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<sup>1</sup> This presentation is based on information gathered from the Alternative Analysis DRAFT Technical Memorandum of the SR-12 Comprehensive Corridor Evaluation and Corridor Management Plan from SR 29 to I-5. As a DRAFT the memorandum is subject to change with respect to findings and/or conclusions. It should also be noted that these findings and/or conclusions may not ever be programmed due to various reasons, including but not limited to, engineering judgment and/or budget constraints.

# SR12

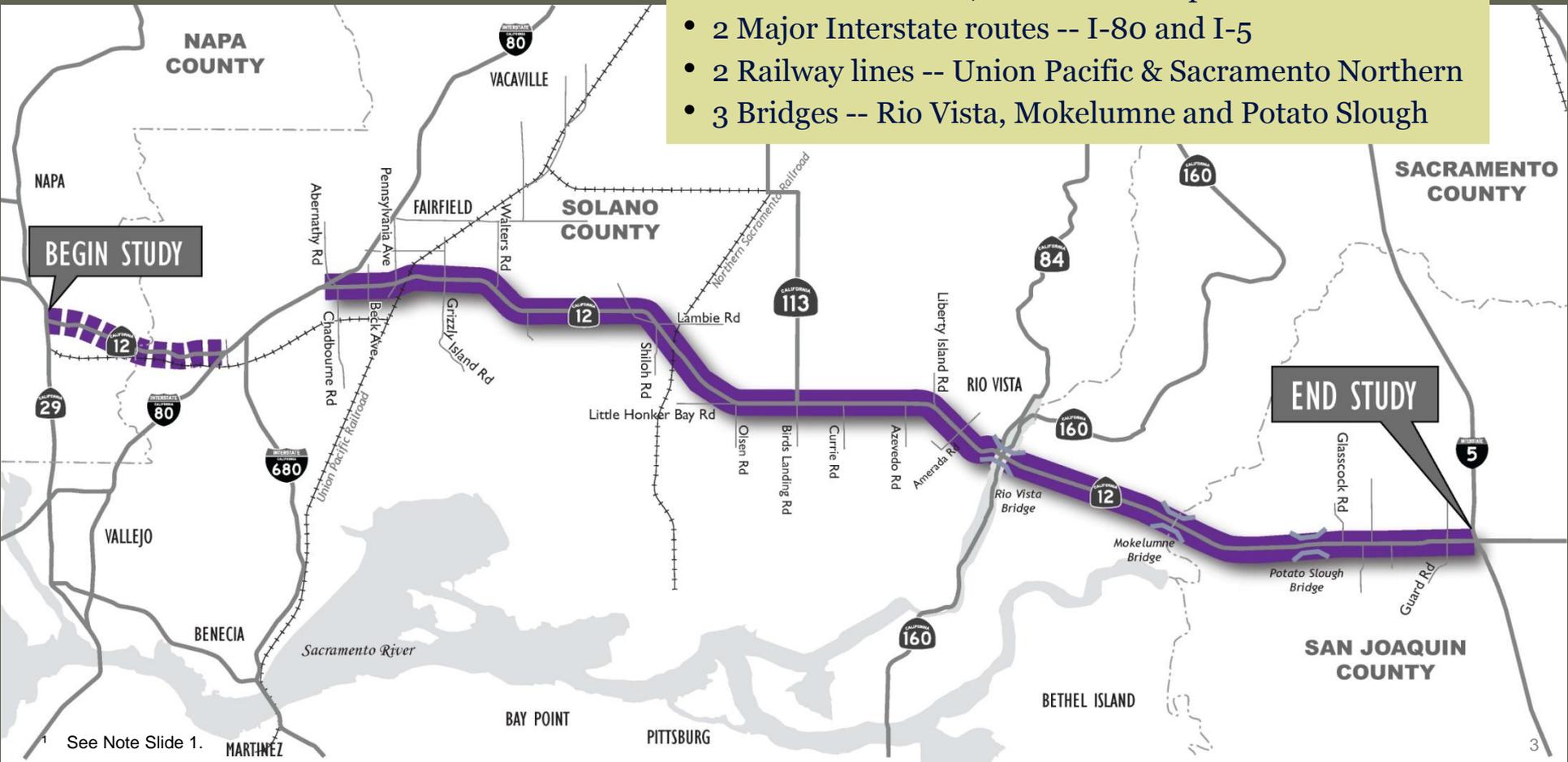
## State Route 12 Comprehensive Corridor Evaluation and Corridor Management Plan TAG/Stakeholder Meeting – February 2012



<sup>1</sup> See Note Slide 1.

# 53-Mile, Multi-Jurisdictional Corridor

- 4 Counties -- Napa, Solano, Sacramento & San Joaquin
- 3 Caltrans Districts -- 3, 4 and 10
- Developed areas -- Suisun City, Fairfield & Rio Vista
- Rural communities, farmlands and portions of the Delta
- 2 Major Interstate routes -- I-80 and I-5
- 2 Railway lines -- Union Pacific & Sacramento Northern
- 3 Bridges -- Rio Vista, Mokelumne and Potato Slough



1 See Note Slide 1.

## Goals

*Conduct a comprehensive evaluation of the State Route 12 corridor from SR-29 in Napa County through Solano, Sacramento, and San Joaquin Counties to I-5, building upon previous studies and projects.*

*Identify improvement strategies that address near- and long-term needs of the SR-12 corridor through an active stakeholder collaboration process.*

*Inform future county and regional funding and planning processes.*



SR 12 passes through **4** counties (Napa, Solano, Sacramento, and San Joaquin), **3** Caltrans Districts (3, 4 and 10), developed areas including Suisun City, Fairfield and Rio Vista, rural communities, farmlands and portions of the Delta. The route crosses **2** major Interstate routes (I-80 and I-5), **2** railway lines (Union Pacific and Sacramento Northern), navigable water bodies with **3** bridges (most notably the Sacramento River Crossing at Rio Vista) and numerous at-grade and grade separated intersections.

### Corridor Overview

SR 12 supports interregional, recreational, commuter, agricultural and military traffic between the Bay Area and the San Joaquin Valley. SR-12 is important for recreational travelers destined for Napa, Solano and Sonoma Counties as well as the Delta. It also serves as a commute corridor and a significant interregional goods movement corridor because of its direct access to I-80, I-5 and Travis Air Force Base.

**GOAL**

The goal of the study process is to develop a multi-jurisdictional corridor management plan that includes stakeholder input and consensus on a set of near-and long-term improvement strategies for SR 12.

This plan will build upon and update existing studies for the SR 12 corridor and incorporate the most recent transportation forecasts based upon current land use plans for each of the counties located along the corridor.



**LEGEND**

- County
- Water Body
- City Limits
- Study Area
- Highway
- Partially

<sup>1</sup> See Note Slide 1.

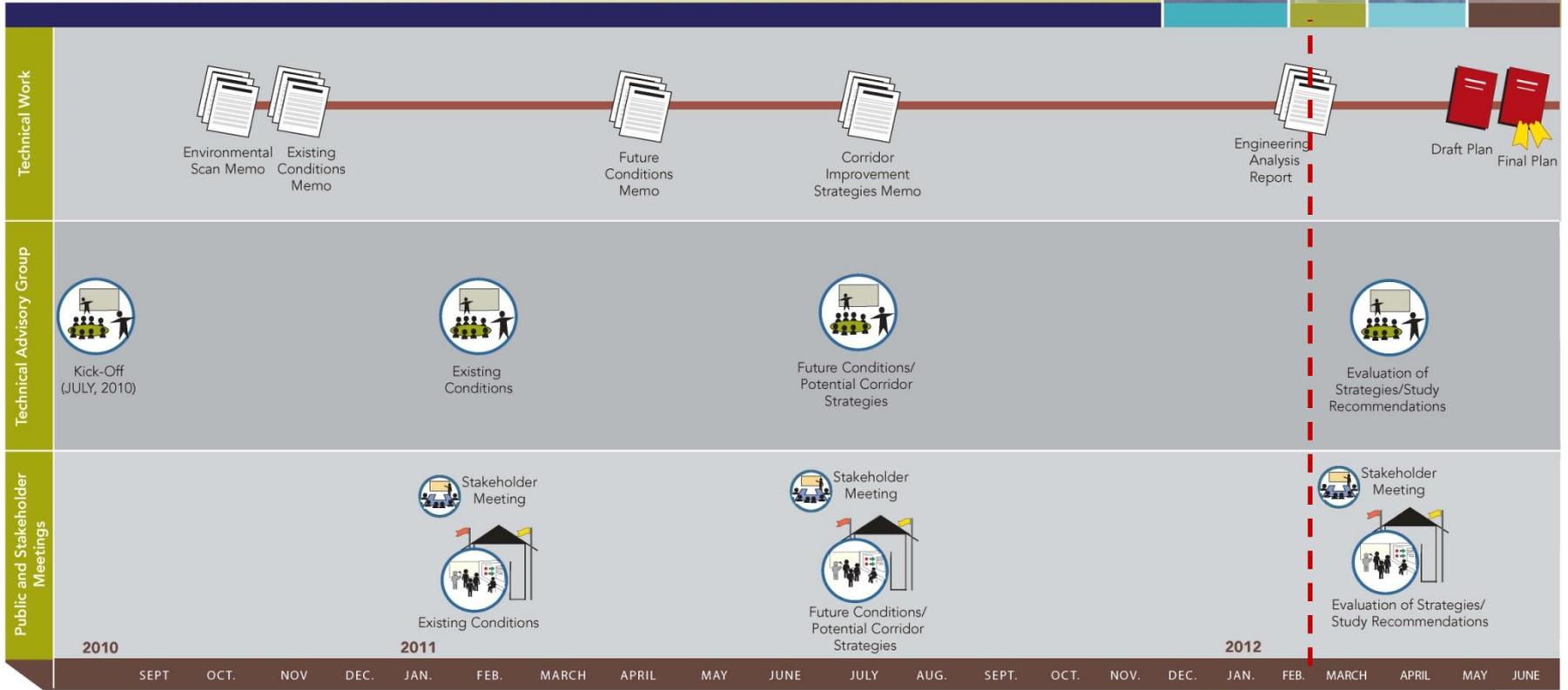
# Outreach Structure & Roles

- Project Development Team (PDT)
  - *Staff from Caltrans Districts, MPO's, Counties and the consultant team*
  - *Meets monthly to direct and guide the study*
  - *Reviews work plan and work products*
- Technical Advisory Group (TAG)
  - *Executives from transportation agencies, city engineers and professional staff*
  - *Meets at major milestones to provide input and guidance*
- Stakeholders
  - *Organized groups with a special interest in the SR-12 corridor*
  - *Briefed at major milestones and asked to provide input*
- Public at-large
  - *Engaged in advertised open-house forums to review major work products and provide input*

# Work Plan & Major Milestones

## State Route 12

Comprehensive Corridor Evaluation and Corridor Management Plan



1 See Note Slide 1.



# Meeting Objectives

1. Review of the Future Conditions Analysis
2. Evaluation of Corridor Improvement Strategies
3. Key Findings
4. Next Steps



*SR-12 – Median Barrier, Solano County*

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# Future Conditions Analysis

