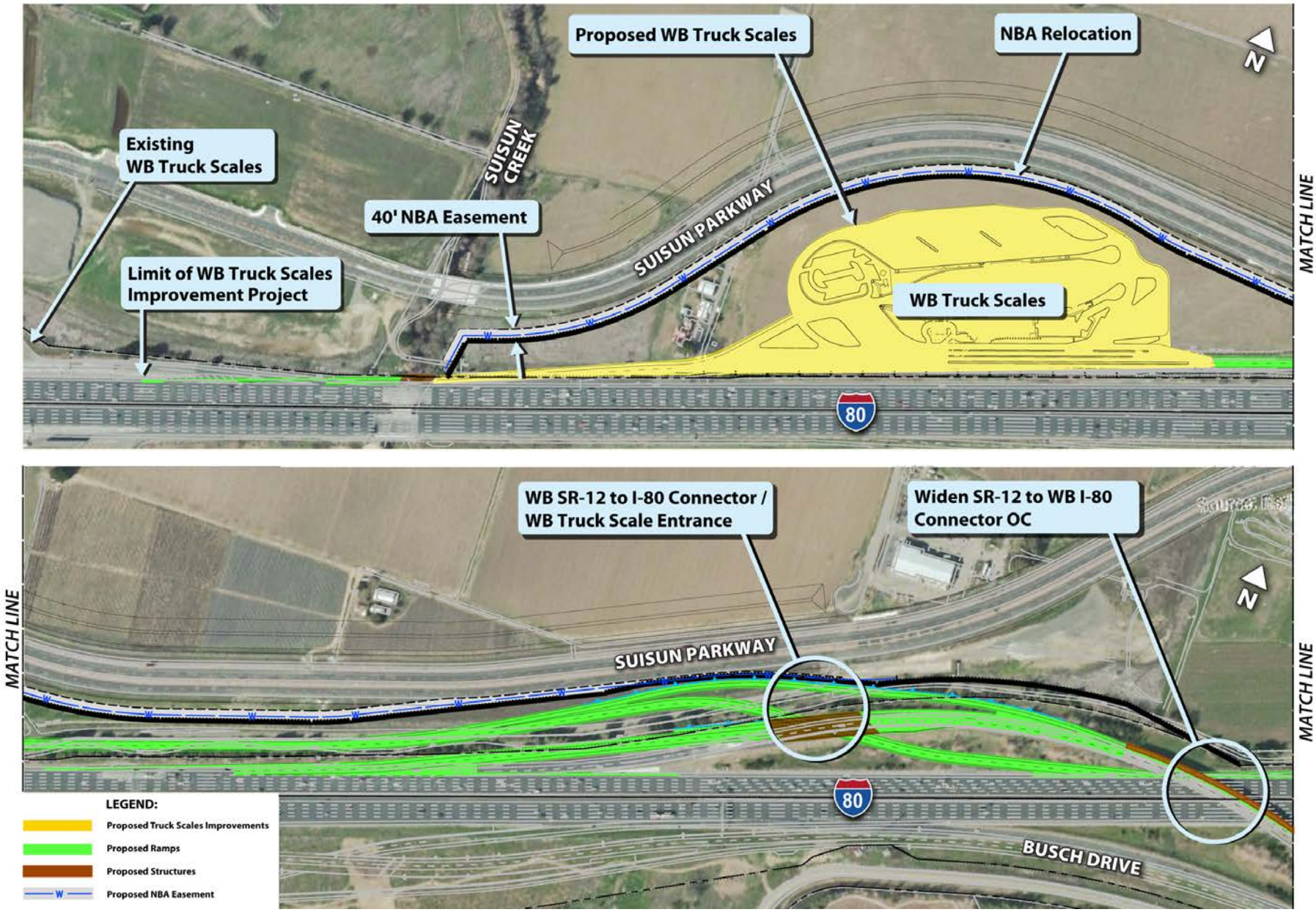


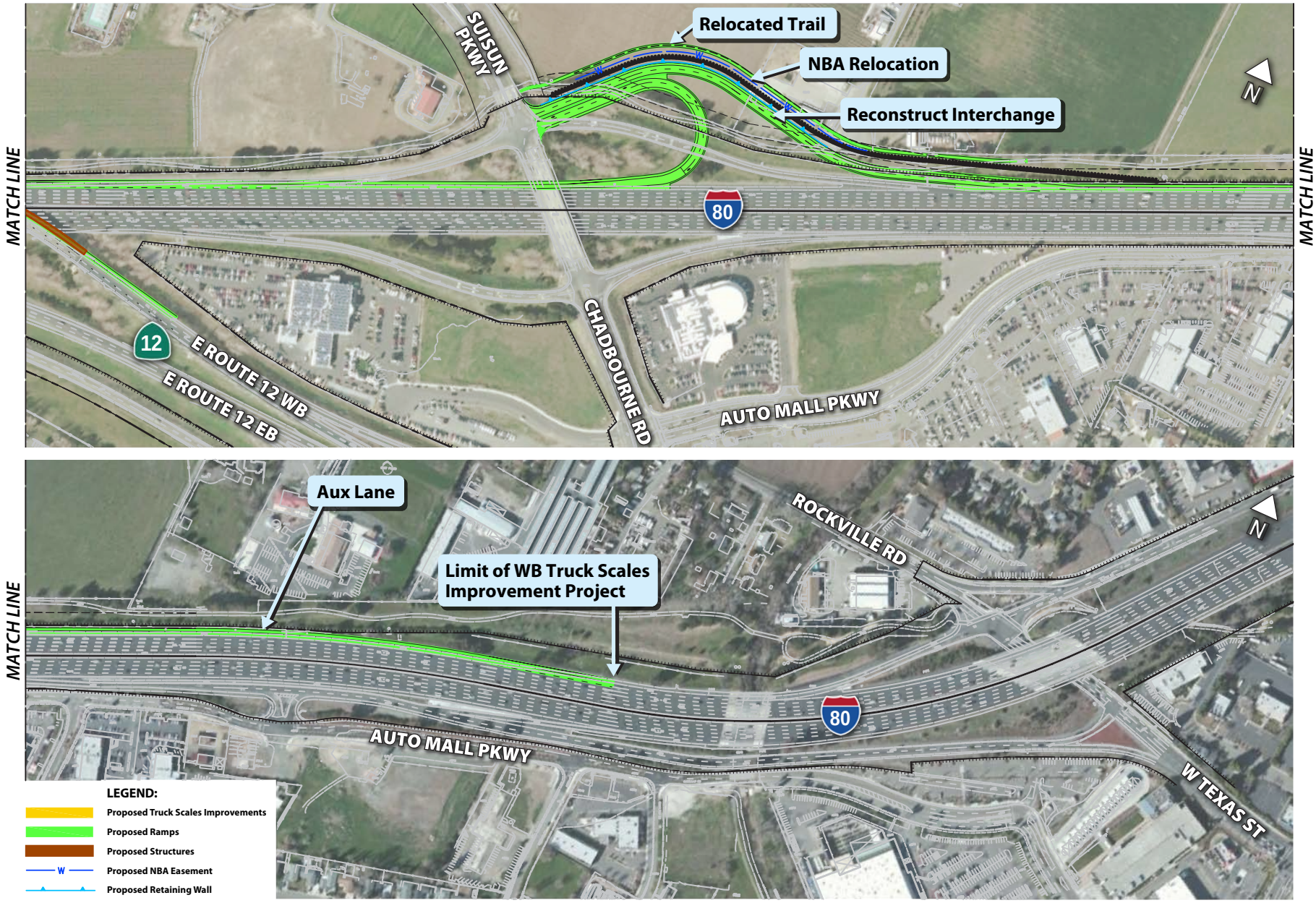
ESTIMATED COSTS *(in millions of dollars)*

Phase	Estimated Costs
PS&E	15.20
R/W (including utility relocations)	37.65
Construction	117.15
TOTAL Estimated Cost	170.00

PROJECT AREA




Proposed WB Truck Scales
NBA Relocation
Existing
WB Truck Scales
SUISUN CREEK
40' NBA Easement
SUISUN PARKWAY
Limit of WB Truck Scales
Improvement Project
WB Truck Scales
MATCH LINE
N
80
WB SR-12 to I-80 Connector /
WB Truck Scale Entrance
Widen SR-12 to WB I-80
Connector OC
MATCH LINE
SUISUN PARKWAY
N
80
BUSCH DRIVE
LEGEND:
Proposed Truck Scales Improvements
Proposed Ramps
Proposed Structures
Proposed NBA Easement


Relocated Trail
NBA Relocation
Reconstruct Interchange
SUISUN PKWY
MATCH LINE
MATCH LINE
80
12
E ROUTE 12 WB
E ROUTE 12 EB
CHADBOURNE RD
AUTO MALL PKWY
N
Aux Lane
Limit of WB Truck Scales Improvement Project
ROCKVILLE RD
AUTO MALL PKWY
W TEXAS ST
LEGEND:
Proposed Truck Scales Improvements
Proposed Ramps
Proposed Structures
Proposed NBA Easement
Proposed Retaining Wall

I-80 EXPRESS LANES
WEST OF RED TOP ROAD TO EAST OF I-505

Proposed improvements include a High Occupancy Vehicle (HOV) Express Lanes in each direction on I-80 from west of Red Top Road to east of I-505. The project includes the conversion of an existing HOV Lane to an Express Lane (Western Segment - Red Top Road to Air Base Parkway) and new construction of an Express Lane (Eastern Segment - Air Base Pkwy to I-505). The project lies within the cities of Fairfield and Vacaville and unincorporated territory of Solano County and would construct approximately 18 miles of express lanes in the I-80 corridor through the conversion and highway widening. The Express Lanes would be free for carpools, vanpools and buses and be available to single occupant vehicles for a fee when there is enough capacity. Tolls for single occupant vehicles will increase as lanes reach capacity to encourage high occupancy and transit users.

