2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

MTC Resolution No. 4308

For the Nine-County San Francisco Bay Area Region
Fiscal Year 2018-19 through FY 2022-23

METROPOLITAN

TRANSPORTATION

COMMISSION

December 20, 2017

https://mtc.ca.gov/our-work/fund-invest/investment-strategies-commitments/transit-21st-century/funding-sales-tax-and

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December 21, 2017

Susan Bransen, Executive Director
California Transportation Commission
1120 N Street, Room 2221 – MS 52
Sacramento, CA 95814

Attention: Teresa Favila, Associate Deputy Director

Dear Ms. Bransen:

With this letter, I am pleased to transmit MTC's proposed projects for the 2018 Regional Transportation Improvement Program (RTIP) for the San Francisco Bay Area.

The 2018 State Transportation Improvement Program (STIP) Fund Estimate provides $291 million in new programming capacity for fiscal years 2018-19 through 2022-23. Senate Bill 1 (SB1), stabilized the funding for the State Highway Account that is directed to fund the STIP. Thanks to SB1 the counties of the San Francisco Bay Area and MTC are now able to program $362 million to new and previously deleted projects.

MTC's 2018 RTIP proposes $156 million in RTIP funds, for seventeen new projects in seven of the nine Bay Area counties. The 2018 RTIP focuses on maintaining aging transit assets in a state of good repair. In Alameda and Contra Costa Counties, BART has $16.8 million for two Station Modernization projects to improve the 19th Street Oakland and Concord stations. In San Francisco, SFMTA programmed nearly their entire RTIP share, $13.6 million, for the maintenance and rehabilitation of various light rail lines throughout the City. The proposal also includes focused investments on the highway system supporting SB1 competitive program applications. Additional programming changes are detailed in the RTIP documents attached to this letter.

Please feel free to contact me at (415) 778-6722, or Kenneth Kao of my staff at (415) 778-6768 if you need further information about our proposal. We look forward to working with you on finalizing the 2018 STIP.

Sincerely,

Anne Richman

Anne Richman
Director, Programming & Allocations

AR:KA

cc: Bruce De Terra, Caltrans HQ
Bijan Sartipi, Caltrans District 4

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A. OVERVIEW AND SCHEDULE

A. Overview and Schedule

Section 2. General Information

Insert contact information in the text fields below.

- **Regional Agency Name**
  Metropolitan Transportation Commission (MTC)

- **Agency website links for Regional Transportation Improvement Program (RTIP) and Regional Transportation Plan (RTP).**

  Regional Agency Website Link: http://www.mtc.ca.gov

  RTIP document link: https://mtc.ca.gov/our-work/fund-invest/investment-strategies-commitments/transit-21st-century/funding-sales-tax-and

  RTP link: http://2040.planbayarea.org

- **Regional Agency Executive Director/Chief Executive Officer Contact Information**

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- **RTIP Manager Staff Contact Information**

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- **California Transportation Commission (CTC) Staff Contact Information**

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Section 3. Background of Regional Transportation Improvement Program (RTIP)

A. What is the Regional Transportation Improvement Program?

The Regional Transportation Improvement Program (RTIP) is a program of highway, local road, transit and active transportation projects that a region plans to fund with State and Federal revenue programmed by the California Transportation Commission in the State Transportation Improvement Program (STIP). The RTIP is developed biennially by the regions and is due to the Commission by December 15 of every odd numbered year. The program of projects in the RTIP is a subset of projects in the Regional Transportation Plan (RTP), a federally mandated master transportation plan which guides a region's transportation investments over a 20 to 25 year period. The RTP is based on all reasonably anticipated funding, including federal, state and local sources. Updated every 4 to 5 years, the RTP is developed through an extensive public participation process in the region and reflects the unique mobility, sustainability, and air quality needs of each region.

B. Regional Agency's Historical and Current Approach to developing the RTIP

As the Regional Transportation Planning Agency (RTPA) for the San Francisco Bay Area, MTC is responsible for developing the region's funding priorities for the STIP, and for submitting the projects to the CTC by way of the RTIP. The proposed projects were developed by the county Congestion Management Agencies (CMAs), in consultation with Caltrans, and with MTC's guidance, and are consistent with the policies and procedures adopted by the MTC Commission, as set forth in MTC Resolution No. 4308, and with the STIP guidelines adopted by the CTC on October 25, 2017.

Section 4. Completion of Prior RTIP Projects (Required per Section 68)

The Bay Area completed a number of projects between December 2015 and December 2017. These projects are listed in the table below, and include improvements to the state highway system, transit, as well as bicycle and pedestrian accessibility and safety.

Project Location and Sponsor	Description	Summary of Improvements/Benefits
Alameda: Alameda County Transportation Commission	Rt 580, Landscaping, San Leandro Estudillo Ave - 141st	Landscaping Enhancements
Alameda: Union City	Union City Intermodal Station, Pedestrian Enhancements Ph. 2 & 2A	Construct a new pedestrian entrance with new fare gates.
Contra Costa: Hercules	Hercules Rail Station	Construct a rail station
Contra Costa: EBRPD	SF Bay Trail Gap Closure (Hercules Bay Trail, Bio Rad Segment)	Construct a new portion of the SF Bay Trail to connect to the Hercules Rail Station
Contra Costa: Concord	Detroit Ave Bike/Pedestrian Improvements	Complete Streets improvements
Contra Costa: Concord	Concord Monument Corridor (Detroit Ave) Ped/Bike Improvements	Construct wide, asphalt-paved Class I Bikeway
Marin: Marin County	North Civic Center Drive Improvements	Congestion relief, enhanced access to new SMART Train Station, bicycle and pedestrian improvements, and overall safety
Marin: Marin County	Miller Creek Class II Bicycle Pedestrian Improvements	Enhanced bicycle and pedestrian improvements for access and safety
Marin: TAM	Marin-Sonoma Narrows Mitigation & Sound Wall	Constructed a sound wall in Novato and planted trees
Marin: TAM	Route 101 HOV Lane Gap Closure Mitigation Planting	Constructed Brookdale park and planted trees
Napa: St. Helena	SR 29/Grayson Ave signal installation and construction	Improved safety for vehicle and bike/pedestrian crossings
San Francisco: SFMTA	SF Crosswalk Conversion	Continental Crosswalks
San Francisco: SFMTA	Pedestrian Safety & Education Program	Campaign to improve Pedestrian Safety
San Francisco: SFMTA	Sunset Boulevard Ped Safety and Education	Installation of four signalized intersections
San Mateo: Caltrans	US 101 / Broadway Interchange Improvement	Reconstruct and reconfigure interchange, replaced existing bridge with a wider bridge
San Mateo: C/CAG	San Mateo County Traffic Incident Management	Implement traffic incident management strategies by deploying Intelligent Transportation System elements
San Mateo: Pacifica	SR1 San Pedro Creek Bridge Replacement	Improved flood protection and increased pedestrian and bicycle mobility
Solano: Solano Transportation Authority	I-80/I-680/SR12 Interchange Phase 1	Improve the connections from westbound I-80 to I-680 and SR12
Solano: WETA	WETA Maintenance Facility	The facility provides a new base for WETA's Vallejo ferry fleet

Project Location and Sponsor	Description	Summary of Improvements/Benefits
Solano: Fairfield	Fairfield/Vacaville Train Station	A new station, sheltered waiting areas, bike and pedestrian access, parking, and bus transfer area.
Solano: Fairfield	Jepson Parkway Phase 1 and 2A	Roadway widening from 2 to 4 lanes and traffic safety improvements

Section 5. RTIP Outreach and Participation

Below are a number of important dates related to the adoption of the RTIP and STIP.

A. RTIP Development and Approval Schedule

Action	Date
Initial discussion of issues and schedule for 2018 RTIP at Partnership working groups	June 14, 2017
CTC adopts Fund Estimate and Guidelines	August 16, 2017
Caltrans identifies State Highway Needs	September 15, 2017
MTC releases draft RTIP Policies and Procedures for public comment and review	October 4, 2017
MTC Programming and Allocations Committee (PAC) review and recommendation of final RTIP Policies and Procedures	October 11, 2017
Caltrans submits draft ITIP	October 13, 2017
CTC ITIP Hearing, North	October 19, 2017
CMAs submit draft RTIP project summary listing to MTC	October 20, 2017
CTC ITIP Hearing, South	October 24, 2017
MTC Commission adopts RTIP Policies and Procedures	October 25, 2017
CMAs submit final RTIP listing, PPRs, and supporting documentation to MTC	November 8, 2017
Partnership TAC and working group review of RTIP status	November 20, 2017
MTC releases final RTIP for public comment and review	December 6, 2017
MTC PAC review and recommendation of final RTIP	December 13, 2017
Regions submit RTIP to CTC	December 15, 2017
Caltrans submits ITIP to CTC	December 15, 2017
MTC Commission adopts 2018 RTIP	December 20, 2017
CTC STIP Hearing, South	January 25, 2018
CTC STIP Hearing, North	February 1, 2018
CTC publishes staff recommendations	February 28, 2018
CTC Adopts 2018 STIP	March 21-22, 2018

B. Public Participation/Project Selection Process

Each County Congestion Management Agency (CMA) or equivalent agency in each county is responsible for determining the project programming requests for their county share. In counties where there is new or substitute programming, those county CMA or equivalent agency presented its recommendations to their boards or commissions. In counties where there are no changes from the previous adopted STIP, no additional action or resolution was necessary.

MTC adopted the RTIP Policies and Procedures at the Commission meeting on October 25, 2017. Prior to adoption, MTC presented the draft Policies and Procedures to various groups and committees, including working groups and the Programming and Allocations Committee on October 11, 2017. Similarly, MTC adopted the final RTIP program of projects at the Commission meeting on December 20, 2017. MTC presented the draft RTIP program of projects to the Partnership Technical Advisory Committee on November 20, 2017 and the Programming and Allocations Committee on December 13, 2017.

For further information about MTC's Public Participation Plan, please visit http://mtc.ca.gov/about-mtc/public-participation/public-participation-plan.

C. Consultation with Caltrans District (Required per Section 17)

Caltrans District: 04

MTC staff meets quarterly with Caltrans District 4 staff to discuss various project and program coordination and delivery issues. MTC and District 4 staff last met on Friday, December 8 to discuss the final proposed project lists for both the RTIP and ITIP, and maintain regular communication to ensure project funding and schedule consistency.

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

B. 2018 STIP REGIONAL FUNDING REQUEST

B. 2018 STIP Regional Funding Request

Section 6. 2018 STIP Regional Share and Request for Programming

A. 2018 Regional Fund Share Per 2018 STIP Fund Estimate

The 2018 State Transportation Improvement Program (STIP) Fund Estimate identifies roughly $291 million in new programming capacity for the Bay Area. Seven of the nine Bay Area counties propose new projects for RTIP funding. Marin and Sonoma Counties do not have new programming capacity since those counties are still paying back prior STIP commitments.

B. Summary of Requested Programming

New Programming

The projects below are new projects, not previously in the RTIP, proposed for programming using RTIP funds.

Project Location and Name	Project Description	Requested RIP Amount
Alameda: SR 84/I-680 Widening and Interchange Improvements	Improve highway and interchange operations, and bike & pedestrian access	$11.1 million
Alameda: I-80 Gilman Interchange Reconstruction and Access Improvements	Reconfigure the interchange and construct a bike and pedestrian overcrossing	$25.8 million
Contra Costa: SR4 Operational Improvements	Reconfigure lanes on EB SR4, to improve safety, and encourage carpooling	$1.4 million
Napa: Silverado Five- Way Intersection Improvements	Reduce congestion, improve safety and operations for motorists, bicyclists, and pedestrians	$1.1 million
Napa: Silverado Trail Repaving Phase L	Pavement rehabilitation on a segment of the Silverado Trail	$0.2 million
San Francisco: 2020 Restoration of SFMTA Light Rail Lines	Replace and restore components of SFMTA's light rail system	$5.5 million
San Francisco: 2021 Restoration of SFMTA Light Rail Lines	Replace and restore components of SFMTA's light rail system	$8.2 million
San Mateo: US 101 Managed Lane Project	Construct a continuous managed lane for northbound and southbound U.S. 101	$33.5 million
San Mateo: US 101/Woodside Road Interchange Improvement Project	Reconstruct interchange and construct a bike and pedestrian overcrossing	$8 million
San Mateo: US 101 Produce Avenue Interchange - Imps.	Reconstruction and reconfiguration of the interchange	$5 million
San Mateo: ITS Imps. in Daly City, Brisbane, and Colma	Design of Intelligent Transportation System (ITS) infrastructure	$8.5 million

Project Location and Name	Project Description	Requested RIP Amount
Santa Clara: San Jose W. San Carlos Urban Village Streetscape	Install complete street elements	$4.3 million
Santa Clara: US 101 Express Lanes - Phase 3	Convert existing single carpool lanes to express lanes	$14.3 million
Santa Clara: US 101 Express Lanes - Phase 4	Convert existing single carpool lanes to express lanes	$11.5 million
Santa Clara: US 101 Express Lanes - Phase 5	Convert existing single carpool lanes to express lanes	$10.2 million
Solano: SR 37 Project/Mare Island Interchange Project	Replace the Mare Island interchange and construct a 4-lane facility between Mare Island and SR 121	$5 million
Solano: SR 12/Church Rd	Construct left-turn pocket on eastbound SR12 at Church Rd.	$1.9 million
	Total	**$155.5 million**

Programming Changes to Existing Projects

Below is a summary of the proposed changes to currently-programmed RTIP projects by county.

Alameda County

- Redirect $12 million from the East West Connector (I-880 to Mission Blvd.) project programmed in FY 20-21, to the I-80 Gilman Interchange Reconstruction and Access Improvements project in the same fiscal year, as allowed under the 2018 STIP Guidelines; and
- Update the project description of the BART Station Modernization Program to the BART 19th Street Oakland Station Improvement Project.

Contra Costa County

- Advance the I-680 South Bound HOV Gap Closure (N. Main-Livorna) project from FY 19-20 to FY 18-19, as allowed under the 2018 STIP Guidelines; and
- Program an additional $5.8 million to the I-80/Central Avenue - Phase 2 (Local Road Realignment) project in Richmond, $4 million for right-of-way in FY 20-21 and $1.8 million for construction in FY 21-22; and
- Update the project description of the BART Station Modernization Program to the BART Concord Station Improvement Project.

Marin County

- No programming changes requested.

Napa County

- Redirect $1.2 million from the Eucalyptus Drive Extension project programmed in FY 20-21, to the Devlin Road and Vine Trail Extension project in in FY 18-19, as allowed under the 2018 STIP Guidelines; and
- Combine the right-of-way and construction funding for the Petrified Forest Rd and SR-128, Intersection Improvements project into construction, and delay the project by one year to FY 19-20 to accommodate additional environmental studies; and
- Combine engineering and construction funding for the Hopper Creek Pedestrian Path (Oak Cir - Mission) project into construction in FY 19-20.

San Francisco County

- No programming changes requested.

San Mateo County

- Redirect $6.9 million from the State Route 1 Calera Parkway project programmed in FY 18-19, to the US 101/Woodside Road Interchange Improvements project in in FY 18-19, as allowed under the 2018 STIP Guidelines.

Santa Clara County

- Program $7 million across all phases to the previously deleted I-280 Soundwalls at Bird Ave. in San Jose project.

Solano County

- Program an additional $6 million to the Jepson Parkway (Leisure Town from Commerce to Orange) project, and delay the project from FY 18-19 to FY 20-21.

Sonoma County

- No programming changes requested.

Regional

- Redirect $46 million in regional discretionary RTIP funds to the MTC Transportation Incentive Grant program, and program funds outside of 2018 RTIP period.

Advanced Project Development Element

The 2018 STIP Fund Estimate identifies funding for Advanced Project Development Element (APDE) shares. Up to 25% of the each county's share of the estimated capacity in the next STIP cycle can be programmed for the environmental and permits and the plans, specifications and estimates phases (PS&E). Contra Costa and Santa Clara Counties each programmed the full amount of available APDE shares:

- Contra Costa County, $6.1 million for PS&E in FY 21-22 for the SR-4 Operational Improvements project

- Santa Clara County, $10.6 million for PS&E in FY 18-19 for the US-101 Express Lanes - Phase 5 project.

Section 7. Overview of Other Funding Included With Delivery of Regional Improvement Program (RIP) Projects

Projects funded in the 2018 RTIP generally include other types of funding in order to complete the funding plan. Local funding represents the vast majority of non-STIP funds included in RTIP projects. These include local-option sales taxes for transportation, local transportation funding, and general fund. Other important fund sources include federal funds (such as Surface Transportation Program (STP) and Congestion Mitigation and Air Quality Improvement (CMAQ) funds, and earmarks), other state funds (such as ATP and Proposition 1B funds), and regional funds (bridge tolls). The table below aggregates projects based on the county in which the project is located. For more detailed information, refer to the Project Programming Request (PPR) forms (Section 15).