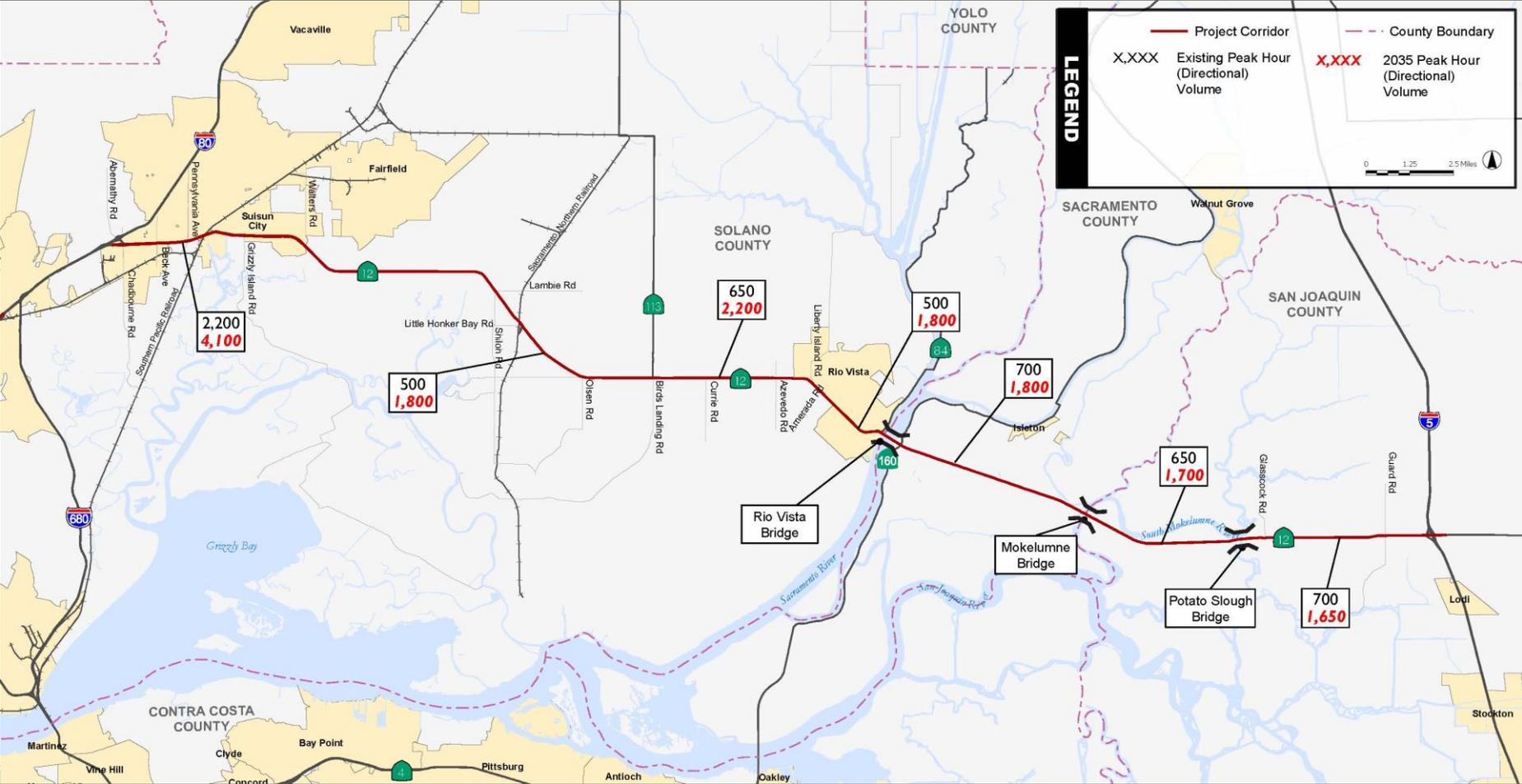
# 2035 Forecast

- Population is expected to grow by 40%, with the largest increase in the Rio Vista area (70%).
- Employment is expected to grow by 50% with the largest concentrations in the Fairfield, Suisun City and Rio Vista areas.
- Traffic demand along two-lane rural sections is expected to more than double.

# Future Conditions Analysis

# 2035 Forecast

Peak Hour (Directional) Volumes



1 See Note Slide 1.

# 2035 Forecast

- Truck\* traffic is expected to increase by 34 to 71 percent.

Year	Trucks per Day
2010	950 – 3,750
2035	2,850 – 5,850

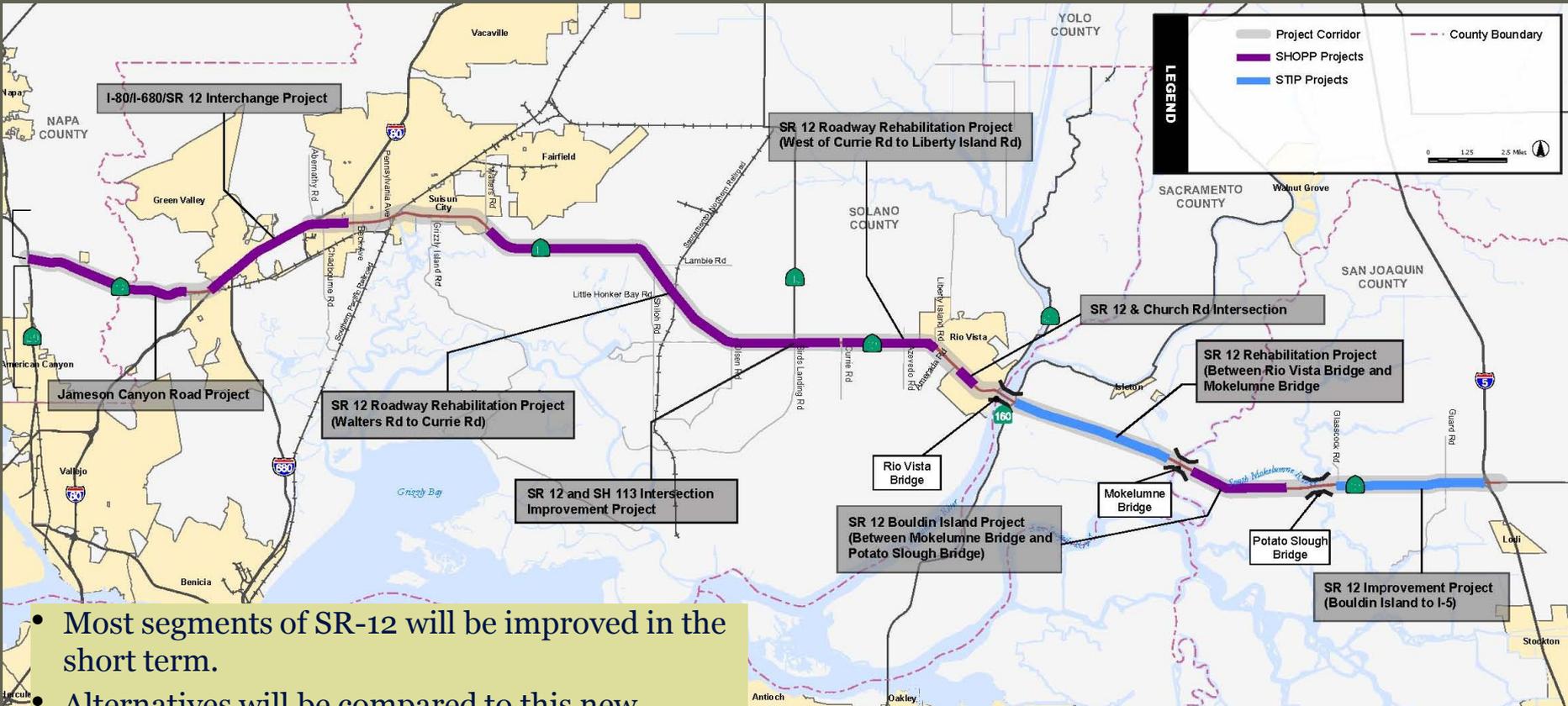
- Moveable bridge operations are expected to double from previous highs.

Year	Rio Vista Bridge Openings
2004	200/month
2010	100/month
2035	440/month

\* Defined as vehicles with three or more axles.

# Future Conditions Analysis

# Baseline Improvements

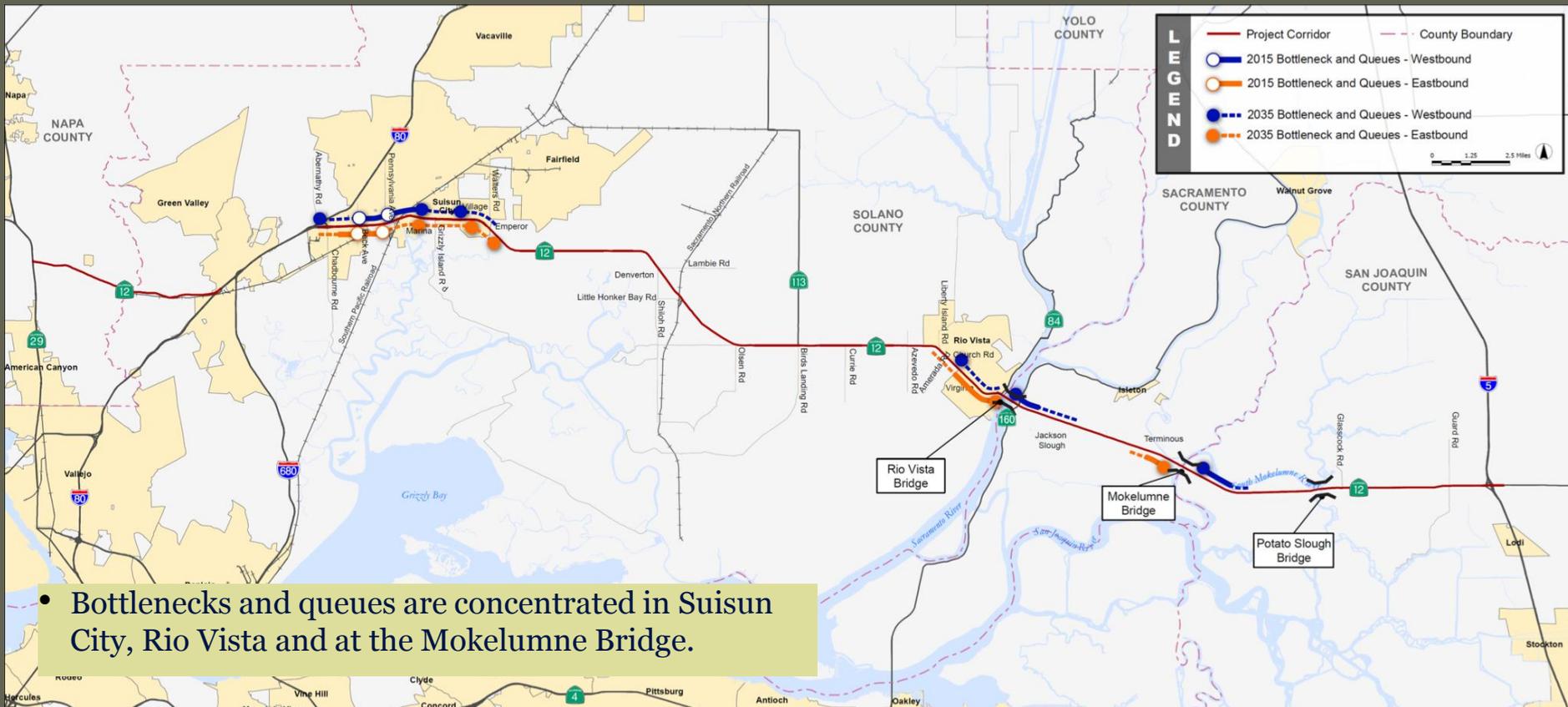


- Most segments of SR-12 will be improved in the short term.
- Alternatives will be compared to this new Baseline for the corridor.

<sup>1</sup> See Note Slide 1.