Constructing and opening the full 18-mile Express Lanes on I-80 in Solano County *will result in the following enhanced benefits:*

- An 18-mile Express Lane facility will provide an opportunity to attract more customers as it provides an option for expedited travel through the two city congested areas.
- The conversion of the HOV lane on the western segment of I-80 (Red Top to Air Base Parkway) will improve the throughput while the new construction on the eastern segment (Air Base Parkway to I-505) will increase capacity as well as improve throughput.
- Enhance travel options for carpools, buses, and Express Bus. Constructing the Eastern segment (new construction) will provide an additional 9-mile HOV Lanes to I-505, thus having a full 18-mile section of continuous HOV Lanes on I-80.
- Increasing travel time savings and reliability for all users, including HOVs and transit for the additional 9-mile segment to I-505.
- Improve safety – Currently the EB HOV Lane ends at Air Base Pkwy, where a significant bottleneck is formed. Constructing the Eastern Segment (new Construction) will remove this bottleneck.
- Reduce congestion and delays for all travelers in the corridor.
- Improve transit utilization by improving transit travel times in a longer corridor (18-mile vs. 9-mile)
- Constructing the full 18-miles of Express Lanes provides for an expansion, in conjunction with the implementation of a payment system, which is likely to be viewed positively by traveling public.
- Establish a revenue-generating mechanism to defray operational and maintenance costs for the express lanes, and ultimately provide revenue to help fund other future transportation improvements in the Regional Express Lane Network.
- The Updated Revenue Forecast Report (March 4, 2013) for this 18-mile corridor shows that it will generate 2020 revenues of $3.7 M vs. $1.6 M for the conversion segment only.

Estimated Costs

TOTAL ESTIMATED COSTS *(in millions of dollars)*			
Phase	*West Segment (Conversion)*	*East Segment (New Construction)*	*East/West Segment*
PA/ED			10.8
PS&E	3.2	13.1	
R/W	1.2	2.9	
Design Services During Construction	0.37	1.8	
Construction Support	3.7	12.4	
Construction	33.8	94.7	
Total Estimated Costs	**42.3**	**124.9**	**10.8**

Notes:

1. Highlighted in yellow is the work that is currently funded.
2. Escalated costs to 2018 is an unfunded need of $135 M.
3. The cost for Systems Integration has not been included in the above table and will be performed by MTC/BAIFA.

Solano Transportation Authority

For more information please contact:
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DATE: June 16, 2017
TO: STA Arterials, Highways, and Freeways Committee
FROM: Anthony Adams, Project Manager
RE: Office of Traffic Safety (OTS) Grant Update

Background:

The California Office of Traffic Safety (OTS) is a state agency whose goal is to eliminate traffic deaths and injuries. It seeks to accomplish this goal by making available grants to local and state public agencies for programs that help them enforce traffic laws, educate the public in traffic safety, and provide varied and effective means of reducing fatalities, injuries and economic losses from collisions. OTS draws from several federal government funding sources for its grants. OTS also mounts public awareness campaigns and acts as a primary traffic safety resource in order to enlist the help of the general public and the media encouraging traffic safety.

OTS has numerous "areas of concentration" for grant applications. All of these areas of concentration have no local match requirement, no minimum or maximum grant amount, and funds must be expended within one fiscal year. The call for projects was on December 5th, 2016.

STA staff applied, on a countywide basis, for two separate OTS areas of concentration for grant funding:

> **Traffic Records:** The program goal is to establish/improve record systems that aid in identifying existing and emerging traffic safety problems and aid in evaluating program performance. Accurate and current records are needed to support problem identification and to evaluate countermeasure effectiveness.
>
> **Pedestrian and Bicycle Safety:** The program goal is to increase safety awareness among pedestrians, bicyclists and motorists through various approaches including education, enforcement and engineering.

Discussion:

On June 6th, OTS contacted STA to inform us that we have been preliminarily awarded $171,000 for each application. OTS informed STA that the next steps will be to finalize a budget, timeline, and sign a contract. Work can begin on the proposed projects by October 1st. Below is a brief explanation of each of the grants:

The traffic records grant will be focused on procurement of collision data software and standardization of data reporting techniques. This data will help to identify the types and locations of collisions, and will have this data available and analyzed automatically. In consultation with the commanders of each police department within Solano County, all data will be collected and made available through an online portal.

The pedestrian and bicycle safety grant will be focused on reducing injuries of middle and high school children within Solano County. The Solano Safe Routes to School Program launched a youth engagement program in January 2017 to increase middle and high school youth participation and leadership within the program. With the potential support from this grant, youth teams across the county will engage in Youth-led Participatory Action Research (YPAR) projects that can lead to sustainable solutions in transportation, safety and increasing physical activity. These YPAR youth teams will also work in partnership with STA and city project and planning staff, countywide bicycle and pedestrian committees and various school and community organizations to research and develop solutions around pedestrian and bicycle safety in a participatory learning process.

Fiscal Impact:
No matching funds are required for this OTS grant.