		Other Funding ($1,000s)					
Proposed 2018 RTIP	Total RTIP	ITIP	Fed. (STP, CMAQ, etc.)	Local	Regional	Other State	Project Cost in STIP Period*
Alameda County	56,455	-	460	125,555	-	75,323	**257,793**
Contra Costa County	81,694	-	2,800	220,419	22,675	-	**327,588**
Marin County	400	-	-	-	-	-	**400**
Napa County	13,160	-	2,689	29,168	-	3,900	**48,917**
San Francisco County	14,838	-	55,008	-	-	-	**69,846**
San Mateo County	74,369	18,000	-	33,674	164,500	275,000	**565,543**
Santa Clara County	94,541	-	3,582	3,320,138	-	179,676	**3,598,212**
Solano County	26,200	-	-	-	-	6,200	**32,400**
Sonoma County	814	-	-	-	-	-	**814**
Totals	**362,471**	**18,000**	**64,539**	**3,729,229**	**187,175**	**540,099**	**4,901,513**

Notes: (*) The funding and project costs in this table only represents funding within the 2018 RTIP period (FY 2018-19 through FY 2022-23). Funding and costs programmed before and after this five year period are not included in this table.

Section 8. Interregional Transportation Improvement Program (ITIP) Funding

The 2018 STIP Fund Estimate identifies $528 million in new programming capacity for Caltrans's Interregional Transportation Improvement Program (ITIP) – which represents 25% of the total STIP. Caltrans proposes programming one new project in the Bay Area from its ITIP target – $18 million for the final design phase of the US-101 Managed Lanes project in San Mateo County. Caltrans proposes this amount come from its APDE share, and augments that project's funding plan which includes RTIP funding and planned SB 1 competitive program funding.

Section 9. Projects Planned Within the Corridor (Required per Section 20e)

The region has four new projects that are part of the US-101 corridor.

First, the San Mateo US-101 Managed Lane Project is part of the larger US-101 corridor that aims to construct a continuous managed lane for northbound and southbound traffic and improve US-101 between San Francisco and Santa Clara County. Major investments have already been made through local, state, and federal funding. Additionally, the US-101 Express Lanes Phases 3, 4, and 5 projects in Santa Clara County are part of the US-101 corridor along the Peninsula and South Bay. Other improvements have included high occupancy vehicle lanes along the US-101 corridor, along with interchange improvements. These improvements have been funded through local, state, and federal funds.

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

2018 STIP PERFORMANCE REPORT

C. RELATIONSHIP OF RTIP TO RTP/SCS AND BENEFITS OF RTIP

&

D. PERFORMANCE AND EFFECTIVENESS OF RTIP

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Overview of 2018 STIP performance report

Regions and Caltrans are responsible for developing goals, objectives and priorities that include consideration of the overall performance of the transportation system consistent with federal and state planning requirements. These goals and objectives are incorporated in the region's regional transportation plan (RTP) and are also reflected in the region's RTIP. In order to maximize the state's investments in transportation infrastructure, it is the California Transportation Commission (CTC)'s policy that each RTIP be evaluated for performance and cost-effectiveness at the regional level, and where applicable, at the project level.

San Francisco Bay Area transportation projects funded under the 2018 STIP – totaling $380 million in programming – are an extremely small portion of the $303 billion in transportation investments envisioned in the region between 2017 and 2040. As such, most of the projects receiving STIP funding rely upon other funding sources to supplement STIP funds and proceed to construction. Even so, it is reasonable to expect that regional performance impacts from this subset of transportation investments will be quite minimal compared to baseline conditions.

The region's overall transportation investment strategy was developed as part of Plan Bay Area 2040, the San Francisco Bay Area's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). However, MTC's STIP Performance Report is an evaluation of the regional impact 2018 STIP funded projects have on State performance measures, as required by the California Transportation Commission's performance guidelines. The State performance measures reflect federal performance goals established by the FHWA (Federal Highway Administration) for state and MPO transportation agencies as part of MAP-21 (the Moving Ahead for Progress in the 21st Century Act). While there is some consistency between these federal goals and regional goals, there are still crucial differences between them.

In addition to evaluating baseline performance for each of the State measures, MTC staff conducted a rigorous model-based evaluation of the package of transportation projects funded with 2018 STIP dollars. By incorporating new and continuing STIP-funded projects that increase system capacity, this evaluation allowed for a consistent analysis of how funded projects will affect year 2040 performance of the regional transportation system. While much of the funding for these capacity-increasing projects will come from sources other than the STIP, the analysis highlights how STIP funding supports a package of transportation investments that advance state and regional goals.

The RTIP evaluation has four parts:

A. **Regional level performance evaluation.**
B. **Evaluation of the cost-effectiveness of the STIP**
C. **Project-level outputs**
D. **Project-level benefit evaluation for select projects**

MTC Projects Funded by 2018 STIP Subject to Evaluation	
Project	**Included?**
SR 84/I-680 Widening and I/C Imps.	Yes
I-80 Gilman I/C Reconstruction and Access Imps.	No
AC Transit Bus Rapid Transit Project	Yes
19th Street BART Station Modernization	No
I-680 SB HOV Gap Closure (N. Main-Livorna)	Yes
I-80/Central Avenue - Phase 2 (Local Road Realignment)	Yes
Concord BART Station Modernization	No
I-680/SR4 Interchange Improvements – Phase 3	Yes
SR4 Operational Improvements	Yes
Walnut Creek BART TOD Intermodal Project	No
I-80/San Pablo Dam Rd Interchange (Ph. 2)	Yes
Kirker Pass Rd NB Truck Climbing Lane	Yes
Silverado Five- Way Intersection Improvements	No
Silverado Trail Repaving Phase L	No
Devlin Road and Vine Trail Extension	No
Soscol Junction	Yes
Petrified Forest Rd and SR-128, Intersection Improvements	No
Hopper Creek Pedestrian Path (Oak Cir - Mission)	No
2020 Restoration of SFMTA Light Rail Lines	No
2021 Restoration of SFMTA Light Rail Lines	No
US 101 Managed Lane Project	Yes
US 101/Woodside Road Interchange Imp. Project	Yes
US 101 Produce Avenue Interchange - Imps.	Yes
ITS Imps. in Daly City, Brisbane, and Colma	Yes
Countywide ITS Imps. - San Mateo County Smart Corridor – SSF Expansion	Yes
SR 92/US 101 Interchange Imps. - Phase 2	Yes
US-101 Willow Rd I/C Reconst. (AB3090 Reimbursement)	No
BART Phase 2: Extension to Downtown San Jose/Santa Clara	Yes
I-680 Soundwall from Capitol to Mueller	No
San Jose West San Carlos Urban Village Streetscape Imps.	No
US 101 Express Lanes - Phase 3	Yes
US 101 Express Lanes - Phase 4	Yes
US 101 Express Lanes - Phase 5	Yes
I-280 Soundwalls at Bird Ave. in San Jose	Yes
Jepson Pkwy (Leisure Town from Commerce to Orange)	Yes
I-80/I-680/SR12 I/C Package 2A (EB SR12 to EB I-80 Connector)	Yes
SR 37 Project/Mare Island Interchange Project	No
SR 12/Church Rd	No

Note: *non-capacity-increasing projects are not expected to have regional impacts and are not captured in model runs; this analysis focuses on the major capital investments that increase capacity on roads or transit systems.*

A. Regional level performance evaluation

The CTC has requested that MPOs evaluate their 2018 STIP investments against State performance measures at the regional level to see how each RTIP furthers the goals of the region's RTP and SCS. The performance measures are meant to allow for a level of consistency between STIP monitoring efforts across the state. Clustered under the goals of congestion reduction, infrastructure condition, system reliability, safety, economic vitality and environmental sustainability, the measures highlight some of the state's top transportation priorities.

The State performance measures and their nexus with MTC's RTP/SCS performance targets are summarized below:

Nexus of State Performance Measures and MTC RTP/SCS Goals

State 2018 STIP		MTC RTP/SCS Plan Bay Area 2040	
Goal	**Performance Indicator/Measure**	**Goal**	**Target**
Congestion Reduction	Vehicle Miles Traveled per capita.	None	None
	Percent of congested Vehicle Miles Traveled.	Economic Vitality	Reduce per-capita delay on freight network
	Commute Mode Share.	Transportation System Effectiveness	Increase non-auto mode share
Infrastructure Condition	Percent of distressed state highway lane-miles.	Transportation System Effectiveness	Reduce vehicle operating and maintenance costs due to pavement conditions
	Pavement Condition Index (local streets and roads).		
	Percent of highway bridges by deck area classified in Poor condition.	None	None
	Percent of transit assets that have surpassed the FTA useful life period.	Transportation System Effectiveness	Reduce per-rider transit delay due to aged infrastructure
System Reliability	Highway Buffer Index.	None	None
Safety	Fatalities, serious injuries, and injuries per capita.	Healthy and Safe Communities	Reduce adverse health impacts
	Fatalities, serious injuries, and injuries per Vehicle Miles Traveled.		
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	Economic Vitality	Increase share of jobs accessible in congested conditions
	Mean commute travel time (to work). [1]	None	None
Environmental Sustainability	Change in acres of agricultural land.[5]	Open Space and Agricultural Preservation	Direct development within urban footprint

	CO_2 emissions reduction per capita	Climate Protection	Reduce per-capita CO_2 emissions
None	None	Adequate Housing	House the region's population
None	None	Equitable Access	Decrease share of lower-income households' budgets spent on housing and transportation
None	None		Increase share of affordable housing
None	None		Do not increase share of households at risk of displacement
None	None	Economic Vitality	Increase jobs in middle-wage industries

Overall approach

To comply with the 2018 STIP requirements, MTC staff followed the following approach to measure the regional performance of 2018 STIP investments.

1. Calculate baseline using monitoring data

The CTC requires MTC to evaluate overall performance using, as a baseline, the region's existing monitored data. MTC monitors regional performance through its Vital Signs (www.vitalsigns.mtc.ca.gov) performance monitoring initiative. Monitored data for annual regional performance measures are updated on a frequent basis (annually or biannually). Relevant monitored data are available for the below listed State performance measures:

- Vehicle Miles Traveled per capita.
- Percent of congested VMT (at or below 35 mph).
- Commute Mode share (travel to work).
- Percent of distressed state highway lane-miles.
- Pavement Condition Index (local streets and roads).
- Percent of transit assets that have surpassed the FTA useful life period.
- Highway Buffer Index (the extra time cushion that most travelers add to their average travel time when planning trips to ensure on-time arrival).
- Fatalities, serious injuries, and injuries per capita.
- Fatalities, serious injuries, and injuries per VMT.
- Percent of population within 0.5 miles of transit stops with frequent transit service.
- Mean commute travel time (to work).
- Change in acres of urbanized land.
- CO_2 emissions reduction per capita.

2. Request appropriate project modeling details from project sponsors.

In order to forecast the regional performance impacts of investments funded with 2018 STIP funds, staff requested appropriate project modeling details from project sponsors – particularly with regards to specific capacity improvements – to incorporate the projects into

Travel Model One (the region's activity-based travel demand model). This allows MTC to ensure that project impacts are being forecast in a consistent manner, rather than simply aggregating benefits forecast separately by sponsors. Project were included in the travel model based on the most recent information submitted to MTC by project sponsors as of December 20, 2018.

3. **Run regional travel demand model for baseline 2040 and STIP program 2040 conditions.**
   Travel Model One was run for year 2040 using baseline (no project) and 2018 STIP (project) conditions. The "project" run incorporates coding for all projects with total cost of $50 million or greater, or STIP programming for right-of-way and/or construction of $15 million or more funded in the 2018 STIP, even if the projects are only partially funded with STIP dollars. (The list of coded projects can be found on page 3 of this report.) While these projects represent a subset of STIP-funded investments, capacity-increasing projects represent the highest-cost and most significant investments that will generate the greatest regional impacts.

4. **Calculate impacts of STIP investments by comparing the baseline and 2018 STIP model run outputs.**
   By comparing baseline model run and the 2018 STIP model run outputs for relevant performance measures, the quantified impacts of STIP-funded projects were calculated. Note that some performance measures cannot be directly forecast in the regional demand model; these modeling limitations are noted in the appropriate section below.

Baseline performance

The following sections highlight key findings of the baseline analysis for the 6 goal areas and performance measures; this overview is followed by the partial *B1 Evaluation* data table which summarize the baseline performance measure results.

Congestion Reduction

Vehicle miles traveled per-capita in the Bay Area have remained relatively stable for the last decade. Although the number of daily miles logged by vehicles in the Bay Area has grown since the end of the Great Recession in 2010, on a per-capita basis, daily travel in the Bay Area has stabilized since 2005 at approximately 23 miles per person. This suggests that recent growth in total mileage is primarily driven by population growth rather than longer travel distances.

Percent of congested vehicle miles traveled was at record-high levels in 2016, with six percent of freeway miles driven in the region affected by traffic congestion. This trend has been driven by worsening conditions at long-standing regional bottlenecks on freeways crisscrossing San Francisco, the East Bay and the South Bay. While past years have seen significant annual growth in congested miles traveled, traffic congestion did not notably get worse in 2016 compared to the previous year, despite a booming economy and corresponding growth in jobs and population. San Francisco topped the list of the region's counties with the greatest share of miles driven in congestion. At 9.5 percent in 2016, it continues to exceed congestion levels in nearby Alameda County, which has historically been the most congested in the Bay Area. The latest data for these counties reflect slower freeway speeds and increasing congestion in the urban core. On the other hand, in the more northerly counties of Sonoma, Napa and Solano,

drivers spend very little time in congested conditions. These counties have seen little-to-no growth in congestion over the past decade.

Regional commute mode shares have been changing for the first time in decades. While three-quarters of residents still drive to work, the share of residents making this choice has declined by over 5 percentage points since 2000. Transit mode shares increased by 2 percentage points in the last five years – the first time this share has markedly increased in more than five decades. At 12 percent, the share of Bay Area public transit commutes is at its highest level since 1970. Walking and biking to work have also become more popular, especially in San Francisco where active transportation has posted the greatest gains in recent years.

Infrastructure Condition

The region's Pavement Condition Index (PCI) has been relatively stable for the past decade, but it ticked upward to a new high of 67 in 2016 after years of stagnant performance, indicating that the typical local street or road is slightly smoother. This puts our local streets and roads in "fair" condition. While local governments continue to work to improve their pavement condition, aging infrastructure remains a challenge for the region. While the regional trend has been relatively stable in recent years, performance gains are more evident at the county level. San Francisco and Marin counties have registered the biggest improvements in PCI since 2010, gaining four and three points, respectively. Roads in Alameda, Napa and San Mateo counties have also seen improvement in PCI during the same period, while Contra Costa and Santa Clara counties have experienced slight declines in their countywide average PCI scores.

The percentage of Bay Area highway lane-miles with pavement in distressed condition increased to 25 percent in 2015, but this remains 10 percentage points lower than the level registered nearly two decades ago. The recent dip in the regional highway pavement quality is attributed mainly to deterioration on the heavily-traveled I-580 and I-880 corridors in Alameda County. As state and local agencies rehabilitate and reconstruct roads in the most distressed conditions, highway segments across the region continue to deteriorate due to increasing age, traffic and unfavorable weather conditions.

Although data is unavailable on the share of highway bridges by deck area classified in Poor condition, MTC has analyzed data on the share of all regional bridges flagged as structurally deficient, weighted by bridge deck area. This data shows Bay Area bridge conditions have significantly improved over the past decade. Bay Area bridges and overpasses are in their best shape since 1992 – the earliest year on record – thanks to substantial efforts to improve the seismic and structural safety of these critical facilities. Poor bridge conditions hit a peak in 2004 when nearly one-third of the Bay Area's bridges were identified as structurally deficient. Over the past 12 years, seismic retrofit programs on highway bridges as well as upgrades to elevated freeway structures helped the region reverse that trajectory. As a result, the share of bridges flagged as deficient fell by a remarkable 25 percentage points – and stood at just 7 percent as of 2016.