# Mainline Segment Operations

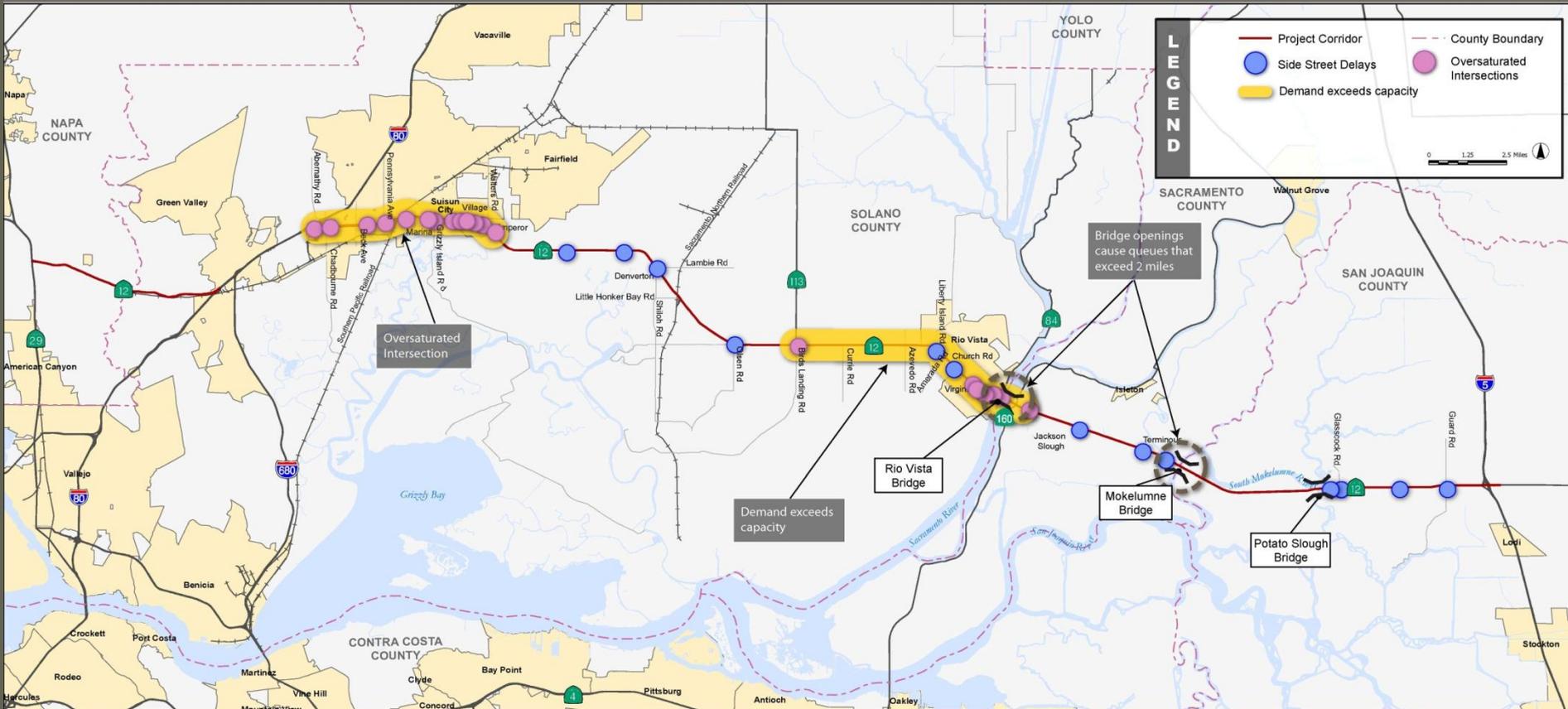
Location of Bottlenecks and Queues for Future Year (2015 and 2035)



1 See Note Slide 1.

# Summary of Operational Deficiencies

Future Year (2035)



1 See Note Slide 1.

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# Evaluation of Corridor Improvement Strategies

# Corridor Improvement Strategies

- Overview of the three strategies
- Common Elements
  - Pedestrian Facilities
  - Bicycle Facilities
  - Transit
  - Intelligent Transportation Systems
  - Bridge Operations
  - Sea Level Rise



*SR-12 – Rio Vista Bridge*

# Corridor Improvement Strategies

- **Gap-fill Strategy**

- Builds upon Caltrans existing SHOPP/STIP projects
- Addresses traffic, safety and operational problems

- **Barrier Separated Two-Lane Strategy**

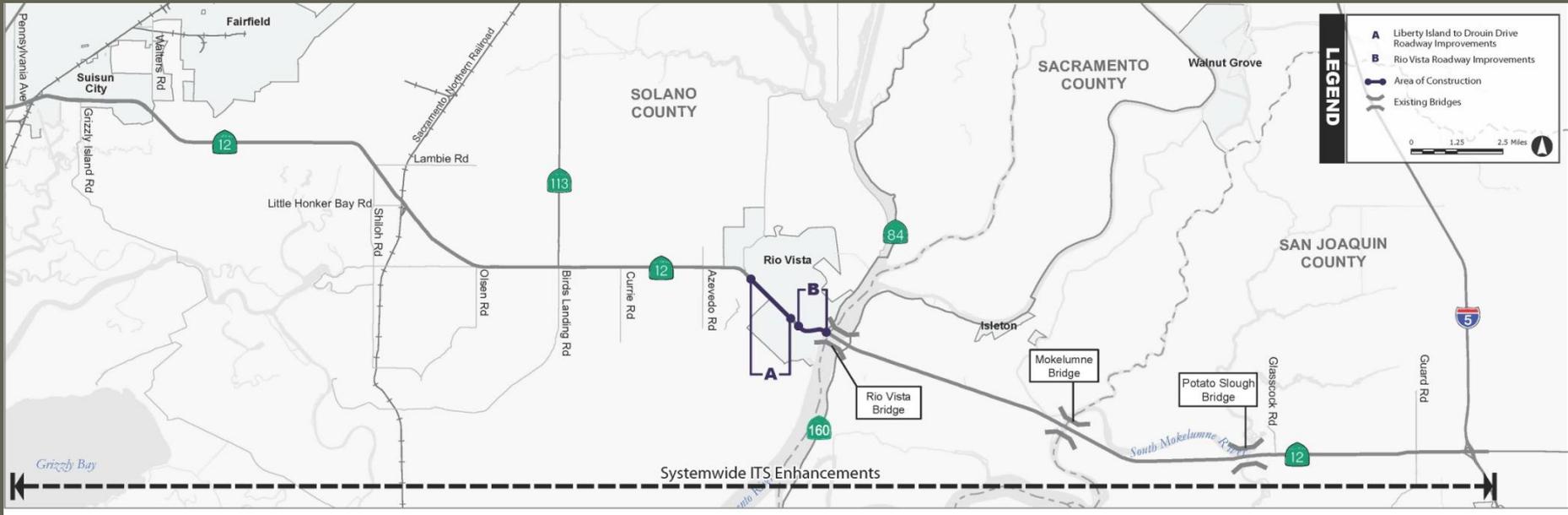
- Implement an enhanced two-lane cross section throughout the corridor
- Includes concrete median barrier
- Strategically located passing lanes

- **Four-Lane Strategy**

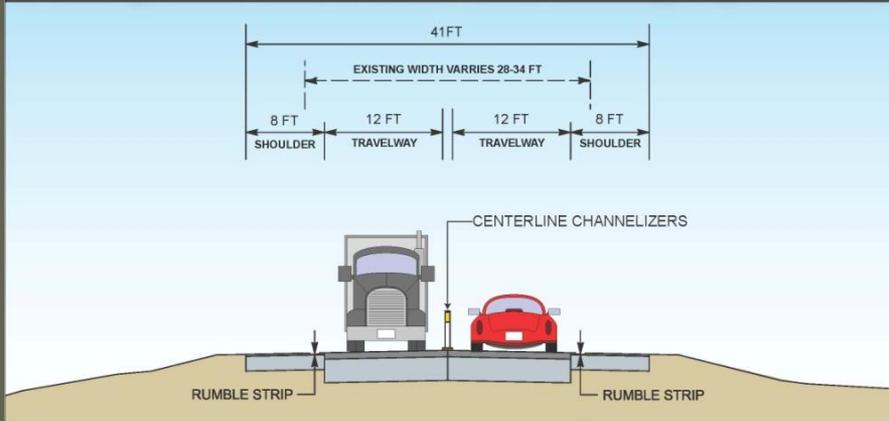
- Implements a minimum four-lane section throughout the corridor
- Includes bridge re-alignments
- Evaluates expressway options