The condition of transit asset in the Bay Area varies from operators to operator. BART's maintenance needs are particularly significant, with nearly half of its infrastructure past its useful life. While no Bay Area transit provider is lucky enough to operate with 100 percent brand-new equipment, BART stands as a primary example of the region's aging transit infrastructure. From tracks and control systems to vehicles and guideways, 49 percent of all BART infrastructure is now past its useful life, standing in contrast to the regional average of 29 percent. Among other

investments currently underway, the replacement of the BART fleet will play a major role in improving the agency's transit asset conditions over the coming years. Operators like Muni, AC Transit and Golden Gate Transit have recently undertaken bus rehabilitation and replacement projects, resulting in improved performance. All three of these robust bus systems have reduced the share of aged vehicles in their fleets to less than 5 percent.

System Reliability

Despite increased congestion in the region, travel time reliability on Bay Area freeways remains remarkably consistent. In 2016, travel time reliability on Bay Area highways shifted slightly, with the morning peak period becoming a bit more reliable while the evening peak period became less so. This is due in part to rising congestion, especially in the evening peak, which results in less consistent travel times. Despite these diverging trends, however, travel time reliability as measured by buffer time index has remained similar since 2010. Buffer time index during the AM Peak was 0.35 and during the PM Peak it was 0.40. In many parts of the region, heavily traveled corridors continue to be "reliably congested," providing consistent travel times even in near-gridlock conditions.

Safety

Fatalities and serious injuries from crashes has ticked upwards since 2010, reversing much of the decline seen during the Great Recession – likely a result of increased road activity as our region's economy has boomed. The past six years mark the first period of sustained growth in road fatalities since the late 1970s, when there were similar conditions during a period of economic growth. Despite the recent adverse trend in fatalities and serious injuries, Bay Area roads are still significantly safer than they in the 1970s and 1980s. This reflects the benefits of improved vehicle safety technologies such as airbags. The long-term decline in fatalities and serious injuries has occurred even as the region's population and mileage traveled has grown. In 2016, the region had:

- 455 fatalities
- 2,089 serious injuries
- 10,503 injuries
- 5.9 fatalities per 100,000 residents
- 27.3 serious injuries per 100,000 residents
- 137.3 injuries per 100,000 residents
- 0.88 fatalities per 100 million VMT
- 4.0 serious injuries per 100 million VMT
- 20.3 injuries per 100 million VMT

Although roads have become increasingly safe for motorists, over one-third of all 2016 traffic fatalities in the Bay Area were vulnerable road users – bicyclists and pedestrians. While improved vehicle safety technologies have managed to reduce fatalities among vehicle occupants, non-motorized travelers since 2011 have experienced higher fatality levels than in decades past.

Economic Vitality

Although data is unavailable for the share of housing and jobs within 0.5 miles of transit stops with frequent transit service, MTC has data on the share of *population* within 0.5 miles of transit stops with frequent transit service. In 2014, 38% of the Bay Area's population lived proximate to

frequent transit service. Because frequent transit service is concentrated in the urban core, population shares vary from county to county. In San Francisco County, 100% of the population, while less than 5% of the population in Sonoma, Solano, and Napa counties is proximate to transit.

Commute times continued to tick upwards in 2015, hitting a record high of over 31 minutes. Across all modes, the average Bay Area commute takes longer than ever before and now lasts over 31 minutes door-to-door. Increasing congestion and longer-distance commutes to job centers in San Francisco and Silicon Valley have contributed to this trend. Importantly, modal choice affects commute duration. Commuters choosing to drive alone spend 28 minutes getting to work, while those choosing public transit log an average commute time nearly twice as long at 51 minutes. The longer transit commute times are not surprising considering nearly two-thirds of transit commuters work in San Francisco. Given congestion in San Francisco and its related impacts on Muni, plus long-distance commutes on BART, Caltrain and express buses from other counties, it is difficult for these commuters to get to work in 30 minutes or less. This results in above-average travel times for public transit users.

Environmental Sustainability

The pace of Bay Area greenfield development, which includes the conversion of agricultural and other non-urbanized land to urbanized land, slowed by nearly a third from 2000 to 2014. The number of new acres of urban development in the Bay Area has decreased during each biannual period since 2002, marking a decade-plus-long trend of declining greenfield development. In the most recent period – from 2012 to 2014 – just 2,410 acres of greenfield development occurred representing just one-fifth the development rate during the 1990s. The slowing rate of urban expansion is no doubt influenced by the lingering effects of the Great Recession, but it also may reflect changing preferences among Bay Area homebuyers and the efficacy of cities' and counties' growth management strategies.

On a per-capita basis, greenhouse gas emissions from primary sources have declined by six percentage points since 2010. While the Bay Area economy has surged in recent years, greenhouse gas emissions have not. Remarkably, since 2010, per-capita greenhouse gas emissions have declined by six percentage points. Between 2010 and 2015, daily greenhouse gas emissions per capita declined 0.01 lbs. CO_2. This trend is primarily attributable to decreased consumption of electricity and natural gas and expanded availability of renewable power sources like solar and wind. At the same time, per-capita consumption of gasoline and diesel fuels by Bay Area drivers has declined in the last few years as well – albeit at a slower rate than the electricity and natural gas sectors.

B1 Evaluation – Regional Level Performance Indicators and Measures (Baseline only)		
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)
	Percent of congested Vehicle Miles Traveled (at or below 35 mph).	5.8% (2015)
	Commute Mode Share (travel to school)[1]	(2014)
		75.7% auto
		11.5% transit
		3.7% walk

		3.2% other
		5.8% telecommute
Infrastructure Condition	Percent of distressed state highway lane-miles.	25% (2015)
	Pavement Condition Index (local streets and roads).	67/100 (2015)
	Percent of highway bridges by deck area classified in Poor condition.	*data unavailable*
	Percent of all bridges by deck area classified as structurally deficient[2]	7% (2016)
	Percent of transit assets that have surpassed the FTA useful life period.	Varies by operator, from 0% to 48.8%, regional average 29% (2015)
System Reliability	Highway Buffer Index (the extra time cushion that most travelers add to their average travel time when planning trips to ensure on-time arrival).	(2016)
		0.35 in AM Peak
		0.40 in PM Peak
Safety	Fatalities, serious injuries, and injuries[3] per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)
		2.7 x 10^{-4}annual serious injuries per resident (2016)
		1.4 x 10^{-3}annual injuries per residents (2016)
	Fatalities, serious injuries, and injuries[3] per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)
		4.0 x 10^{-8} serious injuries per VMT (2016)
		2.0 x 10^{-7}injuries per VMT (2016)
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*
	Percent of population within 0.5 miles of transit stops with frequent transit service.[4]	38% of population (2014)
	Mean commute travel time (to work).[1]	31.1 minutes (2015)
Environmental Sustainability	Change in acres of agricultural land.[5]	2,410 acres reduction in greenfield (2012 to 2014)
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)

Data Source: *MTC Vital Signs*- www.vitalsigns.mtc.ca.gov

[1]**Commute mode share and mean commute travel time Note:** *measures only capture travel to work and does not capture travel to school*
[2]**Share of bridges that are structurally deficient Note:** *measure is used as an alternative to the Share of bridges that are in poor condition*
[3]**All injuries per capita and per vehicle mile traveled Note:** *measures are used as an alternative to serious injury rates for comparison with travel model outputs*
[4]**Population proximate to transit service Note:** *measure is used as an alternative to the share of housing and jobs proximate to transit service*
[5]**Agricultural land Note:** *measure represents change in agricultural land and other non-urbanized land*

Regional-level STIP investment impacts

The following sections highlight key findings of the STIP investment impact analysis for the 6 goal areas and performance measures; this overview is followed by the completed *B1 Evaluation* table which summarize the 2018 STIP impacts.

Congestion Reduction

It is unclear if transportation projects funded with 2018 STIP dollars are expected to support state and regional congestion reduction goals because they have a mixed impacts on congestion measures. MTC's Travel Model One forecasts a 0.02 minute increase in daily vehicle miles traveled per capita in 2040. While projects like the BART extension to San Jose are expected reduce VMT and support congestion reduction goals, improvements are offset by increased VMT from projects like the US-101 HOV/Express Lanes projects. In terms of commute mode share, projects funded with 2018 STIP dollars are forecast to increase the share of transit trips. Nearly all shift in mode share is from auto to transit trips primarily due to the BART to San Jose project. Due to limitations of the travel mode, it is not possible to measure the expected change in percent of congested VMT.

Infrastructure Condition

Without detailed data from project sponsors on existing road and bridge conditions – and the potential improvements to those distressed facilities – it is not possible to forecast how these investments will affect regional system preservation metrics. While the construction of new facilities will improve pavement quality and asset condition, they will result in increased system preservation burdens for the region going forward.

System Reliability

It is not possible to measure highway buffer time index using model outputs from the Travel Model One STIP projects evaluation. Around a dozen projects funded by 2018 STIP dollars include interchange or intersection improvements which should improve highway system reliability by improving traffic flow at those junctions. Similarly, operational and ITS projects in San Mateo and Contra Costa counties should improve reliability in those regions.

Safety

Transportation projects funded with 2018 STIP dollars are expected to support state and regional goals by reducing fatalities and injuries from crashes on Bay Area roads. MTC's Travel Model One forecasts around one fewer annual fatality per year in year 2040. The model forecasts 0.1×10^{-8} fewer annual fatalities per residents and 0.2×10^{-7} fewer fatalities per vehicle miles traveled. With regards to injury crashes, MTC's Travel Model One is cannot model serious injury crashes but does have model outputs for crashes with injuries of all severity types. The model forecasts 0.7×10^{-4} fewer annual injuries per resident and 8.6×10^{-6} fewer serious injuries per VMT.

Economic Vitality

While the projects funded with 2018 STIP dollars are expected to improve regional economic vitality and accessibility, they are not anticipated to increase the share of housing and jobs within 0.5 miles of transit stops with frequent transit service. Because the Bay Area's transit system is already quite robust, the new transit investments are primarily focused on increasing

capacity, reducing travel times, and replacing aged transit assets on key corridors. The BART extension project to Downtown San Jose is designed to replace existing express bus services.

Forecast results cannot be used to determine the impact of projects funded with 2018 STIP dollars on mean commute times in the region. While, MTC's Travel Model One forecasts the projects funded with 2018 STIP dollars decrease auto, walk, and bike commute travel times by 0.1 minutes in year 2040, their effect on transit travel times cannot be measured. While new transit investments to such as the BART station modernization and SFMTA rail restoration projects are expected to improve travel times, the model forecasts a commute modal shift towards transit. Our baseline analysis of monitored data has shown average transit commutes have longer travel times than auto commutes. This suggests that there may be an increase in region-wide mean commute travel time in 2040.

Environmental Sustainability

Projects funded with 2018 STIP dollars have a mixed impact on state and regional environmental sustainability goals. The construction of projects are not anticipated to impact the acres of agricultural land in the region as all projects are within the existing urban footprint. However, projects are forecast to have a slightly negative impact for regional air quality, increasing CO_2 emissions by 0.03 lbs. per capita daily in 2040. The forecasted increase in CO_2 parallels the forecasted increase in daily vehicle miles traveled. Decreases in CO_2 emissions from transit projects like the BART extension are offset by increases in CO_2 emissions from express lane/HOV projects.

Legend for State Performance Measure Investment Impact Tables	
	Investments support goal
	Investments have negligible impact
	Investments adversely impact goal
	Investment impact cannot be forecast

B1 Evaluation table

B1 Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**2018 STIP Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	+0.04 daily VMT
	Percent of congested Vehicle Miles Traveled (at or below 35 mph).	5.8% (2015)	cannot be forecast
	Commute Mode Share (travel to work) [1]	(2014)	
		75.7% auto	-0.09% auto
		11.5% transit	+0.09% transit
		3.7% walk	-0.00% walk
		3.2% other	-0.00% bike
		5.8% telecommute	[2]
Infrastructure Condition	Percent of distressed state highway lane-miles.	25% (2015)	cannot be forecast

	Pavement Condition Index (local streets and roads).	67/100 (2015)	cannot be forecast
	Percent of highway bridges by deck area classified in Poor condition.	*data unavailable*	cannot be forecast
	Percent of all bridges by deck area classified as structurally deficient[3]	7% (2016)	cannot be forecast
	Percent of transit assets that have surpassed the FTA useful life period.	Varies by operator, from 0% to 48.8%, regional average 29% (2015)	cannot be forecast
System Reliability	Highway Buffer Index (the extra time cushion that most travelers add to their average travel time when planning trips to ensure on-time arrival).	(2016)	
		0.35 in AM Peak	cannot be forecast
		0.40 in PM Peak	cannot be forecast
Safety	Fatalities and serious injuries per capita.	5.9×10^{-5} annual fatalities per resident (2016)	-3.0×10^{-8} annual fatalities per resident
		2.7×10^{-4} annual serious injuries per resident (2016)	cannot be forecast
	Serious injuries per capita[4]	1.4×10^{-3} annual injuries per residents (2016)	$+3.1 \times 10^{-4}$ annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8×10^{-9} fatalities per VMT (2016)	-1.8×10^{-11} fatalities per VMT
		4.0×10^{-8} serious injuries per VMT (2016)	cannot be forecast
	Serious injuries per Vehicle Miles Traveled[4]	2.0×10^{-7} injuries per VMT (2016)	-9.8×10^{-9} injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Percent of population within 0.5 miles of transit stops with frequent transit service.[5]	38% of population (2014)	negligible impact
	Mean commute travel time (to work).[1]	31.1 minutes (2015)	-0.04 minutes

Environmental Sustainability	Change in acres of agricultural land.[6]	2,410 acres reduction in greenfield (2012 - 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	+0.04 daily lbs. CO_2 per capita

Baseline Data Source: *MTC Vital Signs*- www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*

[1]**Commute mode share and mean commute travel time Note:** *measures only capture travel to work and does not capture travel to school*
[2]**Telecommute mode share STIP Impact Note:** *Travel Model One does not have outputs to measure the share of commuters that telecommute*
[3]**Share of bridges that are structurally deficient Note:** *measure is used as an alternative to the Share of bridges that are in poor condition*
[4]**All injuries per capita and per vehicle mile traveled Note:** *measures are used as an alternative to serious injury rates for comparison with travel model outputs*
[5]**Population proximate to transit service Note:** *measure is used as an alternative to the share of housing and jobs proximate to transit service*
[6]**Agricultural land Note:** *measure represents change in agricultural land and other non-urbanized land*

B. Evaluation of the cost-effectiveness of the STIP

As an extension of the regional-level performance evaluation, the CTC has requested that MPOs also evaluate the cost-effectiveness of 2018 STIP investments in furthering state and regional transportation goals. Cost-effectiveness is measured using the State performance measures to allow for a level of consistency between STIP monitoring efforts across the state.

Overall approach

Cost-effectiveness is measured by the impact per thousand dollar invested for each State performance measure. The dollars invested represents the full cost through the life of the project, including maintenance and operation, and includes both costs covered by the 2018 STIP and other funding sources. The 38 projects in the San Francisco Bay Area evaluated in this report represent over $380M STIP investments ($362M RTIP and $18M ITIP investments) and $4,521M investments from other sources for a total of $4,902M in total investments. Project costs were submitted to MTC by project sponsors. The regional-level STIP performance impacts from the *B1 Evaluation* table are normalized by the total investments to measure cost-effectiveness.

Regional-level STIP cost-effectiveness

The completed *B2 Evaluation* data table summarize the 2018 STIP cost-effectiveness.

B2 Evaluation table

B2 Evaluation – Cost-Effectiveness Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**2018 STIP Impact (2040 Model) (per thousand dollar invested)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	+8.26 x 10^{-9}
	Percent of congested Vehicle Miles Traveled (at or below 35 mph).	5.8% (2015)	cannot be forecast
	Commute Mode Share (travel to work) [1]	(2014)	
		75.7% auto	-1.75 x 10^{-10} % auto
		11.5% transit	+1.91 x 10^{-10} % transit
		3.7% walk	-1.00 x 10^{-11}% walk
		3.2% other	-6.89 x 10^{-12}% bike
		5.8% telecommute	[2]
Infrastructure Condition	Percent of distressed state highway lane-miles.	25% (2015)	cannot be forecast
	Pavement Condition Index (local streets and roads).	67/100 (2015)	cannot be forecast
	Percent of highway bridges by deck area classified in Poor condition.	*data unavailable*	cannot be forecast
	Percent of all bridges by deck area classified as structurally deficient[3]	7% (2016)	cannot be forecast
	Percent of transit assets that have surpassed the FTA useful life period.	Varies by operator, from 0% to 48.8%, regional average 29% (2015)	cannot be forecast
System Reliability	Highway Buffer Index (the extra time cushion that most travelers add to their average travel time when planning trips to ensure on-time arrival).	(2016)	
		0.35 in AM Peak	cannot be forecast
		0.40 in PM Peak	cannot be forecast
Safety	Fatalities and serious injuries per capita.	5.9 annual fatalities per 100k residents (2016)	-6.04 X 10^{-10} annual fatalities per residents
		27.3 annual serious injuries per 100k residents (2016)	cannot be forecast
	Serious injuries per capita[4]	137.3 injuries per 100k residents (2016)	+6.43 X 10^{-8} annual injuries per residents

	Fatalities and serious injuries per Vehicle Miles Traveled.	0.88 fatalities per 100 million VMT (2016)	-3.73 X 10^{-10}fatalities per VMT
		4 serious injuries per 100 million VMT (2016)	cannot be forecast
	Serious injuries per Vehicle Miles Traveled[4]	20.3	-2.01 X 10^{-8} serious injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible cost-effectiveness
	Percent of population within 0.5 miles of transit stops with frequent transit service. [5]	38% of population (2014)	negligible cost-effectiveness
	Mean commute travel time (to work). [1]	31.1 minutes (2015)	-8.65 x 10^{-9} minutes
Environmental Sustainability	Change in acres of agricultural land. [6]	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	+7.89 x 10^{-9} daily lbs. CO_2 per capita

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*
STIP Investment Source: *Project Sponsors*

[1]**Commute mode share and mean commute travel time Note:** *measures only capture travel to work and does not capture travel to school*
[2]**Telecommute mode share STIP Impact Note:** *Travel Model One does not have outputs to measure the share of commuters that telecommute*
[3]**Share of bridges that are structurally deficient Note:** *measure is used as an alternative to the Share of bridges that are in poor condition*
[4]**All injuries per capita and per vehicle mile traveled Note:** *measures are used as an alternative to serious injury rates for comparison with travel model outputs*
[5]**Population proximate to transit service Note:** *measure is used as an alternative to the share of housing and jobs proximate to transit service*
[6]**Agricultural land Note:** *measure represents change in agricultural land and other non-urbanized land*

C. Project-level outputs

Due to incomplete information on project changes or increased capacity benefits for all projects, a region-level performance summary cannot be provided. B3 Evaluation tables from project sponsors for the following projects are attached to this report:

- I-80 Gilman I/C Reconstruction and Access Imps.
- SR 84/I-680 Widening and I/C Imps.
- US 101 Produce Avenue Interchange - Imps.
- US 101/Woodside Road Interchange Imp. Project
- US 101 Managed Lane Project
- US 101 Express Lanes - Phase 3
- US 101 Express Lanes - Phase 4
- US 101 Express Lanes - Phase 5

B3 Evaluation tables

See Attachment A

D. Project-level benefit evaluation for select projects

For projects with total cost of $50 million or greater, or STIP programming for right-of-way and/or construction of $15 million or more, a project specific benefit evaluation will be performed to estimate its benefit to the regional system from changes to the built environment. The project specific benefit evaluation must include a full life-cycle cost evaluation and take climate change impacts into account.

The following table summarizes projects subject to the individual evaluation:

Project	Project-Level Evaluation Required?
SR 84/I-680 Widening and I/C Imps.	Yes
I-80 Gilman I/C Reconstruction and Access Imps.	Yes
AC Transit Bus Rapid Transit Project	No
19th Street BART Station Modernization	Yes
I-680 SB HOV Gap Closure (N. Main-Livorna)	Yes
I-80/Central Avenue - Phase 2 (Local Road Realignment)	No
Concord BART Station Modernization	Yes
I-680/SR4 Interchange Improvements – Phase 3	Yes
SR4 Operational Improvements	No
Walnut Creek BART TOD Intermodal Project	No
I-80/San Pablo Dam Rd Interchange (Ph. 2)	No
Kirker Pass Rd NB Truck Climbing Lane	No
Silverado Five- Way Intersection Improvements	No
Silverado Trail Repaving Phase L	No
Devlin Road and Vine Trail Extension	No
Soscol Junction	No
Petrified Forest Rd and SR-128, Intersection Improvements	No
Hopper Creek Pedestrian Path (Oak Cir - Mission)	No
2020 Restoration of SFMTA Light Rail Lines	No
2021 Restoration of SFMTA Light Rail Lines	No
US 101 Managed Lane Project	Yes
US 101/Woodside Road Interchange Imp. Project	No
US 101 Produce Avenue Interchange - Imps.	No
ITS Imps. in Daly City, Brisbane, and Colma	No
Countywide ITS Imps. - San Mateo County Smart Corridor – SSF Expansion	Yes
SR 92/US 101 Interchange Imps. - Phase 2	No
US-101 Willow Rd I/C Reconst. (AB3090 Reimbursement)	No
BART Phase 2: Extension to Downtown San Jose/Santa Clara	Yes
I-680 Soundwall from Capitol to Mueller	No
San Jose West San Carlos Urban Village Streetscape Imps.	No
US 101 Express Lanes - Phase 3	Yes
US 101 Express Lanes - Phase 4	Yes
US 101 Express Lanes - Phase 5	No
I-280 Soundwalls at Bird Ave. in San Jose	No
Jepson Pkwy (Leisure Town from Commerce to Orange)	Yes
I-80/I-680/SR12 I/C Package 2A (EB SR12 to EB I-80 Connector)	No
SR 37 Project/Mare Island Interchange Project	No
SR 12/Church Rd	No

Overall approach

To comply with the 2018 STIP requirements, project-level evaluations were completed follow a similar methodology to the regional-level performance evaluation. MTC staff conducted the following process for the state-identified performance measures for each project:

1. **Run regional travel demand model for baseline 2040 and STIP project 2040 conditions.**

2. **Calculate impacts of STIP project investments by comparing the baseline and project run.**

Due to modeling limitation, only select performance measures could be calculated using outputs from Travel Model One. The following measures were used to evaluate project-level impacts:

- Vehicle Miles Traveled per capita.
- Commute Mode share (travel to work).
- Fatalities, serious injuries, and injuries per capita.
- Fatalities, serious injuries, and injuries per VMT.
- Percent of population within 0.5 miles of transit stops with frequent transit service (proxy for share of housing and jobs proximate to transit State measure).
- Mean commute travel time (to work).
- Change in acres of urbanized land.
- CO_2 emissions reduction per capita.
- Benefit/Cost ratio.

Project-level benefit/cost ratios were calculated using the Cal-B/C benefit/cost analysis tool. Project sponsors provided Cal-B/C reports for the US 101 Managed Lane Project, US 101 Express Lanes – Phase 3, and US 101 Express Lanes – Phase 4 projects. Benefit/Cost ratios are not available for other projects.

Project-level STIP investment impacts

Four of the 12 projects required to undergo individual project analysis could not be modeled and evaluated using Travel Model One. These projects are either non-capacity increasing or are not regionally significant and therefore regional benefits are expected to be negligible.

Projects requiring project-level evaluations with negligible benefits		
Project	**Non-Capacity Increasing?**	**Not Regionally Significant?**
Countywide ITS Imps. - San Mateo County Smart Corridor – SSF Expansion	Yes	No
I-80 Gilman I/C Reconstruction and Access Imps.	No	Yes
19th Street BART Station Modernization	Yes	No
Concord BART Station Modernization	Yes	No

The following tables summarize project-level benefit analysis for each project:

SR 84/I-680 Widening and I/C Imps. Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	-1.55×10^{-2} daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	-1.18×10^{-2}% auto
		11.5% transit	+0.00% transit
		3.7% walk	+0.01% walk
		3.2% other	-0.00% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9×10^{-5} annual fatalities per resident (2016)	-4.61×10^{-8} annual fatalities per resident
	Serious injuries per capita	1.4×10^{-3} annual injuries per residents (2016)	-4.42×10^{-6} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8×10^{-9} fatalities per VMT (2016)	-2.66×10^{-12} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0×10^{-7} injuries per VMT (2016)	-1.63×10^{-10} injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	-1.39×10^{-2} minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	-5.83×10^{-3} daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	Not available

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*

Cost-Effectiveness Note: *Cal-B/C report not available*

I-680 SB HOV Gap Closure (N. Main – Livoma) Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	-4.91 x 10^{-3} daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	-0.01% auto
		11.5% transit	+0.01% transit
		3.7% walk	+0.00% walk
		3.2% other	-0.00% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)	+1.27x 10^{-9} annual fatalities per resident
	Serious injuries per capita	1.4 x 10^{-3}annual injuries per residents (2016)	-7.74 x 10^{-7} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)	+1.84 x 10^{-12} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0 x 10^{-7}injuries per VMT (2016)	+5.37 x 10^{-10}injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	+6.81x 10^{-3} minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	$CO2_2$ emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	-6.03 x 10^{-3}daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	Not available

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*

Cost-Effectiveness Note: *Cal-B/C report not available*

I-680/SR-4 Interchange Improvements – Phase 3 Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	-4.33 daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	-0.02% auto
		11.5% transit	+0.01% transit
		3.7% walk	+0.01% walk
		3.2% other	-0.00% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)	+1.08 x 10^{-9} annual fatalities per resident
	Serious injuries per capita	1.4 x 10^{-3}annual injuries per residents (2016)	-9.45 x 10^{-7} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)	+1.61 x 10^{-12} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0 x 10^{-7}injuries per VMT (2016)	-3.03 x 10^{-12}injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	+6.47 x 10^{-3} minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	-6.24 x 10^{-3} daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	Not available

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*

Cost-Effectiveness Note: *Cal-B/C report not available*

US 101 Managed Lane Project Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	+5.83 x 10^{-2} daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	+0.04% auto
		11.5% transit	-0.03% transit
		3.7% walk	-0.01% walk
		3.2% other	-0.01% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)	+4.98 x 10^{-8} annual fatalities per resident
	Serious injuries per capita	1.4 x 10^{-3}annual injuries per residents (2016)	+9.90 x 10^{-4} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)	-1.08 x 10^{-12} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0 x 10^{-7}injuries per VMT (2016)	-5.14 x 10^{-9}injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	+3.49 x 10^{-2} minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	+2.91 X 10^{-2} daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	NB: I-380 to Whipple Ave: 4.2 Whipple Ave to SCL: *N/A*[1] SB: *N/A*[1]

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*
Cost-Effectiveness Source: *Caltrans DOTP CAL-B/C Results*

[1]**Cost-Effectiveness Note:** *Benefit/Cost could not be estimated due to insufficient cost information*

BART Phase 2: Extension to Downtown San Jose/Santa Clara Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	-3.88 X 10^{-2} daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	-0.15% auto
		11.5% transit	+0.15% transit
		3.7% walk	-0.00% walk
		3.2% other	-0.00% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)	-5.68 x 10^{-8} annual fatalities per resident
	Serious injuries per capita	1.4 x 10^{-3}annual injuries per residents (2016)	-8.15 x 10^{-6} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)	+3.25 x 10^{-12} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0 x 10^{-7}injuries per VMT (2016)	+8.20 x 10^{-11}injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	-1.41 x 10^{-2} minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	-1.96 X 10^{-2} daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	6.70

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*

Cost-Effectiveness Note: *Cal-B/C report not available*

US 101 Express Lanes – Phase 3 Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.		+1.29 x 10^{-2} daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	-0.00% auto
		11.5% transit	-0.00% transit
		3.7% walk	-0.00% walk
		3.2% other	-0.00% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)	+2.15 x 10^{-8} annual fatalities per resident
	Serious injuries per capita	1.4 x 10^{-3}annual injuries per residents (2016)	+2.40 x 10^{-6} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)	-6.20 x 10^{-13} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0 x 10^{-7}injuries per VMT (2016)	-7.84 x 10^{-11} injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	+2.46 x 10^{-3} minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	+9.03 X 10^{-3} daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	6.0

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*
Cost-Effectiveness Source: *Caltrans DOTP CAL-B/C Results*

US-101 Express Lanes – Phase 4 Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	-2.96 x 10^{-3} daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	-0.01% auto
		11.5% transit	+0.00% transit
		3.7% walk	+0.01% walk
		3.2% other	-0.00% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)	+4.30 x 10^{-9} annual fatalities per resident
	Serious injuries per capita	1.4 x 10^{-3}annual injuries per residents (2016)	-3.65 x 10^{-7} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)	+1.70 x 10^{-12} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0 x 10^{-7}injuries per VMT (2016)	+4.94 x 10^{-11}injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	+2.00 x 10^{-3} minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	-4.64 X 10^{-3} daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	7.8

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*
Cost-Effectiveness Source: *Caltrans DOTP CAL-B/C Results*

Jepson Pkwy (Leisure Town from Commerce to Orange) Evaluation – Regional Level Performance Indicators and Measures			
Goal	**Indicator/Measure**	**Current System Performance (Baseline)**	**Project Impact (2040 Model)**
Congestion Reduction	Vehicle Miles Traveled per capita.	22.9 daily VMT (2015)	-2.02 x 10^{-3} daily VMT
	Commute Mode Share (travel to work)	(2014)	
		75.7% auto	0.00% auto
		11.5% transit	-0.01% transit
		3.7% walk	0.00% walk
		3.2% other	-0.00% bike
		5.8% telecommute	
Safety	Fatalities and serious injuries per capita.	5.9 x 10^{-5}annual fatalities per resident (2016)	+7.39 x 10^{-9} annual fatalities per resident
	Serious injuries per capita	1.4 x 10^{-3}annual injuries per residents (2016)	-1.19 x 10^{-7} annual injuries per resident
	Fatalities and serious injuries per Vehicle Miles Traveled.	8.8 x 10^{-9} fatalities per VMT (2016)	+1.91 x 10^{-12} fatalities per VMT
	Serious injuries per Vehicle Miles Traveled	2.0 x 10^{-7}injuries per VMT (2016)	+5.57 x 10-11 injuries per VMT
Economic Vitality	Percent of housing and jobs within 0.5 miles of transit stops with frequent transit service.	*data unavailable*	negligible impact
	Mean commute travel time (to work).	31.1 minutes (2015)	+6.74 x 10-3 minutes
Environmental Sustainability	Change in acres of agricultural land.	2,410 acres reduction in greenfield (2012 to 2014)	negligible impact
	CO_2 emissions reduction per capita	0.01 lbs. CO_2 reduction in daily emissions per capita (2010 to 2015)	-5.02 x 10^{-3} daily lbs. CO_2 per capita
Cost-Effectiveness	Benefit /Cost Estimate	*Not applicable*	Not available

Baseline Data Source: *MTC Vital Signs-* www.vitalsigns.mtc.ca.gov
STIP Impact Data Source: *Travel Model One/COBRA (MTC Benefit-Cost Tool)*
Population Forecast Source: *Plan Bay Area 2040 Projections*

Cost-Effectiveness Note: *Cal-B/C report not available*

Attachment A: Project-Level Performance Evaluations

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

ALAMEDA COUNTY
I-80 GILMAN I/C RECONSTRUCTION AND ACCESS IMPS.

For additional information, contact:
Trinity Nguyen
Alameda County Transportation Commission (ACTC)
(510) 208-7441
tnguyen@alamedactc.org

B2 Evaluation - Cost-Effectiveness Indicators and Measures			
Goal	Indicator/Measure (per thousand dollar invested)	Current Level of Performance (Baseline)	Projected Performance Improvement (indicate time frame)
Congestion Reduction	Reduce Vehicle Miles Traveled per capita	NOT AVAILABLE	NOT AVAILABLE
	Reduce percent of congested VMT (at or below 35 mph).	NOT AVAILABLE	NOT AVAILABLE
	Change in commute mode share (travel to work or school).	NOT AVAILABLE	NOT AVAILABLE
Infrastructure Condition	Reduce percent of distressed state highway lane-miles.	NOT APPLICABLE	NOT APPLICABLE
	Improve Pavement Condition Index (local streets and roads).	NOT AVAILABLE	NOT AVAILABLE
	Reduce percent of highway bridge deck area in Poor Condition**.**	NOT APPLICABLE	NOT APPLICABLE
	Reduce percent of transit assets that have surpassed the FTA useful life period.	NOT APPLICABLE	NOT APPLICABLE
System Reliability	Reduce Highway Buffer Index (the time cushion added to average commute travel times to ensure on-time arrival).	NOT APPLICABLE	NOT APPLICABLE
Safety	Reduce fatalities and serious injuries per capita.	NOT APPLICABLE	NOT APPLICABLE
	Reduce fatalities and serious injuries per Vehicle Miles Traveled	NOT APPLICABLE	NOT APPLICABLE
Economic Vitality	Increase percent of housing and jobs within 0.5 miles of transit stops with frequent transit service	NOT APPLICABLE	NOT APPLICABLE
	Reduce mean commute travel time (to work or school).	NOT APPLICABLE	NOT APPLICABLE
Environmental Sustainability	Change in acres of agricultural land.	NOT APPLICABLE	NOT APPLICABLE
	CO_2 emissions reduction per year	164 Metric Tons/ Yr.	81 Metric Tons/ Yr.