# Corridor Improvement Strategies

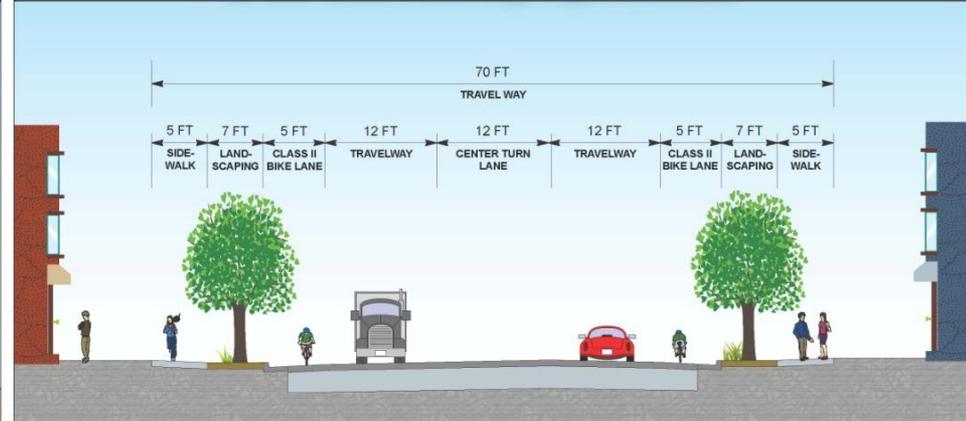
# Gap-fill Strategy



**A. Liberty Island Road to Drouin Drive Roadway Improvements**

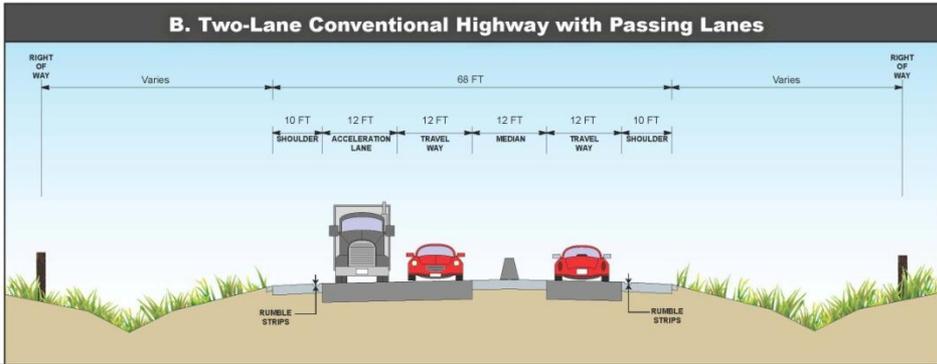
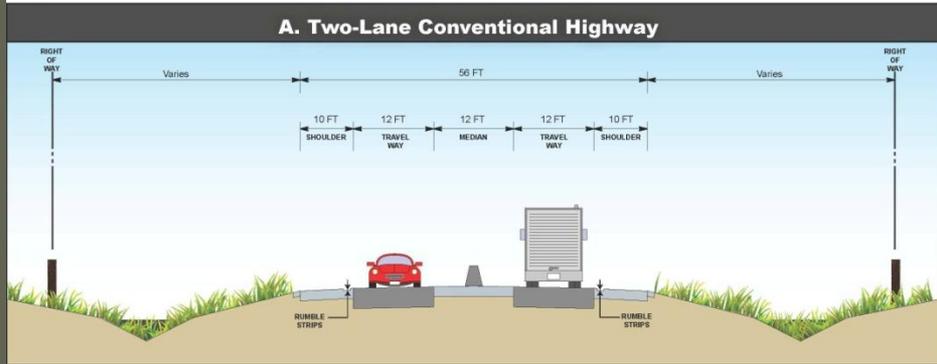
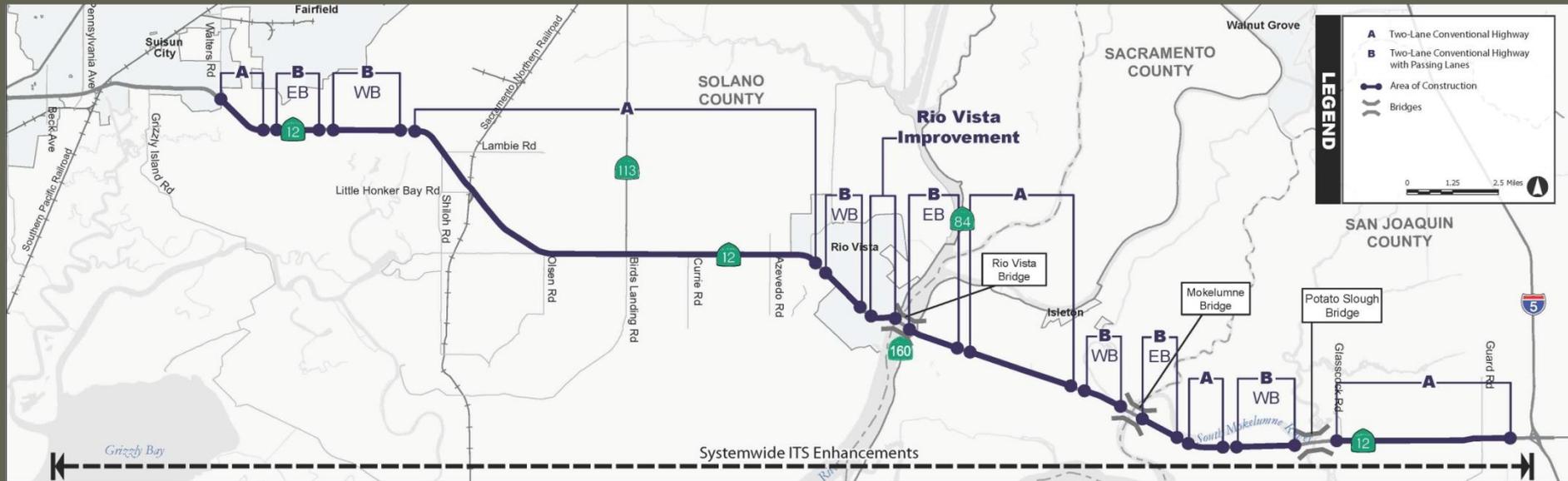


**B. Rio Vista Roadway Improvements**



<sup>1</sup> See Note Slide 1.

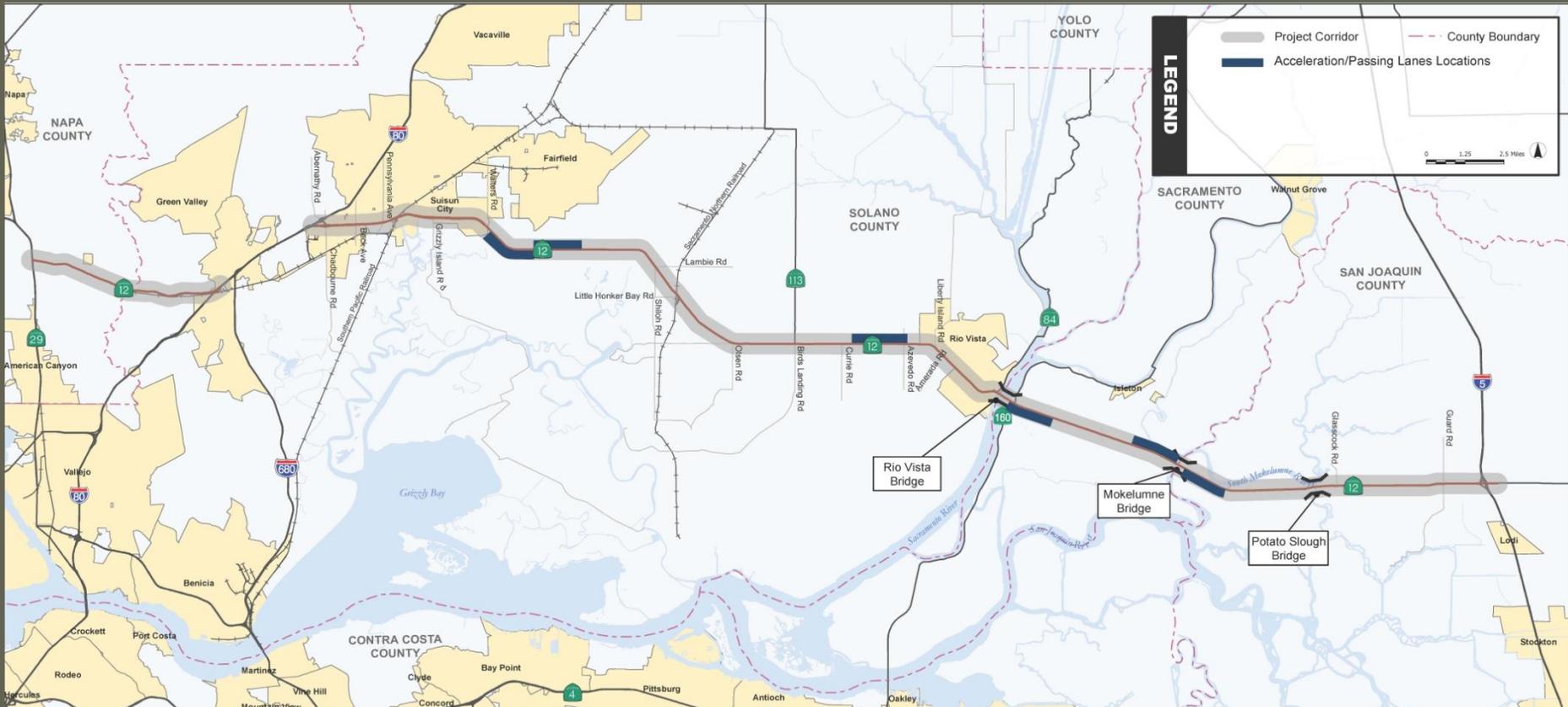
# Barrier Separated, Two-Lane Strategy



<sup>1</sup> See Note Slide 1.

# Barrier Separated, Two-Lane Strategy

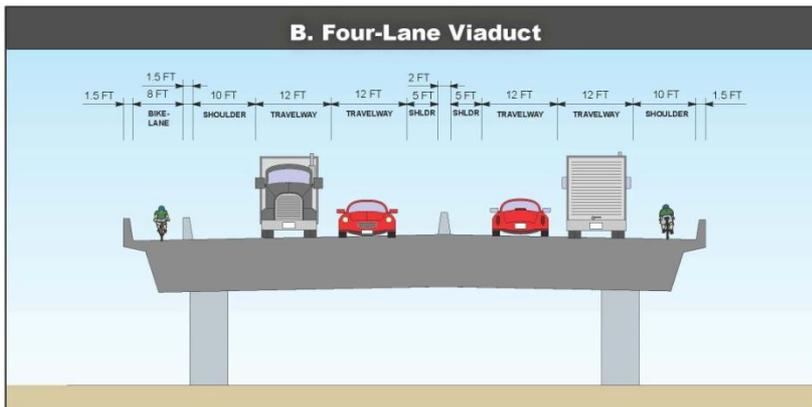
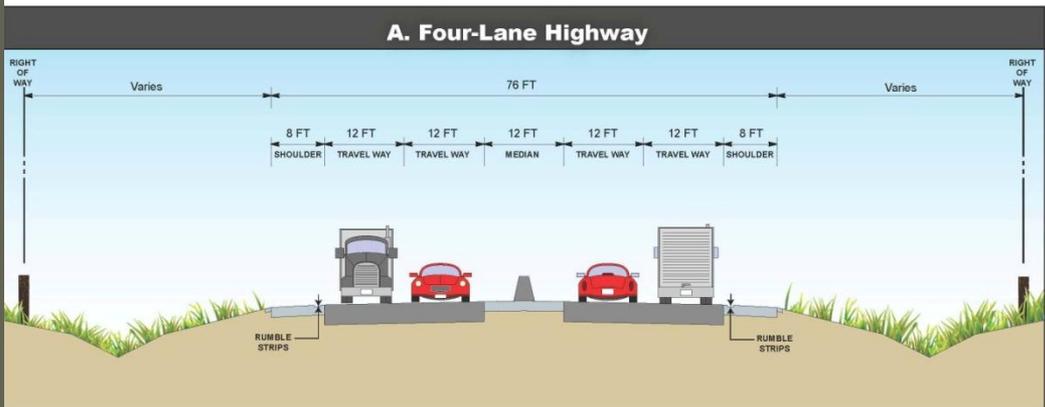
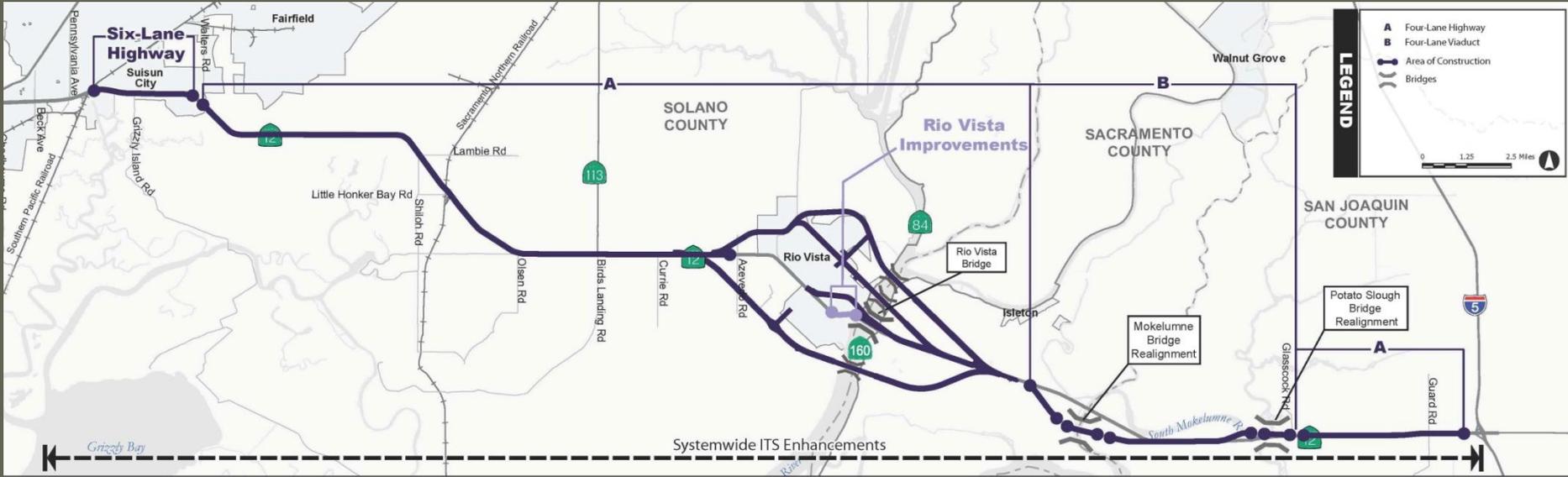
Location of Acceleration/Passing Lanes