Agencies may use the following table B3 to identify by proposed project, or in summary for all proposed projects, changes to the built environment.

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type Or Mode	Change to Built Environment	Indicator/ Measure	Benefits or Performance Improvement at Project Completion
State Highway	New general purpose lane-miles.	NOT APPLICABLE	NOT APPLICABLE
	New HOV/HOT lane-miles.	NOT APPLICABLE	NOT APPLICABLE
	Lane-miles rehabilitated.	NOT APPLICABLE	NOT APPLICABLE
	New or upgrade bicycle lane/sidewalk miles.	NOT APPLICABLE	NOT APPLICABLE
	Operational improvements.	NOT APPLICABLE	NOT APPLICABLE
	New or reconstructed interchanges.	Ramp termini	2
	New or reconstructed bridges.	NOT APPLICABLE	NOT APPLICABLE
Transit or Intercity Rail	Additional transit service miles.	NOT APPLICABLE	NOT APPLICABLE
	Additional transit vehicles.	NOT APPLICABLE	NOT APPLICABLE
	New rail track miles.	NOT APPLICABLE	NOT APPLICABLE
	Rail crossing improvements.	NOT APPLICABLE	NOT APPLICABLE
	Station improvements.	NOT APPLICABLE	NOT APPLICABLE
Local streets and roads	New lane-miles.	NOT APPLICABLE	NOT APPLICABLE
	Lane-miles rehabilitated.	SF	103,220
	New or upgrade bicycle lane/sidewalk miles.	SF	11,000
	Operational improvements.	New Ro ndabouts	2
	New or reconstructed bridges.	LF	1490

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

ALAMEDA COUNTY
SR 84/I-680 WIDENING AND I/C IMPS.

For additional information, contact:
Trinity Nguyen
Alameda County Transportation Commission (ACTC)
(510) 208-7441
tnguyen@alamedactc.org

B2 Evaluation - Cost-Effectiveness Indicators and Measures			
Goal	Indicator/Measure (per thousand dollar invested)	Current Level of Performance (Baseline)	Projected Performance Improvement (indicate time frame)
Congestion Reduction	Reduce Vehicle Miles Traveled per capita	4.36 billion annual VMT (study region), no project, 2045	Reduction of 0.68% (2045)
	Reduce percent of congested VMT (at or below 35 mph).	6,844,271 VMT at or below 35 mph (study region), no project, 2045	Reduction of 8.8% (2045)
	Change in commute mode share (travel to work or school).		The project includes Class I and Class II bikeways along SR 84 with connections to Calaveras Road and Paloma Way. The bikeways would allow for an increase in bicycle commuting through the project area; however, no mode shift was assumed in the traffic analyses.
Infrastructure Condition	Reduce percent of distressed state highway lane-miles.	Not applicable	Not applicable
	Improve Pavement Condition Index (local streets and roads).	Not applicable	Not applicable
	Reduce percent of highway bridge deck area in Poor Condition.	Not applicable	Not applicable
	Reduce percent of transit assets that have surpassed the FTA useful life period.	Not applicable	Not applicable

B2 Evaluation - Cost-Effectiveness Indicators and Measures			
Goal	Indicator/Measure (per thousand dollar invested)	Current Level of Performance (Baseline)	Projected Performance Improvement (indicate time frame)
System Reliability	Reduce Highway Buffer Index (the time cushion added to average commute travel times to ensure on-time arrival).	Average travel time (minutes), no-project condition, 2045 AM peak period, southbound SR 84: 52.4 PM peak period, northbound SR 84: 11.8	Reduction in average AM peak period travel times, southbound SR 84: 17% (2045) Reduction in average PM peak period travel times, northbound SR 84: 27% (2045) Travel times in the I-680 corridor will be reduced as well as traffic volume shifts to the SR 84 corridor after completion on the project, and afternoon queue spillback from the northbound SR 84 corridor onto the northbound I-680 mainline is eliminated by the project.
Safety	Reduce fatalities and serious injuries per capita.	2.77 total collisions (fatal and fatal + injury) per million vehicle miles (statewide average for comparable facility 0.40), worst location, January 2011 through December 2013	Reduction in total collision rates (fatal and fatal + injury): up to 86% compared to the statewide average.[1]

[1] The proposed improvements at the SR 84/I-680 interchange would eliminate an existing weaving conflict between traffic entering northbound I-680 from Calaveras Road and exiting northbound I-680 to northbound SR 84. The fatal plus injury and total collision rates in this area are approximately five times higher than the statewide average.

In addition, at the following locations, which all have higher fatal and/or total collision rates than the statewide average, the project would:

- Convert SR 84 from a two-lane conventional undivided highway to a four-lane divided median expressway, and provide standard lane widths, shoulders, and sight distance.
- Add a signalized intersection with lighting at Little Valley Road/Vallecitos Atomic Laboratory Road, and construct frontage roads to provide access for the adjacent private properties to the signalized intersection.
- Construct a barrier to separate Calaveras Road and the northbound I-680 on-ramp for safer connections to

Goal	Indicator/Measure (per thousand dollar invested)	Current Level of Performance (Baseline)	Projected Performance Improvement (indicate time frame)
	Reduce fatalities and serious injuries per Vehicle Miles Traveled		See above
Economic Vitality	Increase percent of housing and jobs within 0.5 miles of transit stops with frequent transit service	Not applicable	Not applicable
	Reduce mean commute travel time (to work or school).	2045 no-project peak period vehicle hours of delay, study region (36,500 AM, 20,300 PM)	Reduction of 9% in AM peak period and 23% in PM peak period (2045)
Environmental Sustainability	Change in acres of agricultural land.		The project would not affect cultivated agricultural land.
	CO2 emissions reduction per capita	1.464 million metric tons (study region), no project, 2045	Reduction of 0.68% (2045)

northbound SR 84.

- Convert the right turn at the ramp terminus of the southbound I-680/southbound SR 84 off-ramp to Paloma Way from a free right to a stop control, which is expected to reduce the turning speeds and increase the weaving length available by approximately 240 feet.

SR-84/I-680

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type Or Mode	Change to Built Environment	Indicator/ Measure	Benefits or Performance Improvement at Project
State Highway	New general purpose lane-miles.	Lane miles	23.1 lane-miles
	New HOV/HOT lane-miles.	Lane miles	2.98 lane-miles
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	Lane miles	7.13 lane-miles
	Operational improvements.	Lane miles	3.59 lane-miles
	New or reconstructed interchanges.	N/A	
	New or reconstructed bridges.	N/A	
Transit or Intercity Rail	Additional transit service miles.	N/A	
	Additional transit vehicles.	N/A	
	New rail track miles.	N/A	
	Rail crossing improvements.	N/A	
	Station improvements.	N/A	
Local streets and roads	New lane-miles.	N/A	
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	N/A	
	Operational improvements.	N/A	
	New or reconstructed bridges.	N/A	

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

SAN MATEO COUNTY
US 101/PRODUCE AVE INTERCHANGE

For additional information, contact:
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San Mateo City/County Association of Governments (SM C/CAG)
(650) 599-1462
jhigaki@smcgov.org

Produce Interchange - Improvements

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type or Mode	Change to Built Environment	Indicator/Measure	Benefits or Performance Improvement at Project Completion
State Highway	New general purpose lane-miles.	na	
	New HOV/HOT lane-miles.	na	
	Lane-miles rehabilitated.	na	
	New or upgrade bicycle lane/sidewalk miles.	na	
	Operational improvements.	na	
	New or reconstructed interchanges.	Revised footprint	Travel conditions on southbound on/off ramps improved. Better arterial road connections with greater opportunity for merged on/off access.
		Increased design speed	Higher average travel speeds of approx. 40mph on improved on/off ramps compared to current approx. 25 mph maximum speed.
		Increased Capacity and Reduced Queuing	Additional lanes added to on/off ramps allow higher number of vehicles; fewer incidents and reduced durations of queuing.
		Improved safety	Improved design and facilities reduce conflicts between ramp vehicle traffic and pedestrian/bicycle users. Future accidents should be reduced from 1.96 accidents/MVM) closer to statewide average rate of 0.96 accidents/MVM.
	New or reconstructed bridges.	na	
Transit or Intercity Rail	Additional transit service miles.	na	
	Additional transit vehicles	na	
	New rail track miles.	na	
	Rail Crossing Improvements.	na	
	Station Improvements.	na	
Local streets and roads	New lane-miles.	New connectivity between east and west side of US 101.	Savings in average travel distances (3.3 miles) and times (4.5 minutes) for overpass users compared to current route alternates.
		Capacity for Increase Future Traffic Volumes	Proposed overpass designed to carry significantly higher traffic volumes than the currently project 2040 use levels of 4,200 ADT. Extra capacity and new connectivity expected to encourage and accommodate any increases in local area land use densities and use types (e.g. regional retail and mixed use development).
	Lane-miles rehabilitated.	na	
	New or upgrade bicycle lane/sidewalk miles.	Lanes mileage. New and more convenient user route.	Reduced pedestrain and bicyclist travel distances (0.8 and 1.3 miles respectively) and times (16 and 5 miles respectively) compared to current alternate routes.
		Facility Improvements	Lighting, roadway, signage improvements improve users' travel experience and encourage increased route use.
		Improved safety	Improved design and facilities reduce conflicts between ramp vehicle traffic and pedestrian/bicycle users.
	Operational improvements.	na	
	New or reconstructed bridges.	na	

Appendix A

US 101 Produce/Airport On & Off Ramp

Model Analysis & Results for Accident cost Savings

District: District 4

PROJECT: US 101/Produce Ave Interchange - SB On and Off-Ramp

EA:
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$116.8
Life-Cycle Benefits (mil. $)	$2.8
Net Present Value (mil. $)	-$114.0
Benefit / Cost Ratio:	0.0
Rate of Return on Investment:	#NUM!
Payback Period:	20+ years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$0.0	$0.0	$0.0	$0.0
Veh. Op. Cost Savings	$0.0	$0.0	$0.0	$0.0
Accident Cost Savings	$2.7	$0.1	$2.8	$0.1
Emission Cost Savings	$0.0	$0.0	$0.0	$0.0
TOTAL BENEFITS	$2.7	$0.1	$2.8	$0.1

Person-Hours of Time Saved	0	0
CO_2 Emissions Saved (tons)	0	0
CO_2 Emissions Saved (mil. $)	$0.0	$0.0

Should benefit-cost results include:

1) Induced Travel? (y/n)	N (Default = Y)
2) Vehicle Operating Costs? (y/n)	N (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	N (Default = Y)

Southbound Off-Ramp

District: District 4

PROJECT: US 101/Produce Ave Interchange - SB Off-Ramp

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	Off-Ramp Widening	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	2	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	4	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		2	2
Number of HOV/HOT Lanes			
HOV Restriction (2 or 3)			
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		25	40
Length (in miles)	Highway Segment		0.0
	Impacted Length	0.3	0.3

Average Daily Traffic			
	Current	5,591	
		No Build	Build
	Base (Year 1)	6,147	6,401
	Forecast (Year 20)	7,325	7,534
Average Hourly HOV/HOT Lane Traffic			0
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		0.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		55	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.25	1.25
	Peak	1.25	1.25
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	12	1.96
Fatal Accidents (Fat)		0.006
Injury Accidents (Inj)	2	0.33
Property Damage Only (PDO) Accidents	10	1.63

Statewide Basic Average Accident Rate	No Build	Build
Rate Group		
Accident Rate (per million vehicle-miles)		
Percent Fatal Accidents (Pct Fat)		
Percent Injury Accidents (Pct Inj)		

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		33%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
A ge Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS				Constant Dollars	Present Value
	Project Support	R / W	Construction	Maint./ Op.	Rehab.				
Construction Period									
1	$4,335	$33,069	$19,336			$250		$56,990,000	$56,990,000
2	$4,335	$33,069	$19,336			$250		$56,990,000	$54,798,077
3								$0	$0
4								$0	$0
5								$0	$0
6								$0	$0
7								$0	$0
8								$0	$0
Project Open									
1				$387				$386,720	$357,544
2				$387				$386,720	$343,793
3				$387				$386,720	$330,570
4				$387				$386,720	$317,856
5				$387				$386,720	$305,630
6				$387				$386,720	$293,875
7				$387				$386,720	$282,573
8				$387				$386,720	$271,704
9				$387				$386,720	$261,254
10				$387				$386,720	$251,206
11				$387				$386,720	$241,544
12				$387				$386,720	$232,254
13				$387				$386,720	$223,321
14				$387				$386,720	$214,732
15				$387				$386,720	$206,473
16				$387				$386,720	$198,532
17				$387				$386,720	$190,896
18				$387				$386,720	$183,554
19				$387				$386,720	$176,494
20				$387				$386,720	$169,706
Total	$8,670	$66,138	$38,672	$7,734	$0	$500	$0	$121,714,400	$116,841,588

Present Value = Future Value (in Constant Dollars) / (1 + Real Discount Rate) ^ Year

2A

HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	1,835		1,835	
Weaving Volume	0		0	
Truck Volume	181		181	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	3,759		3,759	
Weaving Volume	0		0	
Truck Volume	372		372	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	2,187		2,187	
Weaving Volume	0		0	
Truck Volume	216		216	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	4,479		4,479	
Weaving Volume	0		0	
Truck Volume	443		443	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Build				
Year 1				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	1,911		1,911	
Weaving Volume	0		0	
Truck Volume	189		189	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	3,914		3,914	
Weaving Volume	0		0	
Truck Volume	387		387	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	2,249		2,249	
Weaving Volume	0		0	
Truck Volume	222		222	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	4,607		4,607	
Weaving Volume	0		0	
Truck Volume	456		456	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.33		0.33	
PDO Accidents	1.63		1.63	
Total Accidents	1.966			
Hwy Safety or Weaving Improvement		52%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.4850		0.4850	
Injury Accidents	0.4850		0.4850	
PDO Accidents	0.4850		0.4850	
Build				
Fatal Accidents	0.003		0.003	
Injury Accidents	0.16		0.16	
PDO Accidents	0.79		0.79	
Total Accidents	0.954			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	837,108	871,698	34,590
Truck Trips	66,233	68,969	2,737
Non-Peak Period			
Non-HOV Trips	1,715,050	1,785,917	70,868
Truck Trips	135,696	141,303	5,607
Total Trips	2,754,087	2,867,888	113,802
Year 20			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	997,529	1,025,991	28,462
Truck Trips	78,925	81,177	2,252
Non-Peak Period			
Non-HOV Trips	2,043,719	2,102,031	58,312
Truck Trips	161,701	166,315	4,614
Total Trips	3,281,875	3,375,515	93,640

C

SUMMARY OF ACCIDENT REDUCTION BENEFITS

Year	HIGHWAY								TRANSIT	Present Value of Accident Benefits	Constant Dollars
	Peak HOV	Peak Non-HOV	Peak Weaving	Peak Truck	Peak Arterial	Non-Peak Non-HOV	Non-Peak Weaving	Non-Peak Truck	All Periods		
1	$0	$39,774	$0	$3,932	$0	$81,431	$0	$8,055	$0	$133,191	$144,060
20	$0	$22,767	$0	$2,252	$0	$46,646	$0	$4,613	$0	$76,277	$173,818
2	$0	$38,658	$0	$3,821	$0	$79,152	$0	$7,829	$0	$129,461	$145,626
3	$0	$37,570	$0	$3,714	$0	$76,927	$0	$7,609	$0	$125,820	$147,192
4	$0	$36,508	$0	$3,609	$0	$74,757	$0	$7,394	$0	$122,269	$148,758
5	$0	$35,473	$0	$3,507	$0	$72,639	$0	$7,185	$0	$118,804	$150,325
6	$0	$34,463	$0	$3,407	$0	$70,574	$0	$6,980	$0	$115,425	$151,891
7	$0	$33,478	$0	$3,310	$0	$68,560	$0	$6,781	$0	$112,130	$153,457
8	$0	$32,518	$0	$3,215	$0	$66,597	$0	$6,587	$0	$108,917	$155,023
9	$0	$31,583	$0	$3,123	$0	$64,683	$0	$6,398	$0	$105,786	$156,589
10	$0	$30,671	$0	$3,033	$0	$62,819	$0	$6,213	$0	$102,735	$158,156
11	$0	$29,782	$0	$2,945	$0	$61,001	$0	$6,033	$0	$99,762	$159,722
12	$0	$28,917	$0	$2,859	$0	$59,231	$0	$5,858	$0	$96,865	$161,288
13	$0	$28,074	$0	$2,776	$0	$57,507	$0	$5,687	$0	$94,044	$162,854
14	$0	$27,253	$0	$2,695	$0	$55,827	$0	$5,521	$0	$91,297	$164,421
15	$0	$26,454	$0	$2,616	$0	$54,192	$0	$5,360	$0	$88,622	$165,987
16	$0	$25,676	$0	$2,539	$0	$52,600	$0	$5,202	$0	$86,017	$167,553
17	$0	$24,919	$0	$2,464	$0	$51,050	$0	$5,049	$0	$83,482	$169,119
18	$0	$24,182	$0	$2,391	$0	$49,542	$0	$4,899	$0	$81,015	$170,686
19	$0	$23,464	$0	$2,321	$0	$48,074	$0	$4,754	$0	$78,613	$172,252
Total	**$0**	**$612,185**	**$0**	**$60,528**	**$0**	**$1,253,811**	**$0**	**$124,009**	**$0**	**$2,050,532**	**$3,178,777**