1 See Note Slide 1.

# Corridor Improvement Strategies

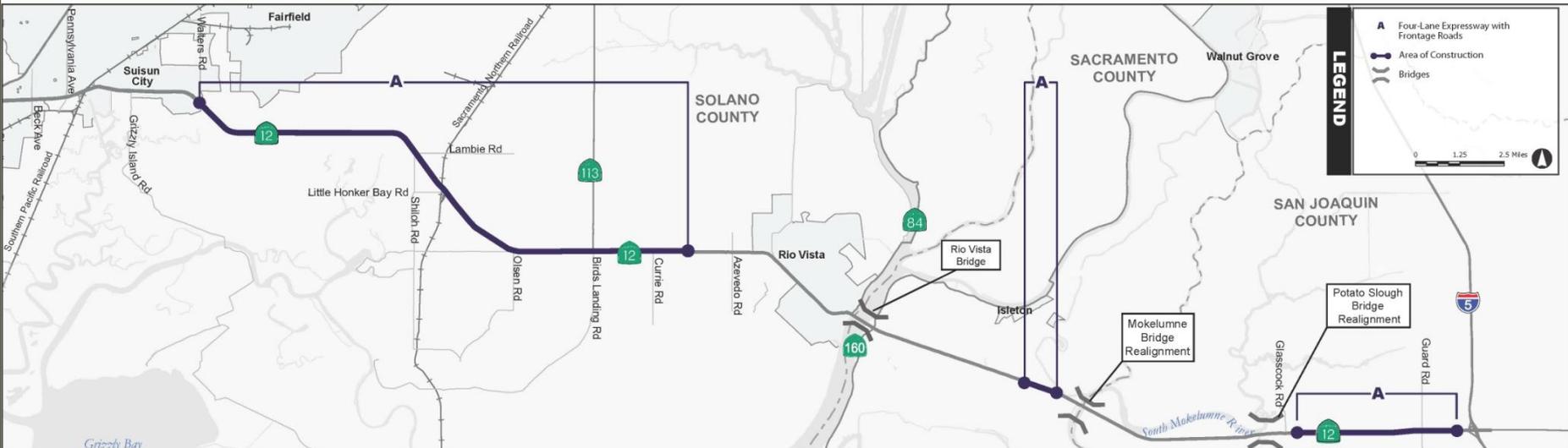
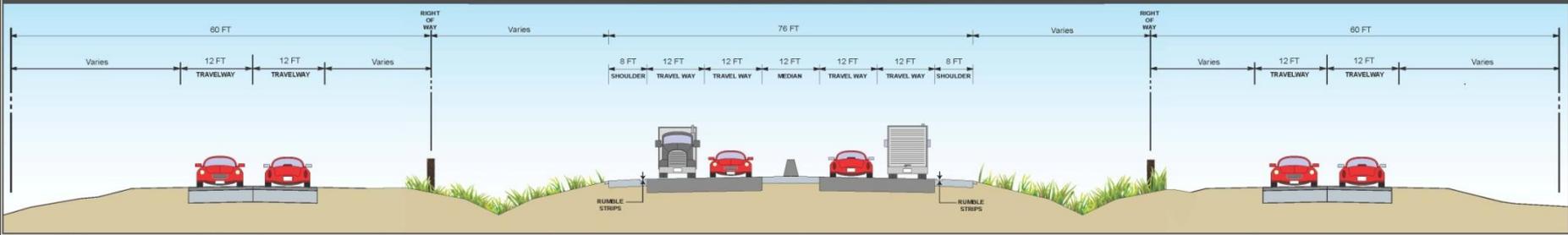
# Four-Lane Strategy



<sup>1</sup> See Note Slide 1.

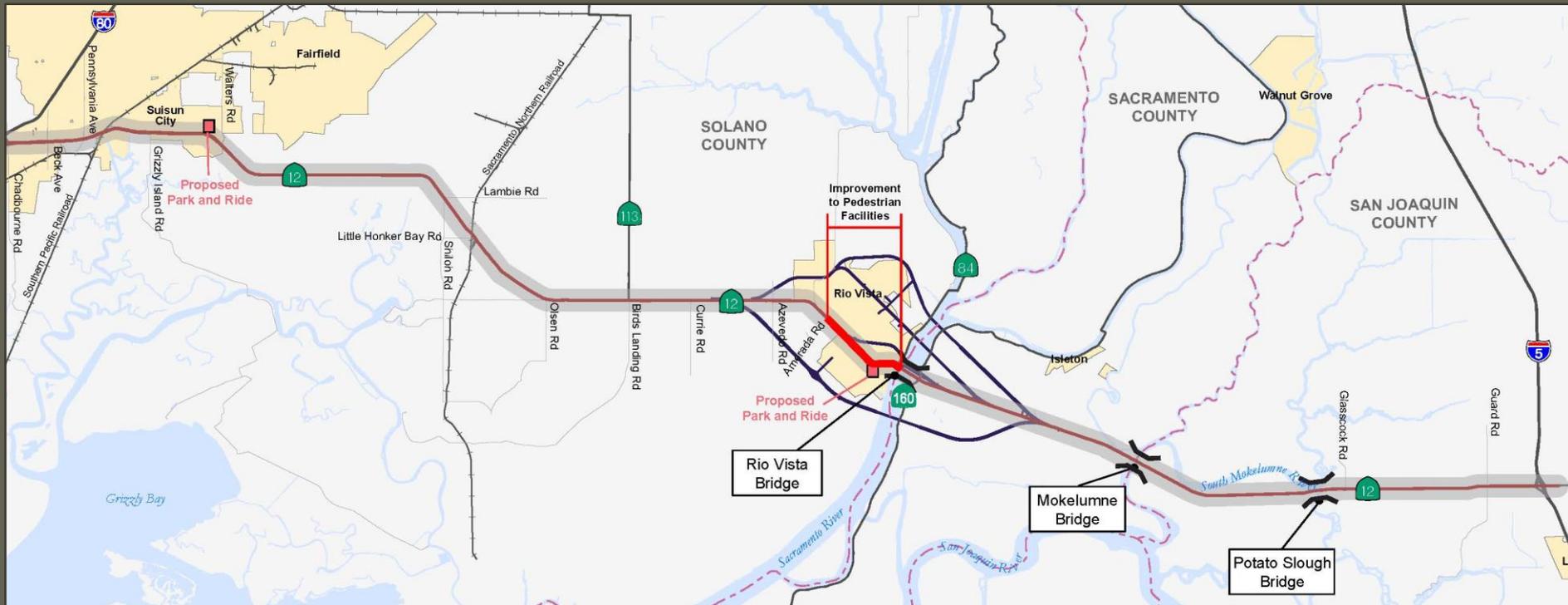
# Four-Lane Expressway Variation

A. Four-Lane Expressway with Frontage Roads



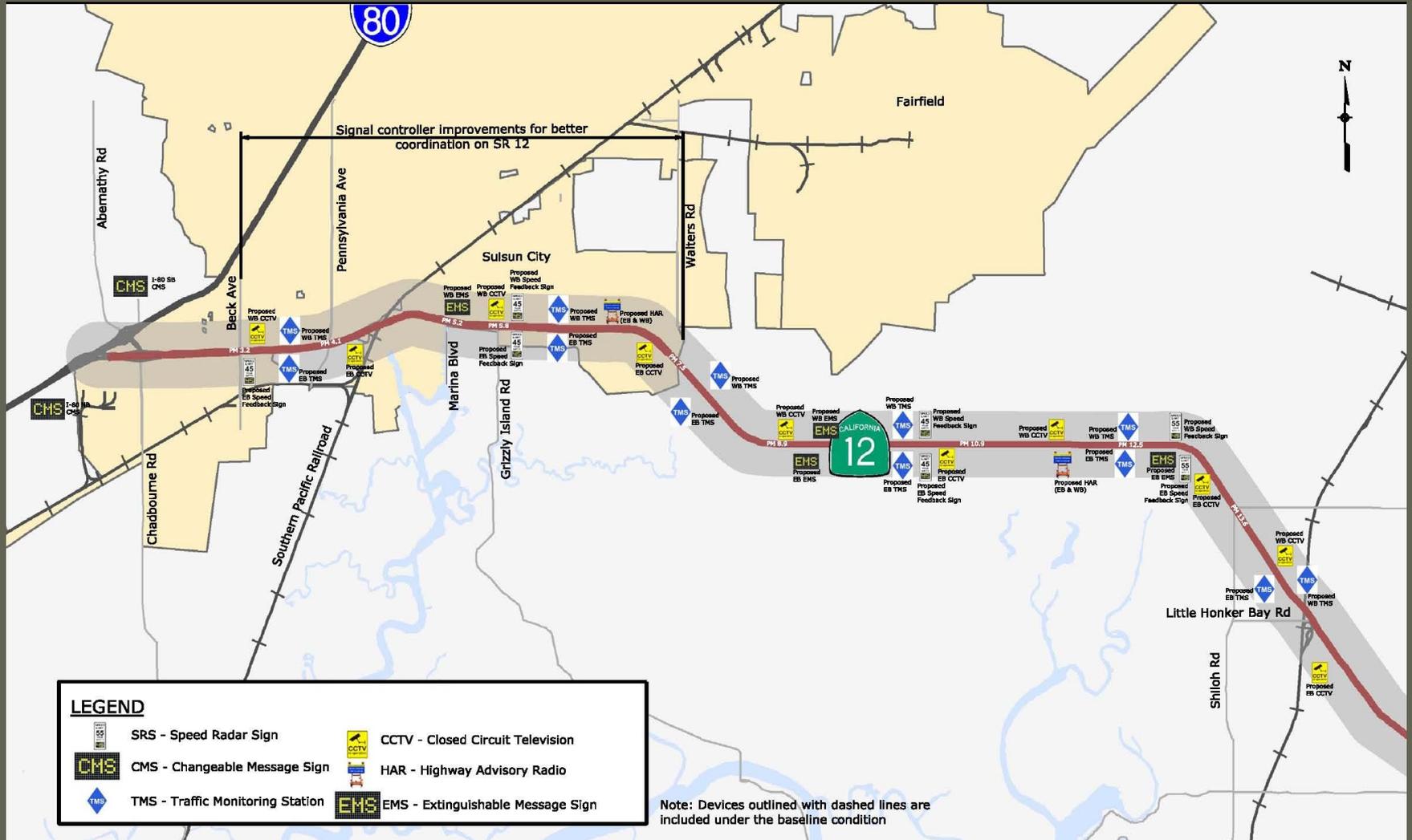
1 See Note Slide 1.

# Common Elements – Transit, Bicycle and Pedestrian Facilities



<sup>1</sup> See Note Slide 1.

# Common Elements – Intelligent Transportation Systems (ITS)



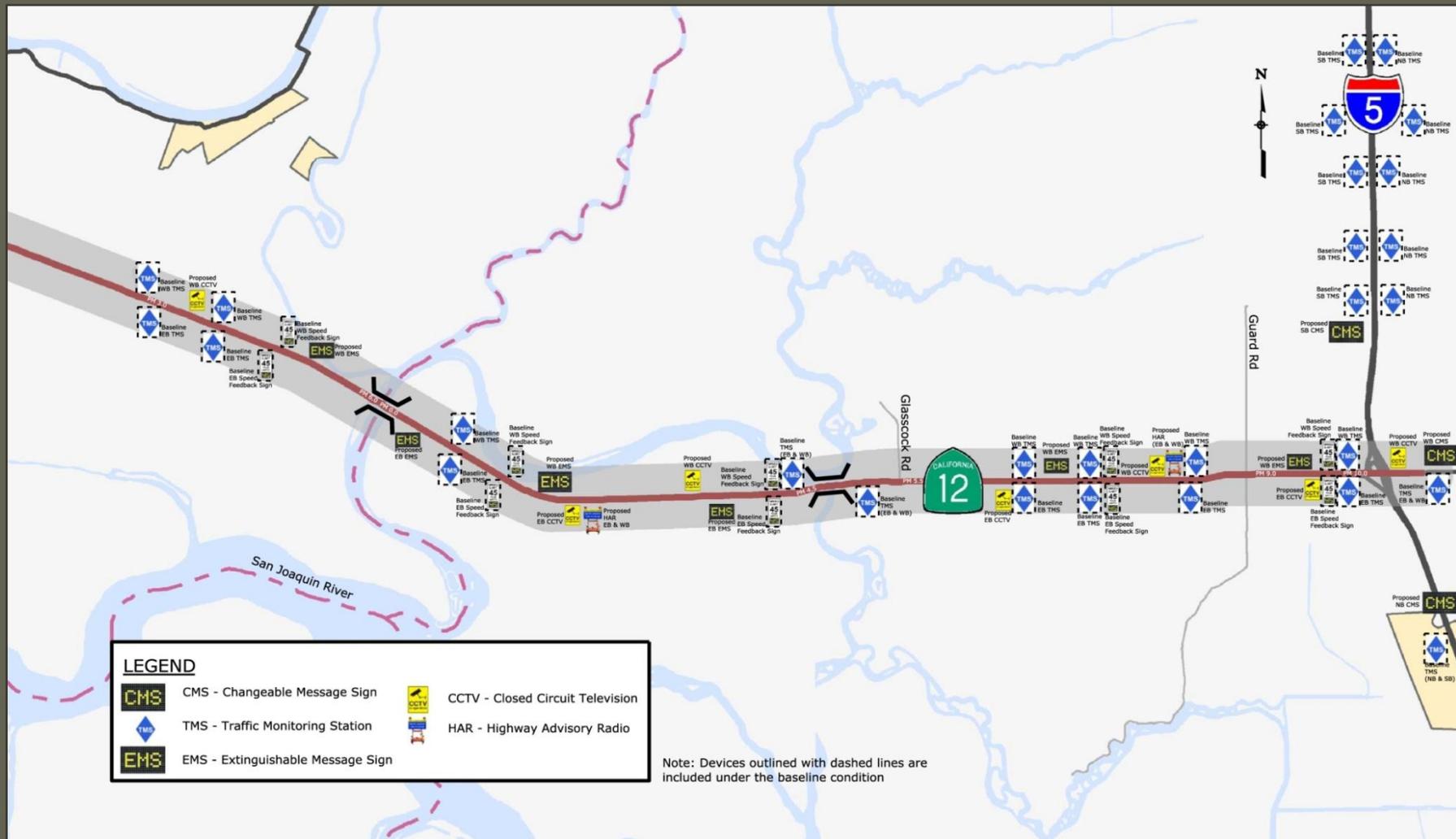
1 See Note Slide 1.

# Common Elements – Intelligent Transportation Systems (ITS)



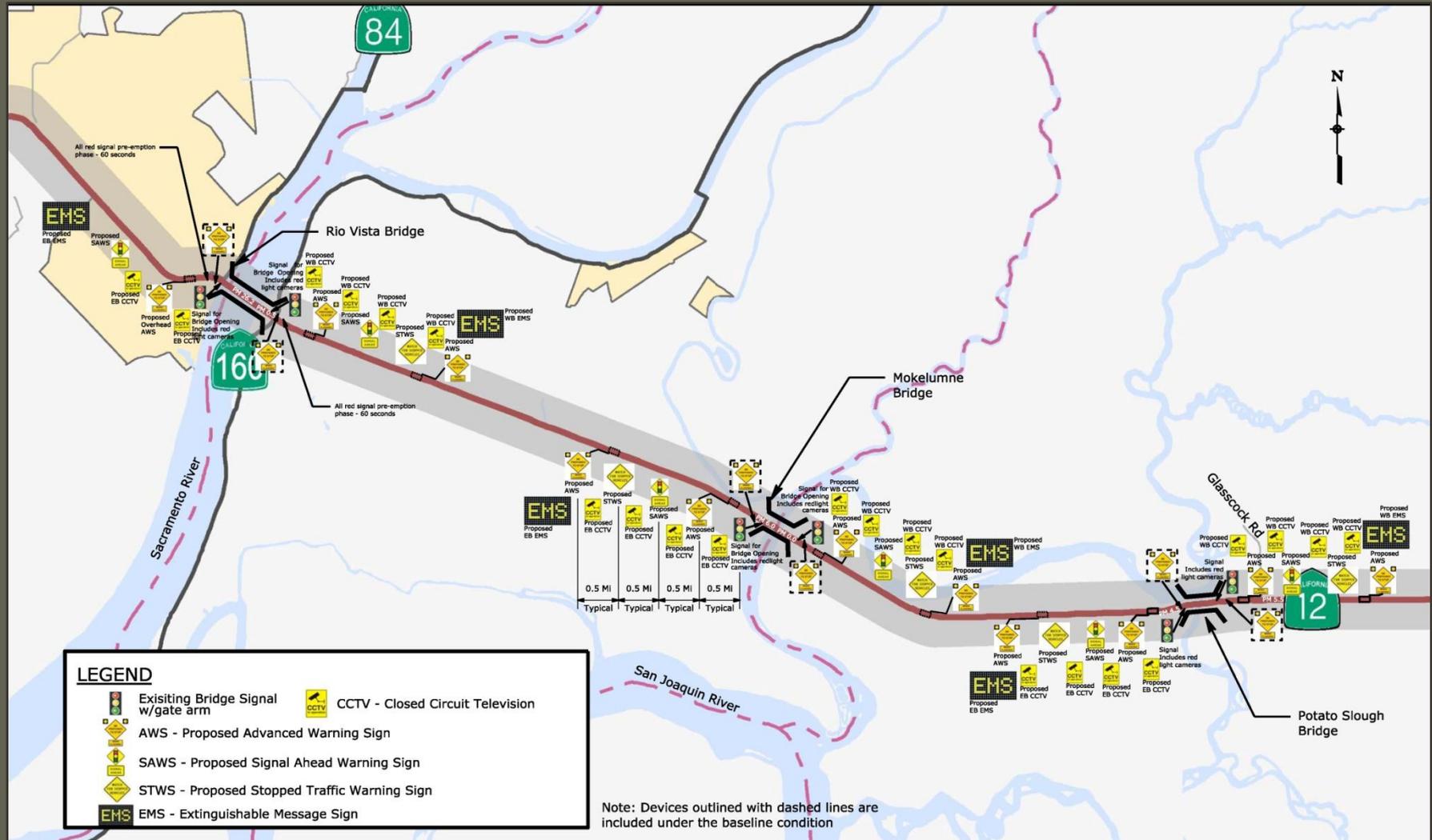
1 See Note Slide 1.

# Common Elements – Intelligent Transportation Systems (ITS)



1 See Note Slide 1.

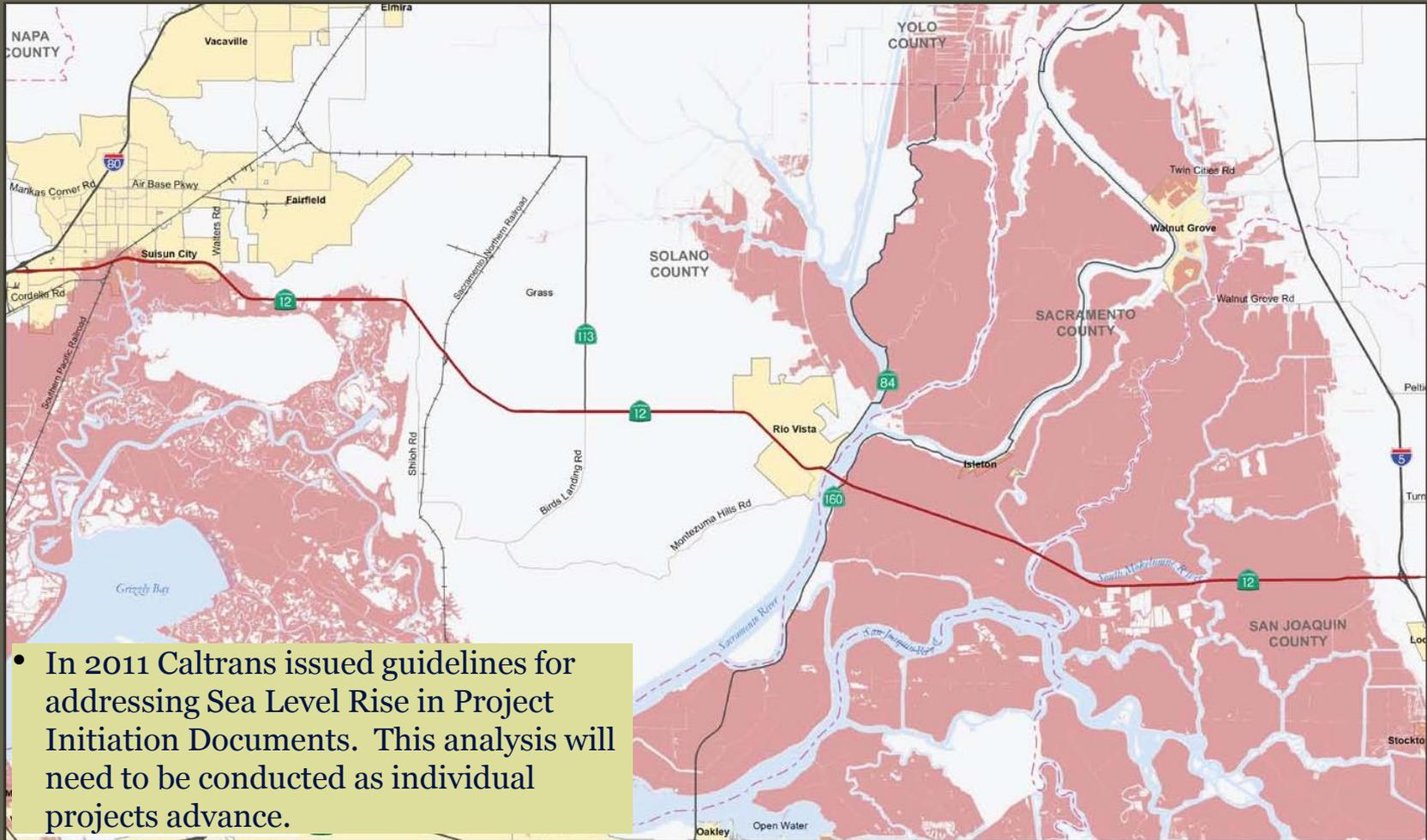
# Common Elements – Enhancements to Bridges



1 See Note Slide 1.

# Corridor Improvement Strategies

# Rising Sea Levels



- In 2011 Caltrans issued guidelines for addressing Sea Level Rise in Project Initiation Documents. This analysis will need to be conducted as individual projects advance.