Southbound On-Ramp

District: District 4

PROJECT: US 101/Produce Ave Interchange - SB On-Ramp

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	On-Ramp Widening	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	2	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	4	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		2	2
Number of HOV/HOT Lanes			
HOV Restriction (2 or 3)			
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		25	40
Length (in miles)	Highway Segment		0.0
	Impacted Length	0.0	0.0

Average Daily Traffic			
	Current	2,020	
		No Build	Build
	Base (Year 1)	2,079	2,176
	Forecast (Year 20)	2,646	2,722
Average Hourly HOV/HOT Lane Traffic			0
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		0.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		55	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	800	328
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.25	1.25
	Peak	1.25	1.25
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	2	0.90
Fatal Accidents (Fat)		0.006
Injury Accidents (Inj)	1	0.45
Property Damage Only (PDO) Accidents	1	0.45

Statewide Basic Average Accident Rate	No Build	Build
Rate Group		
Accident Rate (per million vehicle-miles)		
Percent Fatal Accidents (Pct Fat)		
Percent Injury Accidents (Pct Inj)		

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		33%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
A ge Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS				Constant Dollars	Present Value
	Project Support	R / W	Construction	Maint./ Op.	Rehab.				
Construction Period									
1	$4,335	$33,069	$19,336			$250		$56,990,000	$56,990,000
2	$4,335	$33,069	$19,336			$250		$56,990,000	$54,798,077
3								$0	$0
4								$0	$0
5								$0	$0
6								$0	$0
7								$0	$0
8								$0	$0
Project Open									
1				$387				$386,720	$357,544
2				$387				$386,720	$343,793
3				$387				$386,720	$330,570
4				$387				$386,720	$317,856
5				$387				$386,720	$305,630
6				$387				$386,720	$293,875
7				$387				$386,720	$282,573
8				$387				$386,720	$271,704
9				$387				$386,720	$261,254
10				$387				$386,720	$251,206
11				$387				$386,720	$241,544
12				$387				$386,720	$232,254
13				$387				$386,720	$223,321
14				$387				$386,720	$214,732
15				$387				$386,720	$206,473
16				$387				$386,720	$198,532
17				$387				$386,720	$190,896
18				$387				$386,720	$183,554
19				$387				$386,720	$176,494
20				$387				$386,720	$169,706
Total	$8,670	$66,138	$38,672	$7,734	$0	$500	$0	$121,714,400	$116,841,588

Present Value = Future Value (in Constant Dollars) / (1 + Real Discount Rate) ^ Year

2A

HIGHWAY SPEED AND VOLUME INPUTS

No Build

Year 1

Peak Period

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
HOV Volume	0		0	
Non-HOV Volume	641		641	
Weaving Volume	0		0	
Truck Volume	63		63	
HOV Speed	55.0		55.0	
Non-HOV Speed	63.4		63.4	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Non-Peak Period

Non-HOV Volume	1,271		1,271	
Weaving Volume	0		0	
Truck Volume	126		126	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Year 20

Peak Period

HOV Volume	0		0	
Non-HOV Volume	816		816	
Weaving Volume	0		0	
Truck Volume	81		81	
HOV Speed	55.0		55.0	
Non-HOV Speed	63.4		63.4	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Non-Peak Period

Non-HOV Volume	1,618		1,618	
Weaving Volume	0		0	
Truck Volume	160		160	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Build

Year 1

Peak Period

HOV Volume	0		0	
Non-HOV Volume	649		649	
Weaving Volume	0		0	
Truck Volume	64		64	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Non-Peak Period

Non-HOV Volume	1,331		1,331	
Weaving Volume	0		0	
Truck Volume	132		132	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Year 20

Peak Period

HOV Volume	0		0	
Non-HOV Volume	812		812	
Weaving Volume	0		0	
Truck Volume	80		80	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Non-Peak Period

Non-HOV Volume	1,665		1,665	
Weaving Volume	0		0	
Truck Volume	165		165	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.45		0.45	
PDO Accidents	0.45		0.45	
Total Accidents	0.906			
Hwy Safety or Weaving Improvement		50%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.5000		0.5000	
Injury Accidents	0.5000		0.5000	
PDO Accidents	0.5000		0.5000	
Build				
Fatal Accidents	0.003		0.003	
Injury Accidents	0.23		0.23	
PDO Accidents	0.23		0.23	
Total Accidents	0.453			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	283,121	296,331	13,210
Truck Trips	22,401	23,446	1,045
Non-Peak Period			
Non-HOV Trips	580,053	607,117	27,064
Truck Trips	45,894	48,036	2,141
Total Trips	931,470	974,930	43,460
Year 20			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	360,336	370,686	10,350
Truck Trips	28,510	29,329	819
Non-Peak Period			
Non-HOV Trips	738,250	759,454	21,204
Truck Trips	58,411	60,089	1,678
Total Trips	1,185,507	1,219,558	34,051

C

SUMMARY OF ACCIDENT REDUCTION BENEFITS

Year	HIGHWAY								TRANSIT	Present Value of Accident Benefits	Constant Dollars
	Peak HOV	Peak Non-HOV	Peak Weaving	Peak Truck	Peak Arterial	Non-Peak Non-HOV	Non-Peak Weaving	Non-Peak Truck	All Periods		
1	$0	$14,732	$0	$1,457	$0	$27,839	$0	$2,753	$0	$46,780	$50,598
20	$0	$8,899	$0	$880	$0	$17,133	$0	$1,695	$0	$28,607	$65,189
2	$0	$14,368	$0	$1,421	$0	$27,186	$0	$2,689	$0	$45,664	$51,366
3	$0	$14,011	$0	$1,386	$0	$26,542	$0	$2,625	$0	$44,564	$52,134
4	$0	$13,660	$0	$1,351	$0	$25,908	$0	$2,562	$0	$43,481	$52,902
5	$0	$13,316	$0	$1,317	$0	$25,283	$0	$2,501	$0	$42,416	$53,670
6	$0	$12,977	$0	$1,283	$0	$24,668	$0	$2,440	$0	$41,368	$54,438
7	$0	$12,645	$0	$1,251	$0	$24,062	$0	$2,380	$0	$40,338	$55,206
8	$0	$12,320	$0	$1,218	$0	$23,467	$0	$2,321	$0	$39,326	$55,974
9	$0	$12,000	$0	$1,187	$0	$22,882	$0	$2,263	$0	$38,333	$56,742
10	$0	$11,687	$0	$1,156	$0	$22,308	$0	$2,206	$0	$37,357	$57,510
11	$0	$11,381	$0	$1,126	$0	$21,743	$0	$2,150	$0	$36,400	$58,278
12	$0	$11,080	$0	$1,096	$0	$21,189	$0	$2,096	$0	$35,461	$59,046
13	$0	$10,786	$0	$1,067	$0	$20,646	$0	$2,042	$0	$34,541	$59,814
14	$0	$10,498	$0	$1,038	$0	$20,113	$0	$1,989	$0	$33,639	$60,582
15	$0	$10,217	$0	$1,010	$0	$19,590	$0	$1,938	$0	$32,755	$61,350
16	$0	$9,941	$0	$983	$0	$19,078	$0	$1,887	$0	$31,889	$62,117
17	$0	$9,672	$0	$957	$0	$18,577	$0	$1,837	$0	$31,042	$62,885
18	$0	$9,408	$0	$930	$0	$18,085	$0	$1,789	$0	$30,213	$63,653
19	$0	$9,151	$0	$905	$0	$17,604	$0	$1,741	$0	$29,401	$64,421
Total	**$0**	**$232,750**	**$0**	**$23,019**	**$0**	**$443,905**	**$0**	**$43,903**	**$0**	**$743,577**	**$1,157,872**

US 101/PRODUCE AVENUE INTERCHANGE PROJECT

BENEFIT/COST ASSESSMENT

Study Purpose

This brief technical memorandum presents a preliminary benefit cost assessment of the US 101/Produce Avenue Interchange Project (the Project). The analysis includes:

- Result of an initial benefit cost analysis using Caltrans Life-Cycle Benefit/Cost Analysis Model (Cal-B/C);
- Identification and evaluation of key factors, assumptions and limitations determining the Benefit/Cost Assessment;
- Discussion of the quantifiable and qualitative potential benefits and costs associated with the proposed interchange project.

Existing Traffic System Deficiencies

US 101 is a major freeway through the City of South San Francisco, serving significant commuter, commercial, industrial, and San Francisco International Airport traffic. Produce Avenue is between the US 101/East Grand Avenue interchange to the north and the US 101/Interstate 380 interchange to the south. The San Francisco International Airport is approximately 2.5 miles south of Produce Avenue. Land use in the vicinity of the proposed interchange include warehouse and shipping facilities, commercial businesses, produce processing and supply facilities, visitor services (hotels and restaurants) and airport services (passenger parking lots.

The existing US 101/Produce Avenue interchange facility consists of discontinuous interchange ramps in the south and northbound directions. The southbound off-ramp is a short one-lane "buttonhook" design that connects to Produce Avenue at a stop-controlled intersection on the north side of the Colma Canal. At this intersection, Produce Avenue is primarily two lanes in the southbound direction and one lane in the northbound direction. It functions as a collector-distributer roadway, extending south from its intersection with San Mateo Avenue, Airport Boulevard, and South Airport Boulevard, crosses over the Colma Canal, and parallels the freeway briefly as a frontage road before merging as a two-lane on-ramp into the southbound US 101 auxiliary lanes.

In the northbound direction of US 101, the interchange consists of short buttonhook on- and off-ramps connecting with South Airport Boulevard. The only connection between the northbound and southbound ramps is by way of the South Airport Boulevard undercrossing of US 101, to the north.

There are numerous major traffic system deficiencies affecting the City of South San Francisco's southern area in the vicinity of Produce Area.

Vehicle Traffic Use

- Existing accesses to and from U.S. 101 in the Produce Avenue area are circuitous and inadequate.
- Local traffic does not have an efficient route to access northbound and southbound US 101 ramps. As a result, large trucks use local surface streets to access the freeway.
- U.S. 101 southbound off-ramp to Produce Avenue has a historically high accident rate (approximately 1.96 accidents per MVM)

Pedestrian and Bicycle Access

There is limited bike and pedestrian access in SSF across US 101. The South Airport Boulevard undercrossing is the primary route for pedestrians and bicyclists travelling east-west across US 101. East Grand Avenue and Oyster Point Boulevard are the only other potential route alternatives and both result in greatly increased travel distances and times. The nearest of the two alternate routes is the East Grand Avenue bridge located 0.3 miles to the North. Specific pedestrian and bicycle facility deficiencies of the existing US 101/S. Airport Boulevard underpass include:

- Narrow unmarked shoulders with poor lighting at undercrossing for bicyclists;
- Narrow sidewalks for pedestrians;
- Resulting opportunities for pedestrian-cyclist conflicts; and
- Very limited signage along the Class III bike route.

The South San Francisco Pedestrian Master Plan notes that South Airport Boulevard/Produce Avenue area has significant pedestrian safety issues.

Future Traffic System Deficiencies

The current traffic modeling analysis for the project conservatively assumes relatively minor changes to the existing land-uses in the vicinity of the proposed interchange project. As a result, the currently projected traffic demand and future use of the new east-west connection along the Utah Avenue extension is relatively limited. As a result, the initial traffic benefits projected for the project are relatively minor and are considered to be extremely conservative.

The City of South San Francisco and other local government authorities anticipate that future redevelopment of the surrounding area may be expected – especially if improvements are made to improve the area's access and connectivity. Major new regional retail is planned for along the west side of the proposed interchange site; and the mixed-use development of new housing and offices can be expected to result in major increases in the future demand and use of the proposed interchange.

Traffic congestion in the project area is predicted to worsen in the future as jobs and housing continue to be added. The City's General Plan anticipates that the highest growth rates for employment from low-intensity warehousing and distribution shifting to higher-intensity uses such as office, commercial, retail, and to some extent hotel and visitor services (City of South San Francisco 2010).

Between 2010 through 2040, regional plans show an expected future population increase of 26% in San Mateo County (including the City of South San Francisco), and 29% in jobs (ABAG and MTC 2013). Within that same time period, the City of South San Francisco's housing units are forecast to increase by 32% (6,920) supporting an almost equal number of new households (6,970, or a 33% increase), while employment is predicted to increase by 24% (10,240 new jobs). On US 101, the projected traffic demand will primarily be from regional trips, but the increase in population and jobs predicted in the future within the City of South San Francisco will place a higher demand for new and efficient access to and from US 101.

Project Purpose

The project proposes to extend Utah Avenue to the west across US 101 to connect with San Mateo Avenue. In addition to this overpass connection, the project will also improve the southbound US 101 on- and off-ramp access from and to these areas.

The proposed interchange project has been designed to achieve the following primary operational objectives to improvement local traffic conditions:

- Provide a new local east-west overpass connection across U.S. 101 and improve local traffic circulation
- Reduce the congestion on Grand Avenue Interchange
- Increase Southbound off ramp capacity and reduce queue lengths
- Improve bike and pedestrian facilities and provide Complete Street" requirements for Pedestrian/Bicycle/Vehicular traffic
- Improve safety and operations for vehicles, pedestrians and bicyclists
- Accommodate future planned growth in the vicinity of Produce Avenue and U.S. 101 and align with the City's future vision of Utah Street extension

Specific Key Traffic Improvements

For the purposes of the BCA, the project can be considered as two sets of roadway improvements:

Southbound Highway On/Off Ramp

- Access improved access and increased service capacity
- Safety Improvements to reduce the current high accident rate (1.96 accidents/MVM for the off ramp and 0.9 accidents/MVM for the on-ramp)

Overpass

- Add new East-West Connectivity. This will result in VHT and VMT savings for future vehicles, pedestrian and bicyclists
- Safety Improvement. “Complete Streets” facility design to reduce vehicle, pedestrian and bicyclist conflicts is proposed.

Benefit Analysis

A Benefit-Cost Analysis (BCA) was prepared for the US 101/Produce Avenue Project to evaluate the project’s cost-effectiveness. The BCA was conducted using version 6.0 of the California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C) where appropriate. The Cal-B/C model is primarily intended and designed for highway improvements. As a result, the model has been used to analyze the benefits of proposed US 101 highway on- and off-ramp improvements and the lifecycle costs of the total project.

However, the traffic benefits from future local traffic use of the proposed new overpass (both for vehicle and non-vehicle use) could be analyzed using the Cal-B/C and therefore have been analyzed separately. In addition, the traffic modeling for the project determine aggregate traffic system travel time and travel distance changes for the 2020 and 2040 conditions that are also analyzed separately in later sections of this technical memorandum.

Furthermore, due to the preliminary and limited availability of traffic modeling analysis for the project, the project’s future traffic benefits cannot be fully quantified at this stage in the project’s planning and design. As a result, where applicable, the current traffic and benefit data and analysis limitations are identified and additional qualitative assessment of the project’s expected benefits is also provided.

California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C)

The BCA was conducted using version 6.0 of the California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C). Cal-B/C is a spreadsheet-based model developed by the California Department of Transportation for life-cycle cost analysis of proposed highway projects in accordance with USDOT guidance. All monetary values are presented in 2017 dollars. A four percent (4%) discount rate was used to compute the net present value (NPV) of benefits and costs. The project is assumed to become operational in 2025 with a very conservative twenty-year life span. The traffic projections used by the analysis are for 2040 conditions and it was conservatively assumed that after which the project’s traffic benefits would remain constant at their 2040 levels. Due to the way the Cal-B/C model is setup, any changes between 2025 and 2045 are assumed to occur linearly.