Exhibit 12: Sea Level Rise Inundated Area

State Route 12 Environmental Resource Scan

— Project Corridor    - - - County Boundary  
■ Area Impacted by Sea Level Rise    ■ Urban Area



1 See Note Slide 1.

# Evaluation Methodology



- **All three strategies are compared to the Baseline case**
- **The initial evaluation was conducted without regard to cost**
  - Transportation Systems Efficiency
  - Safety
  - Economic Vitality
  - Environment
  - Healthy Communities
- **Cost was considered after the initial evaluation**
  - Capital Cost
  - O&M Cost (life-cycle)
  - Cost Effectiveness

# Evaluation Criteria



- **Transportation System Effectiveness**
  - Travel time
  - Daily Vehicle Miles and Vehicle Hours of Travel (VMT & VHT)
  - Improved highway miles
  - Bridge sufficiency ratings
- **Safety**
  - Safety enhanced roadway miles
  - Non-recurrent delay due to accidents and incidents
- **Economic Vitality**
  - Recurrent delay
  - Total delay (recurrent and non-recurrent)

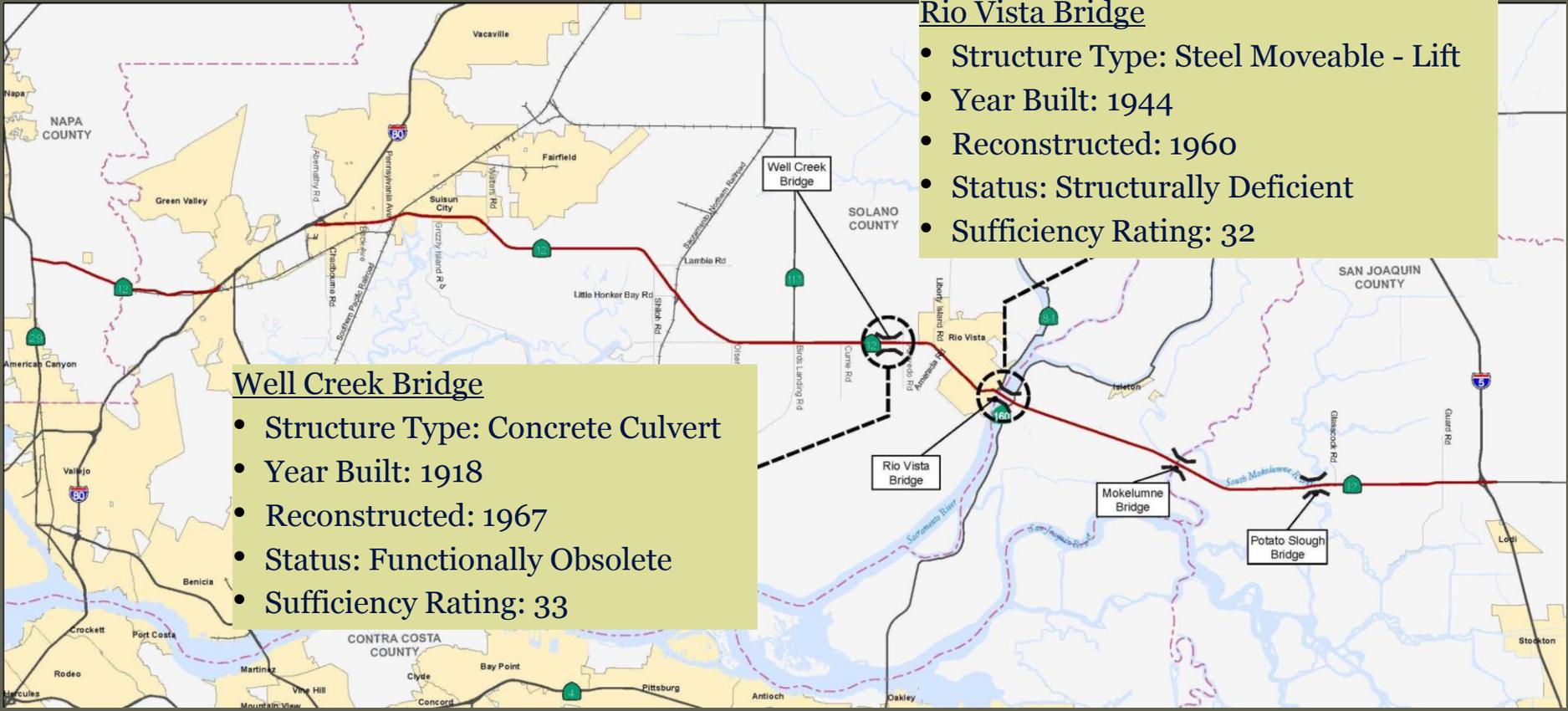
# Evaluation Criteria



- **Environmental**
  - Right-of-way impacts
  - CO2 emissions
- **Healthy Communities**
  - Particulate emissions
  - Bike friendly roadways
  - Dedicated bicycle and pedestrian facilities

<sup>1</sup> See Note Slide 1.

# Bridge Sufficiency



**Rio Vista Bridge**

- Structure Type: Steel Moveable - Lift
- Year Built: 1944
- Reconstructed: 1960
- Status: Structurally Deficient
- Sufficiency Rating: 32

**Well Creek Bridge**

- Structure Type: Concrete Culvert
- Year Built: 1918
- Reconstructed: 1967
- Status: Functionally Obsolete
- Sufficiency Rating: 33

<sup>1</sup> See Note Slide 1.

# Bottlenecks and Queues

- For the two-lane alternatives bottlenecks are located at:
  - Fairfield/Suisun City
  - Rio Vista
  - Mokelumne
- For the four-lane alternative there are no projected bottlenecks



<sup>1</sup> See Note Slide 1.

# Comparison of Alternatives

## Transportation System Effectiveness

Evaluation Categories	Baseline		Gap-fill		Two-Lane		Four-Lane	
	2015	2035	2015	2035	2015	2035	2015	2035
<b>Transportation System Effectiveness</b>								
Average Peak Hour Travel Time (mins)	78	87	75	83	73	78	53	56
Daily VMT	485,000	831,200	485,500	831,200	485,800	848,600	495,000	882,000
Daily VHT	17,300	28,000	15,950	24,650	15,240	24,600	14,240	20,220
Improved pavement (Centerline miles)	N/A		2.5		13.4		25.3	
Number of Bridges with Sufficiency Rating < 80%	2		2		1		0	

Good   
 Better   
 Best

<sup>1</sup> See Note Slide 1.

# Comparison of Alternatives

## Safety

Evaluation Categories	Baseline		Gap-fill		Two-Lane		Four-Lane	
	2015	2035	2015	2035	2015	2035	2015	2035
<b>Safety</b>								
Safety enhanced roadway (Centerline miles)	N/A		2.6		31.1		39.0	
Daily non-recurrent delay (vehicle hrs)	584	6,300	470	5,200	460	5,210	50	1,350

Good   
 Better   
 Best

<sup>1</sup> See Note Slide 1.

# Comparison of Alternatives

## Economic Vitality

Evaluation Categories	Baseline		Gap-fill		Two-Lane		Four-Lane	
	2015	2035	2015	2035	2015	2035	2015	2035
<b>Economic Vitality</b>								
Daily non-recurrent delay (vehicle hrs)	584	6,300	470	4,800	460	5,210	50	1,350
Daily recurrent delay (vehicle hrs)	6,770	10,510	6,360	9,910	6,290	9,660	3,410	6,390
Total daily delay (vehicle hrs)	7,354	16,810	6,830	14,710	6,760	14,460	3,460	7,755

Good   
 Better   
 Best

<sup>1</sup> See Note Slide 1.

# Comparison of Alternatives

## Environment

Evaluation Categories	Baseline		Gap-fill		Two-Lane		Four-Lane	
	2015	2035	2015	2035	2015	2035	2015	2035
<b>Environment</b>								
Construction within existing ROW (acres)	N/A		20.0		197.7		214.1	
Construction outside existing ROW (acres)	N/A		5.9		44.2		399.2	
CO2 Emissions (tonnes/year)	51.4		49.2		48.9		46.8	

Good   
 Better   
 Best

<sup>1</sup> See Note Slide 1.

# Comparison of Alternatives

## Healthy Communities

Evaluation Categories	Baseline		Gap-fill		Two-Lane		Four-Lane	
	2015	2035	2015	2035	2015	2035	2015	2035
<b>Healthy Communities</b>								
Fine Particulate Emissions (tonnes/year)	6.7		6.2		6.2		5.6	
Coarse Particulate Emissions (tonnes/year)	10.9		10.3		10.3		9.5	
Bike friendly Roadways (miles)	33.6		35.3		35.6		39.7	
Dedicated Bikeways (miles)	2.9		3.3		3.3		23.1	
Dedicated pedestrian pathways (miles)	2.7		3.3		3.3		3.3	

Good   
 Better   
 Best

<sup>1</sup> See Note Slide 1.

# Comparison of Strategies based on Evaluation Criteria

- **The Gap-fill Strategy is best suited as a short-term plan for SR-12**
  - Localized improvements in and west of Rio Vista
  - Robust ITS Implementation
  - Bridge operational improvements
- **The Four-Lane Strategy provides the best long-term mobility benefits**
  - Shortest travel times
  - Most reductions in recurrent and non-recurrent delay
  - New bridges address sufficiency ratings
- **The Four-Lane Strategy has the greatest impact to the environment due to realignments and right-of-way needs**

# Cost and Cost Effectiveness Evaluation

- **Capital Cost Estimates**

- Prepared using 2011 dollars
- Includes allowances for environmental mitigation
- Includes soft costs and contingencies

- **Incremental Life-cycle Costs**

- Uses a simplified method (all projects assumed to have a common 20 year life-cycle from 2015 to 2035)
- Annual costs are based on incremental costs for new pavement, new bridges and ITS
- Expressed in 2011 dollars

- **Cost Effectiveness**

- Compares total cost to total reductions in delay over 20 years
- Expressed as Cost per Person Hour of Delay saved
- In general, a person hour of delay has a value of \$14

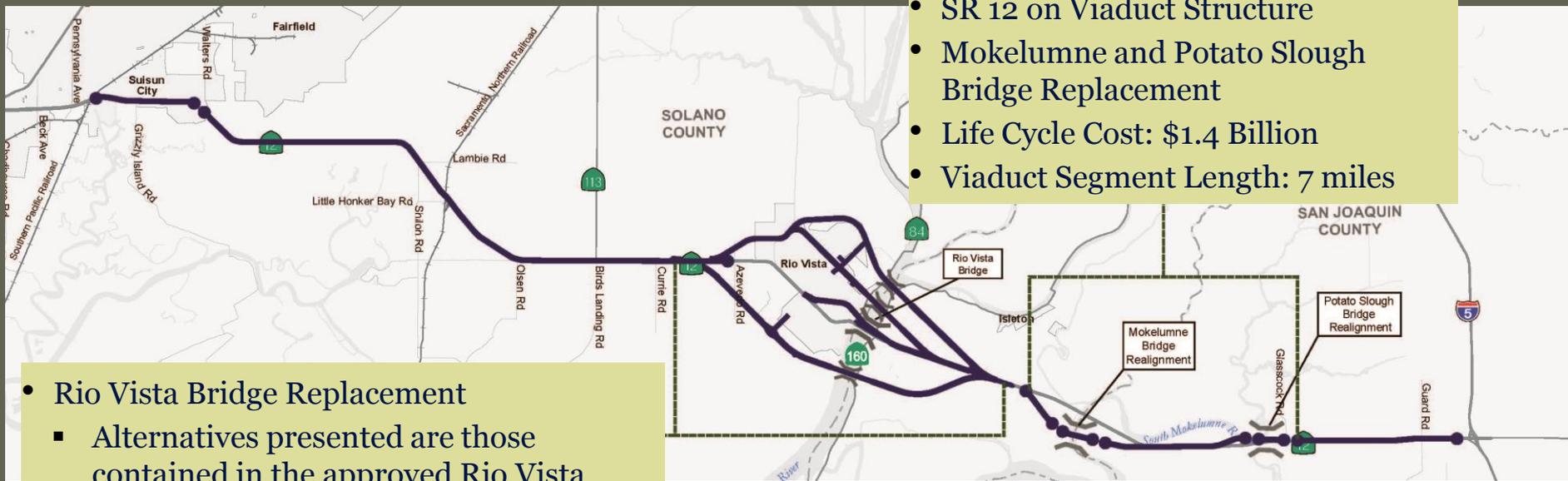
# Cost Effectiveness Results

Evaluation Categories	Baseline		Gap-fill		Two-Lane		Four-Lane	
	2015	2035	2015	2035	2015	2035	2015	2035
<b>Cost Effectiveness</b>								
Capital Cost (millions)	N/A		\$84		\$354		\$2,828	
O&M Life Cycle Cost (millions)	N/A		\$18		\$43		\$90	
Life Cycle Cost (millions)	N/A		\$102		\$397		\$2,918	
Cost Effectiveness Index (dollars per person hour of delay saved)	N/A		\$4.2		\$14.5		\$38.1	

Good   
 Better   
 Best

<sup>1</sup> See Note Slide 1.

# Cost Drivers of the Four-Lane Alternative



- SR 12 on Viaduct Structure
- Mokelumne and Potato Slough Bridge Replacement
- Life Cycle Cost: \$1.4 Billion
- Viaduct Segment Length: 7 miles

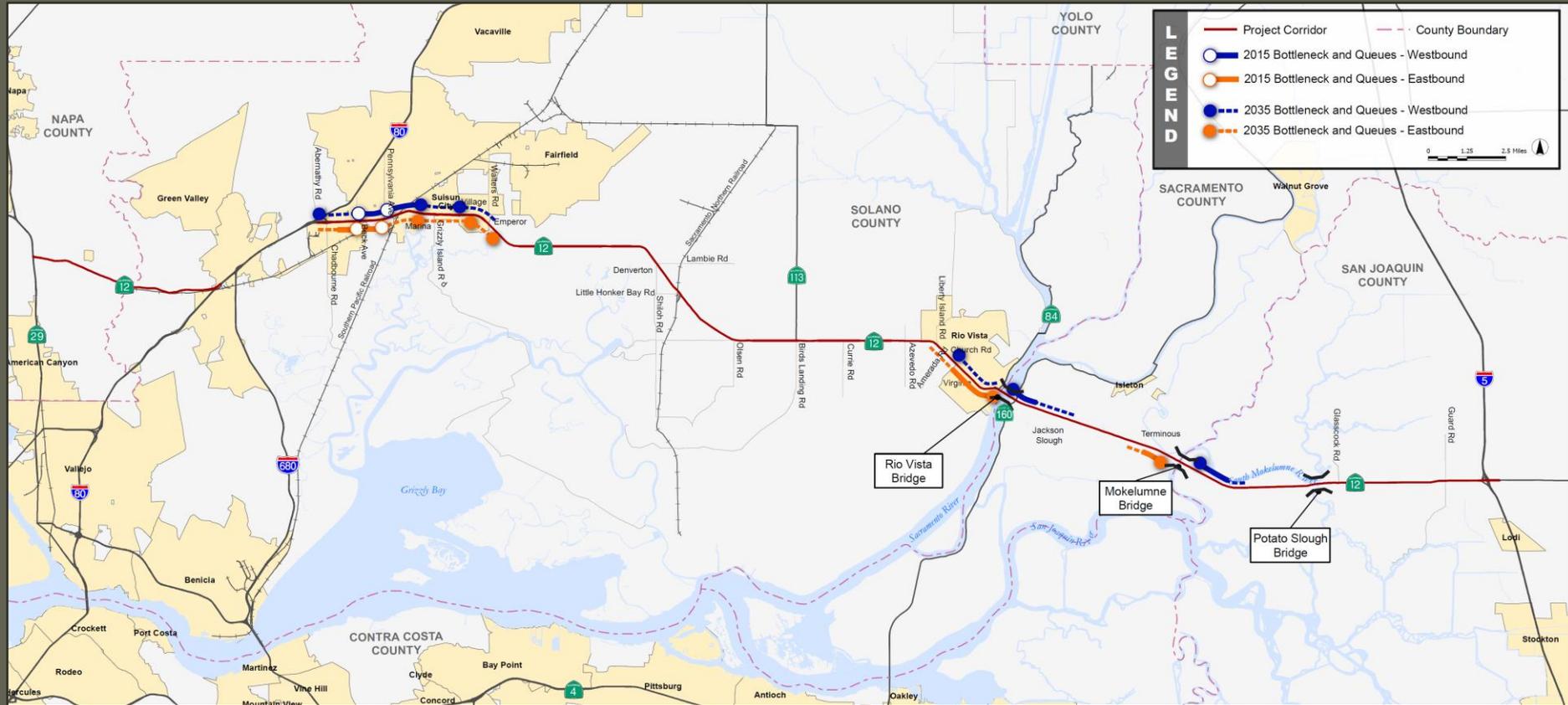
- Rio Vista Bridge Replacement
  - Alternatives presented are those contained in the approved Rio Vista Study.
- Life Cycle Cost: \$998 Million
- Segment Length: 9 miles

<sup>1</sup> See Note Slide 1.

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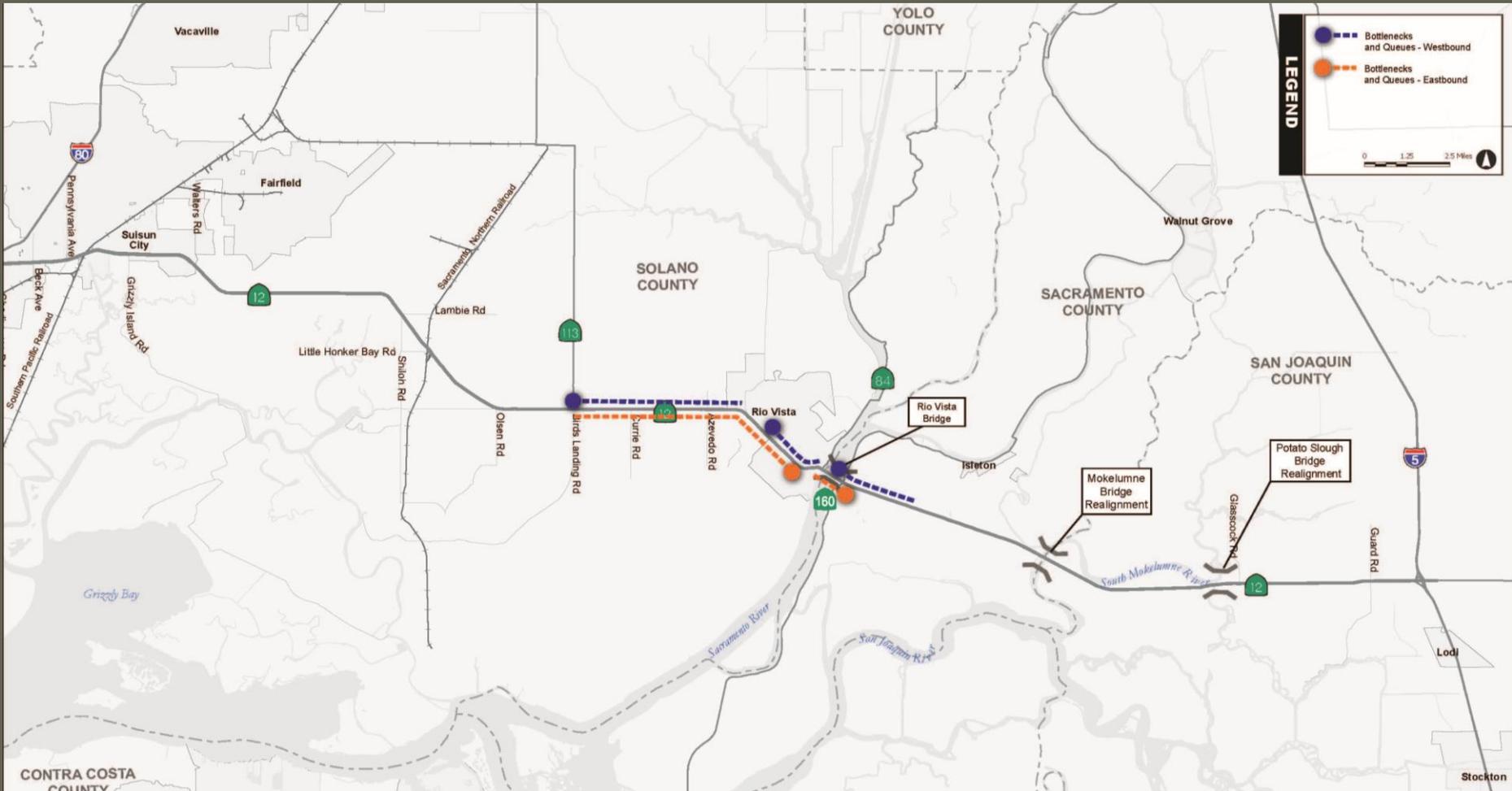
## Key Findings

# Primary Bottlenecks in the Corridor



<sup>1</sup> See Note Slide 1.

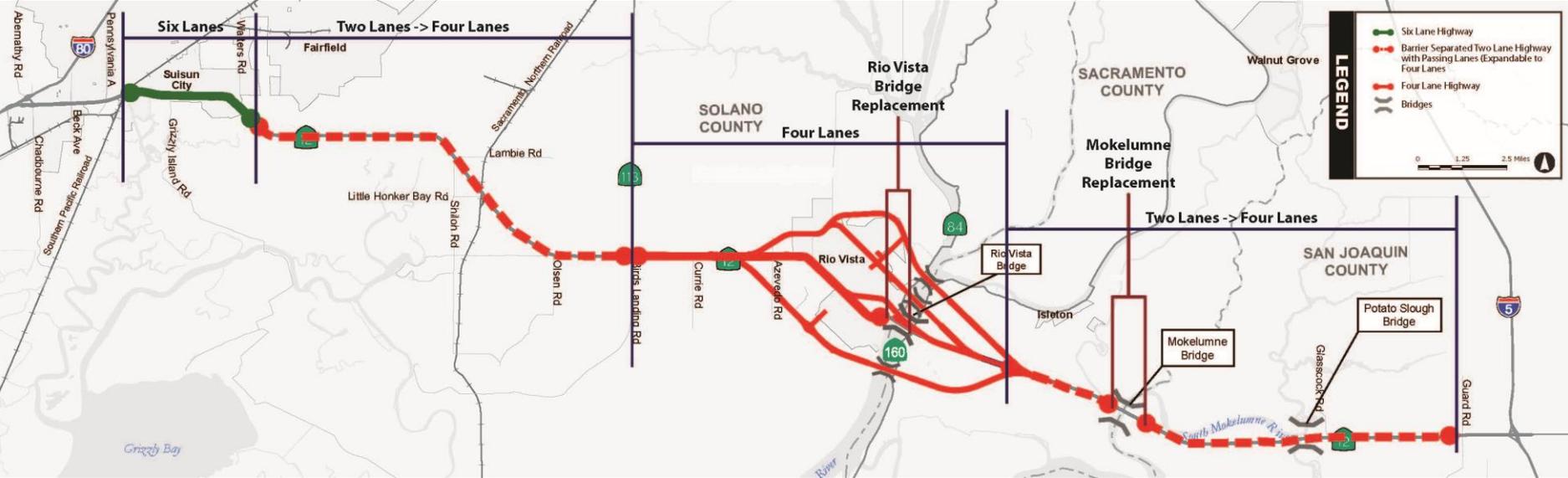
# Secondary Bottlenecks in the Corridor



<sup>1</sup> See Note Slide 1.

Key Findings

# Technical Findings



<sup>1</sup> See Note Slide 1.

# Discussion

# Next Steps

- Upcoming Work
  - Development of Short-term and Long-term Recommendations
  - Preparation of Draft Final Report
  - Public Outreach between April and June 2012
  - Final Report
- To provide input:
  - [www.movingsr12forward.com](http://www.movingsr12forward.com)