Several versions of Cal-B/C are available: the Standard model (version 6.0), a Corridor model, and a TIGER/INFRA model. The Corridor model is appropriate where detailed travel demand model or traffic simulation model forecasts are available for the project. The TIGER/INFRA model has been modified to conform with federal TIGER and INFRA grant application requirements. Since detailed traffic simulation model results are currently unavailable, the standard model version was used for the BCA.

Cal-B/C relies on project-specific inputs. These include construction duration, estimated project costs, and initial year and future year vehicle trips, vehicle-miles travelled (VMT), and vehicle hours travelled (VHT) for no-build and build conditions. With these inputs the model calculates life-cycle costs, life-cycle benefits, annual benefits, the NPV of costs and benefits, a resulting B/C ratio, and the internal rate of return and payback period. Additionally, other default parameters and assumptions within the model are customizable for a more accurate calculation.

Cal-B/C evaluates benefits in the following four categories: travel time, vehicle operating costs, accidents, and emissions. The Cal-B/C model was used to separately analyze the traffic benefits of the new overpass and highway ramp improvements. For the purposes of the analysis it has been conservatively assumed that the interchange would no result in any traffic improvements for other highway user of US 101.

Cal-B/C Analysis and Findings

The results of the preliminary BCA for the US 100/Produce Interchange project's ramp improvements are provided below. Screen shots of the Cal-B/C model runs are provided in Appendix A.

As the majority of travel time savings and vehicle operating cost savings are from the comprehensive traffic impacts, the Cal-B/C model runs for the on/off ramps only considered accident cost savings.

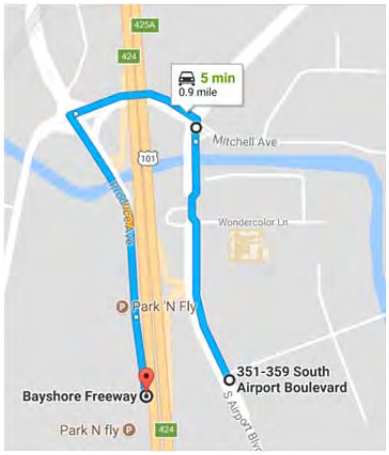
Safety Benefits – On/Off Ramps

The Cal-B/C model predicts the build alternative will have total present savings of $2.7 million vs the no-build alternative due to the expected reduction of 50-52 percent of accidents. This is considered conservative, as the model did not discount growth associated with the Build option.

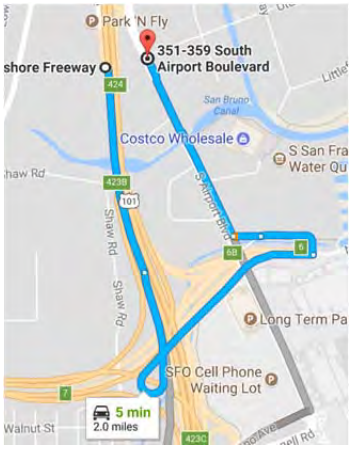
Overpass Travel Time Savings

The proposed new Produce Avenue overpass will result in travel time savings for passenger vehicles and freight that travel from east to west or vice versa via Utah Avenue. Figure 1 depicts the commute distances for both directions under the no build alternative. Travel times for the East to West and for West to east differ slightly as they follow different routes.

Figure 1- No Build Travel Distances



(A) Driving distance No Build E/W



(B) Driving distance No Build W/E

Source: Google Maps

Table 1 shows the estimated potential travel time savings between the no build and the build alternative for both east-west and west-east trips. These estimates were adjusted to account for routing differences and stoppage time per traffic lights. It is estimated that the overpass could save 5.83 minutes per trip for the west to east route and 5.29 minutes for the east to west route. The travel time savings would average 5.56 minutes or 0.09 hours per trip.

Table 1 – Travel Time Savings for Vehicle Use of the Produce Avenue Overpass

	West to East		East to West	
	Time (min)	Miles	Time (min)	Miles
No Build	5	3.6	4	2.8
Build	<1	0.04	<1	0.04
Number of stop lights	4		5	
Stoppage time per traffic light* (min)	0.63		0.63	
Build + stoppage time (min)	6.83		6.29	
Change	6.5	3.56	6.13	2.76

*Average traffic signal cycles are 75 seconds. For the calculation of the stoppage time the average mid-point cycle value of 37.5 seconds was used.
Source: Google Maps,

Table 2 shows the estimated travel time savings. Based on the preliminary traffic analysis, future 2040 traffic use of the new overpass is projected to be 4,200 trips per day. Of these, 89 percent of all trips are expected to be passenger vehicles while 11 percent are freight vehicles, which results in 3,739 passenger vehicle trips and 462 truck trips respectively per day.

The estimated total daily number of passenger trips was estimated to be 4,673 per day based on an average 1.25 passengers per vehicle. The value of travel time for passenger vehicles is $13.65 and $31.40 for freight vehicles. Table 2 presents the daily and yearly value of travel time

savings for the new overpass. The total value of travel time savings amounts to $3.1 million per year.

Table 2 – Value of the Travel Time Savings for Vehicle Use of the Produce Avenue Overpass

	Passenger Vehicle	Freight	Total
Average Time Savings (hours)	0.11	0.11	-
Trips per day	3,738	462	4,200
Value of travel time	$13.65	$31.40	-
Passenger per vehicle	1.25	1	-
Passengers	4,673	462	5,135
Daily Savings	$7,017	$1,526	$8,612
Yearly Savings (365 Days)	$2,561,026	$582,448	$3,143,474

Source: Google Maps (Change), Value of travel time (Caltrans),

Pedestrian and Bicyclist Travel Time Savings

Pedestrian and bicyclist benefits were assessed outside the quantitative B/C analysis due to the difficulties in predicting existing latent demand and future use levels given the currently underdeveloped pedestrian/bicycle access and relatively low levels of use. However, improved facilities and greater access as well as connectivity could result in major increases in future pedestrian and bicycle usage in the City of South San Francisco. The following section first discusses the existing conditions and subsequently moves on to assess future improvements under the proposed project.

Table 3 – Travel Time Savings for Pedestrian and Bicyclist Use of the Produce Avenue Overpass

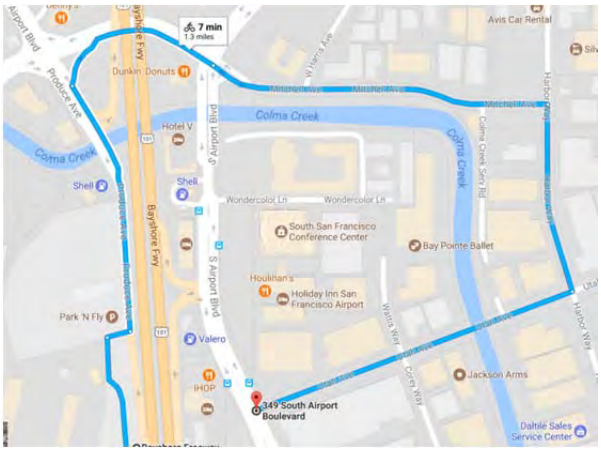
	Pedestrian		Cyclists	
	Minutes	Miles	Minutes	Miles
No Build	17	0.8	6	1.3
Build	<1	0.04	<1	0.04
Change	16	0.76	5	1.26

Source: Google maps

The City of South San Francisco reports that walking represented 9.3 percent of all Bay Area trips. If South San Francisco can achieve success similar to other cities and national goals, the walk travel mode share could double to nearly 20 percent of all trips taken. Table 1 highlights the benefits that the proposed project could contribute to making South San Francisco more accessible for both pedestrian and bicyclists. The new overpass would save pedestrians 15 minutes (0.76 miles) and bicyclists about 5 minutes (1.26 miles) in travel time per crossing. Figure 1 depicts respective detour for both pedestrians and cyclists under the no build alternative.

Figure 1- Pedestrian and Bicyclists commute distance under No Build

(A) Walking distance No Build



(B) Bicycle distance No Build

Source: Google Maps

The new overpass will result in travel time savings for pedestrians and bicycles that travel from east to west or vice versa via Utah Avenue. In total, the travel time savings amount to approximately $174,000 per year. We conservatively assumed that per day 100 pedestrians and 100 cyclists will use the overpass. Following California Life-Cycle Benefit/Cost Analysis Model, the value of time was assumed to equate to $13.65 per hour per person. Table 2 depicts the value of travel time savings for pedestrians and cyclists on a 100 trips per day unit basis.

Table 4 – Value of Pedestrian and Cyclist Travel Time Savings for the Produce Avenue Overpass

	Pedestrians	Cyclists	Total
Change (hr/trip)	0.27	0.08	0.35
Trips per day (person)	100	100	200
Value of travel time ($/hr)	$13.65	$13.65	-
Daily savings ($)	$369	$109	$478
Yearly savings (365 days)	$134,521	$39,858	$174,378

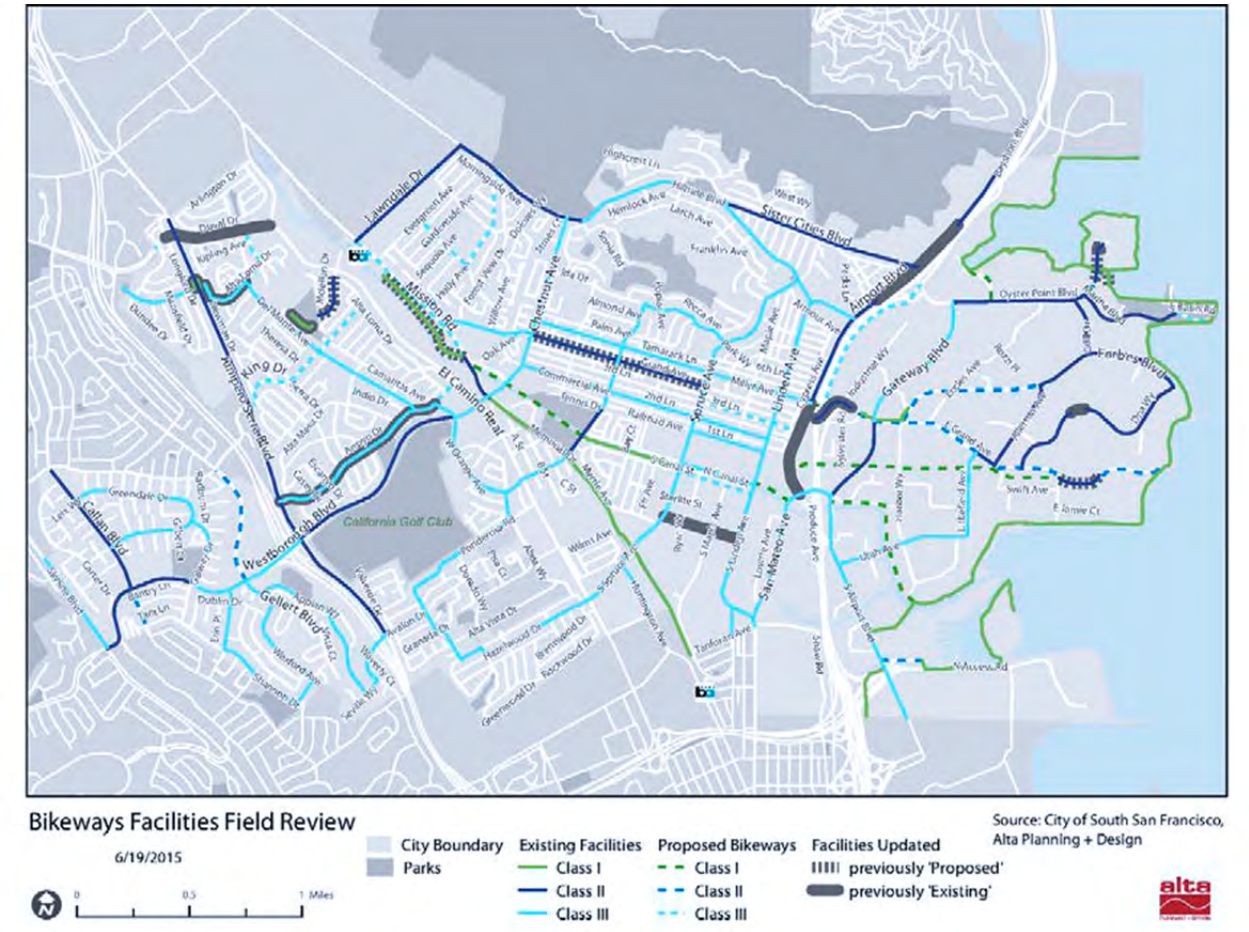
Source: Google Maps (Change), Value of travel time (Caltrans), Trips per day (assumption)

Pedestrian and bicycle use count information is currently unavailable for the area but is expected to be very limited due to both the lack of suitable pedestrian and bicycle routes and facilities and the current land use which especially east of US 101 generates and attracts very limited travel demand. Consequently, major future pedestrian and bicycle benefits for the project cannot be reliability attributed until the current and project future pedestrian and bicycle use can be quantified

However, Figure 2 shows the current and planned bikeway network for South San Francisco. A future Produce Avenue overpass would improve the connectivity between the Class I Bayside

bike trails to Class I bike routes and the South San Francisco BART station. Furthermore, future redevelopment of the project area with more dense and mixed use would likely result in greatly increase demand for pedestrian and bicyclist travel and therefore increase the project's future pedestrian and bicycle use benefits.

Figure 2 - South San Francisco Bikeway Network (Existing and Planned)



In addition to benefits in travel time and trip distance savings, the proposed Produce Avenue overpass can be expected to decrease number of pedestrians and cyclists involved accidents on Grand Avenue and Airport Boulevard, which has been identified as one of the hotspots for pedestrian accidents (City of South San Francisco 2014). The new overpass will reduce the pedestrian and cyclist use of the Grand Avenue and Airport Boulevard crossing as many users would instead chose to use the safer route with dedicated pedestrian and bicycle lanes along the Produce Avenue Overpass.

Although it is difficult to quantify the extent of the accident reduction that would result from pedestrian and bicyclist re-routing via the overpass, even a single annual avoided pedestrian or bicyclist injury accident could represent an safety benefit been more than $65,000 to

approximately $160,000 per year in 2017 dollars (Pedestrian and Bicycle Information Center 2017; Miller 2004).

System-wide Traffic Benefits

Table 5 show the projected daily system-wide traffic changes for the Build and No Build Project Alternatives for 2020 and 2040.

Table 5 – Daily Traffic Projections in Study Area (2020 and 2040)

2020 No Build	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Daily
VMT	313,748	344,173	897,440	1,139,223	3,696,827
VHT	11,241	13,257	22,827	34,313	94,973

2020 Build	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Daily
VMT	314,016	344,261	897,752	1,139,608	3,696,850
VHT	11,184	13,139	22,803	34,058	94,669

2020 Change	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Daily
VMT	267	88	312	385	23
VHT	-57	-118	-24	-255	-304

2040 No Build	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Daily
VMT	367,054	400,609	1,041,157	1,333,739	4,301,555
VHT	15,226	17,918	27,253	42,373	115,125

2040 Build	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Daily
VMT	367,102	400,544	1,041,210	1,335,817	4,303,691
VHT	15,163	17,730	27,240	42,437	114,966

2040 Change	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Daily
VMT	48	-65	53	2,078	2,136
VHT	-63	-188	-14	64	-159

Table 6 show the projected daily system-wide traffic changes for the Build and No Build Project Alternatives for 2020 and 2040.

Table 6 – Annual Traffic Projections in Study Area (2020 and 2040)

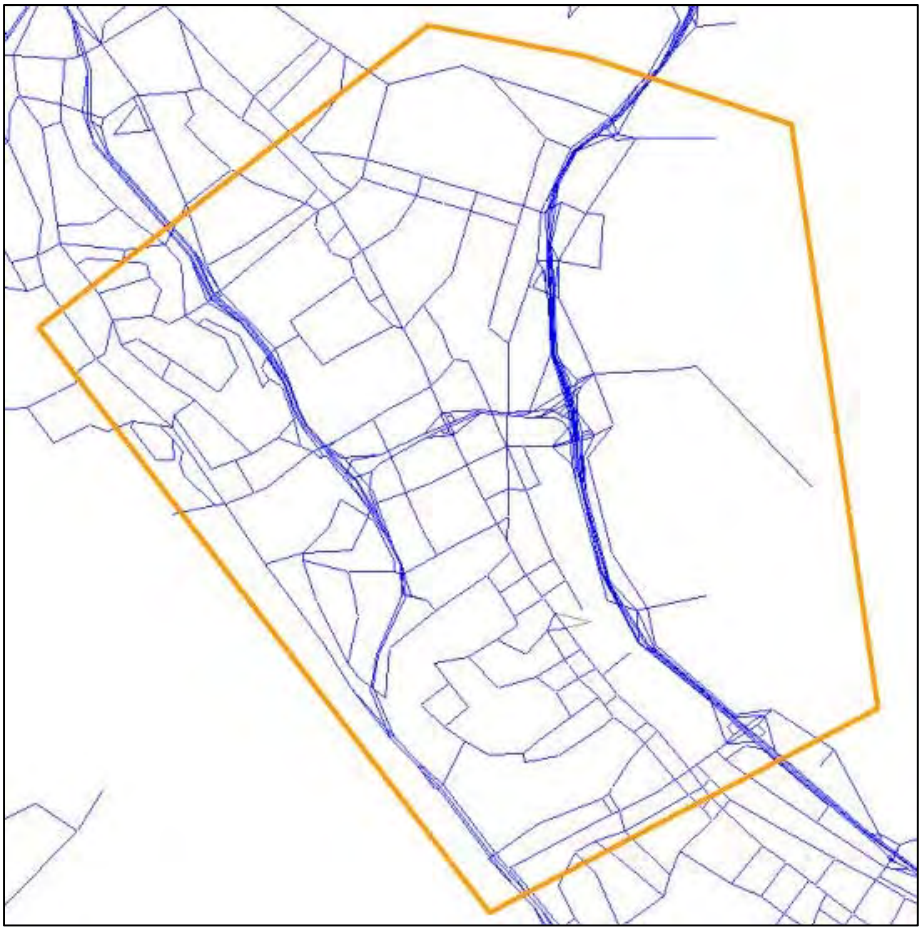
2020 (Change)	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Annual
VMT / YR	97,620	32,122	113,884	140,587	8,395
VHT / YR	-20,648	-42,905	-8,821	-93,070	-110,960

2040 (Change)	AM 1Hr	PM 1Hr	AM 4Hr	PM 4Hr	Annual

VMT / YR	17,596	-23,699	19,478	758,539	779,640
VHT / YR	-23,083	-68,748	-4,938	23,365	-58,035

Figure 3 shows the of analysis used by the traffic modeling to determine the system-wide traffic changes for the project's build and no-build alternatives under the future 2020 and 2040 conditions.

Figure 3 – Map of Traffic Modeling Study Area



Other Project Benefits

Cal-B/C does not include non-vehicle travel benefits such as the broader social or community benefits (e.g. improved livability, reduced noise etc.), nor to pedestrian or bicyclists. Consequently, additional quantitative and/or qualitative analysis was performed to assess the nature of magnitude of these other projected-related benefits.

Reduced Emissions

Cal-B/C can estimate the air quality improvements associated with traffic operational improvements (e.g. more steady and efficient travel speeds, reduced congestion and wait times). However, at this stage of analysis there was insufficient data to quantify and estimate the economic benefit value for the project-related emission reduction benefits. In any case,

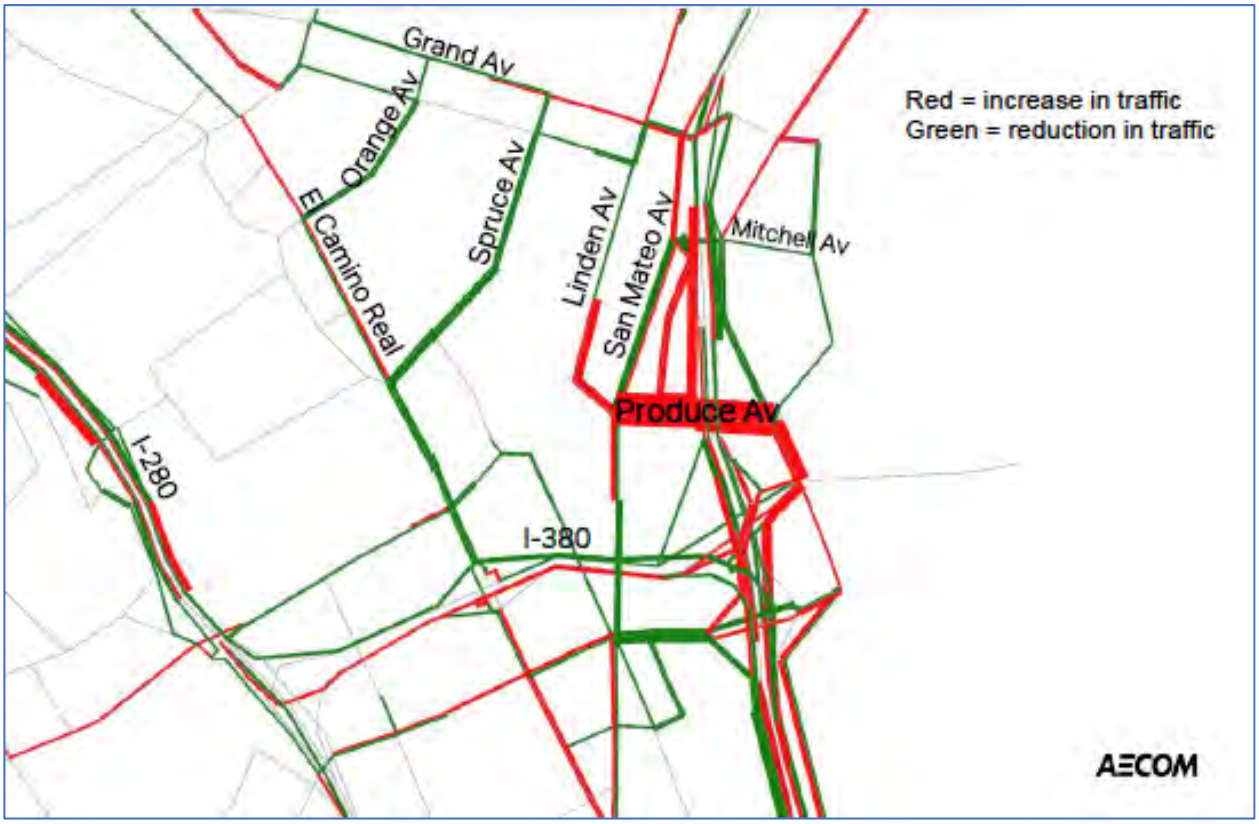
generally the emission benefits for a project like the Produce Avenue Interchange would be expected to be relatively limited (i.e. less than $0.1 million).

Local Traffic Redistribution (Livability)

As show in the Figure 2 below, the improved east-west connectivity would be expected to result in redistribution of local traffic as vehicle are able to re-route for more direct and/or quick access to the local destinations or on to US 101 southbound. In particular, large freight truck traffic would be expected to be reduced from its current levels near downtown.

While the vehicle user benefits from the traffic redistribution are mostly included in the BCA, the redistribution of local traffic may also result in more general livability or quality of life improvements for local residents, workers and visitors as the traffic levels and vehicle use is more appropriately matched with the local roadway system.

Figure 2 – Project Traffic Volume Redistribution



Reliability

If travelers are uncertain of the amount of time necessary for a particular trip, they may plan for additional travel time to ensure against a late arrival at their destination. Depending on the actual trip travel conditions, the extra “buffer” time may be unnecessary or even inadequate. Less variability and uncertainty in freight pickup and drop-off times means fewer late deliveries, which can create benefits for supply chain logistics. Travel reliability improvement may also

reduce employee lateness, which is a labor productivity benefit. Implementing the project would result in a more predictable local transportation system that would increase its reliability and improve the economic competitiveness for local businesses.

However, due the limited available traffic modeling data available at this stage of the project buffer time index or other quantification of the potential magnitude of the project's future reliability benefits. Although there may be a relatively minor change in the system's reliability, greater predictability in trip travel times would nonetheless benefit local road system users.

Project Cost

The total development cost for the project is estimated to be $114 million. Total development costs consist of total capital costs ($104,809,412) and total support costs ($8,670,399). The project's capital costs consist of both construction costs ($38,671,827) and right of way costs ($66,137,584). The project's estimated right-of-way costs are very high and account for a major proportion of the project's project cost due its location on the San Francisco Peninsula along US 101 and proximity to San Francisco International Airport.

Annual Operation and Maintenance costs (O&M) are estimated to be 1 percent of total construction costs per year ($386,718). These O&M costs will be applied for the subsequent 20 years after the completion of the project. Total project costs including annual M&O costs are projected to be $121,214,176. Using a 4 % discount rate, we estimate that the present value of total project cost (incl. annual M&O) are $116,285,083 at the start of the project. Table 3 summarizes the project cost estimates. All costs are reported in 2016 U.S. Dollars.

Table 5 – Project Cost Estimates (not discounted)

Total roadway items	$24,028,798
Total structure items	$14,643,029
Subtotal construction costs	38,671,827
Total right of way items	$66,137,584
Total capital cost	$104,809,412
Project Report and Enviro Doc (PA&ED) 3%	$1,160,155
Design Phase (PS&E) 8%	$3,093,746
R/W Services 2%	$1,322,752
Construction Administration 8%	$3,093,746
Total support cost	$8,670,399
Annual M&O costs = 1% construction costs	$386,718
Total project cost	$113,479,811
Total project cost (incl. 20 years M&O)	$121,214,176
Present Value: Total project cost (incl. M&O)	$116,285,083

The preliminary cost estimates are highly conservative due to the high right of way costs. It is likely that a portion of the land areas currently assumed to be impacted could be redeveloped or that the actual right-of-way costs may be far less than currently projected. Consequently, the actual extent of the interchange's final footprint for land encroachment and/or lost use of the parcels located may be expected to be substantially reduced. In which case, the actual net right-of-way cost for the project would be reduced which in turn would improve the project's BC ratio.

Benefit-Cost Analysis Findings

Three key metrics are commonly used to represent and evaluate BCA results: the net present value (NPV), the benefit-cost ratio (BCR), and the return on investment (ROI).

- NPV is the present value of all costs subtracted from the present value of all benefits. Projects with values greater than zero are considered economically beneficial. The NPV is a useful way to compare the overall dollar value of a Project's expected future net benefits.

- The BCR is the present value of all Project benefits divided by the present value of all costs. The ratio measures the factor by which benefits exceed (or are below) costs. A Project with a ratio value greater than 1.0 is considered economically feasible. The BCR is a useful way to compare the relative benefits of Projects that may differ in time and/or scale.

- The ROI is a traditional financial metric used to describe future cash flows in relation to the initial capital investment. ROI is used to evaluate the efficiency of an investment and is calculated by dividing the net benefits by the initial investment cost. The net benefits are considered the benefits to society; however, typically ROI would be calculated using only the financial benefits.

Table X shows the overall BCA results for the total combined Project. BCA metrics are presented with the standard Caltrans recommended 4 percent discount rate.

The proposed Project has a relatively low BCR of 0.18. Similarly, the project's NPV and ROI are not favorable. At a 4-percent real discount rate, the Project generates a NPV of -$95.5 million.

Table 6: Benefit-Cost Analysis Results

Metric	4% Discount Rate
Net Present Value (NPV) (2017 $)	-$95.5 Million
Benefit-Cost Ratio (BCR)	0.18

Return on Investment (ROI)	Negative

The BCA findings for each year are presented in Table X in millions of 2017 dollars.

Table X6: Benefit-Cost Analysis Results According to Year (in millions of 2017 dollars)

Project Year	Travel Time Savings	Vehicle Operating Costs	Pedestrian and Bicycle Travel Time Savings	Safety benefits	Net Benefits	Discounted Net Benefits 4%
2025	$1,793,603	($90,623)	$177,479	$194,657	$2,075,116	$1,516,267
2026	$1,745,037	($107,992)	$180,635	$196,992	$2,014,672	$1,472,101
2027	$1,696,471	($125,360)	$183,847	$199,326	$1,954,284	$1,427,976
2028	$1,647,905	($142,729)	$187,116	$201,660	$1,893,952	$1,383,893
2029	$1,599,338	($160,097)	$190,444	$203,994	$1,833,679	$1,339,851
2030	$1,550,772	($177,465)	$193,830	$206,328	$1,773,465	$1,295,854
2031	$1,502,206	($194,834)	$197,277	$208,663	$1,713,312	$1,251,900
2032	$1,453,639	($212,202)	$200,785	$210,997	$1,653,219	$1,207,991
2033	$1,405,073	($229,571)	$204,356	$213,331	$1,593,189	$1,164,128
2034	$1,356,507	($246,939)	$207,990	$215,665	$1,533,223	$1,120,311
2035	$1,307,940	($264,308)	$211,688	$218,000	$1,473,320	$1,076,540
2036	$1,259,374	($281,676)	$215,453	$220,334	$1,413,485	$1,032,819
2037	$1,210,808	($299,045)	$219,284	$222,668	$1,353,715	$989,147
2038	$1,162,242	($316,413)	$223,183	$225,002	$1,294,014	$945,523
2039	$1,113,675	($333,781)	$227,152	$227,336	$1,234,382	$901,951
2040	$1,065,109	($351,150)	$231,192	$229,671	$1,174,822	$858,431
2041	$1,065,109	($351,150)	$235,303	$232,005	$1,181,267	$863,140
2042	$1,065,109	($351,150)	$239,487	$234,339	$1,187,785	$867,903
2043	$1,065,109	($351,150)	$243,746	$236,673	$1,194,378	$872,721
2044	$1,065,109	($351,150)	$248,080	$239,007	$1,201,047	$877,593
TOTAL	$27,130,135	($4,938,785)	$4,218,327	$4,336,649	$30,746,326	$22,466,039

Note:* Pedestrian and bicycle usage is estimated to increase at a 1.7 percent rate based on population growth rates in South San Francisco.

Based on the BCA, the Project is expected to generate $30.7 million in undiscounted benefits (savings from travel time, vehicle operating cost savings and reduced emissions) and $116.8 million in undiscounted costs.

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Appendix A

US 101 Produce/Airport On & Off Ramp

Model Analysis & Results for Accident cost Savings

District: District 4

PROJECT: US 101/Produce Ave Interchange - SB On and Off-Ramp

EA:
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$116.8
Life-Cycle Benefits (mil. $)	$2.8
Net Present Value (mil. $)	-$114.0
Benefit / Cost Ratio:	0.0
Rate of Return on Investment:	#NUM!
Payback Period:	20+ years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$0.0	$0.0	$0.0	$0.0
Veh. Op. Cost Savings	$0.0	$0.0	$0.0	$0.0
Accident Cost Savings	$2.7	$0.1	$2.8	$0.1
Emission Cost Savings	$0.0	$0.0	$0.0	$0.0
TOTAL BENEFITS	$2.7	$0.1	$2.8	$0.1

Person-Hours of Time Saved	0	0
CO_2 Emissions Saved (tons)	0	0
CO_2 Emissions Saved (mil. $)	$0.0	$0.0

Should benefit-cost results include:

1) Induced Travel? (y/n)	N (Default = Y)
2) Vehicle Operating Costs? (y/n)	N (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	N (Default = Y)

Southbound Off-Ramp

District: District 4

PROJECT: US 101/Produce Ave Interchange - SB Off-Ramp

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	Off-Ramp Widening	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	2	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	4	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		2	2
Number of HOV/HOT Lanes			
HOV Restriction (2 or 3)			
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		25	40
Length (in miles)	Highway Segment		0.0
	Impacted Length	0.3	0.3

Average Daily Traffic			
	Current	5,591	
		No Build	Build
	Base (Year 1)	6,147	6,401
	Forecast (Year 20)	7,325	7,534
Average Hourly HOV/HOT Lane Traffic			0
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		0.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		55	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.25	1.25
	Peak	1.25	1.25
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	12	1.96
Fatal Accidents (Fat)		0.006
Injury Accidents (Inj)	2	0.33
Property Damage Only (PDO) Accidents	10	1.63

Statewide Basic Average Accident Rate	No Build	Build
Rate Group		
Accident Rate (per million vehicle-miles)		
Percent Fatal Accidents (Pct Fat)		
Percent Injury Accidents (Pct Inj)		

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		33%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
A ge Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS				Constant Dollars	Present Value
	Project Support	R / W	Construction	Maint./ Op.	Rehab.				
Construction Period									
1	$4,335	$33,069	$19,336			$250		$56,990,000	$56,990,000
2	$4,335	$33,069	$19,336			$250		$56,990,000	$54,798,077
3								$0	$0
4								$0	$0
5								$0	$0
6								$0	$0
7								$0	$0
8								$0	$0
Project Open									
1				$387				$386,720	$357,544
2				$387				$386,720	$343,793
3				$387				$386,720	$330,570
4				$387				$386,720	$317,856
5				$387				$386,720	$305,630
6				$387				$386,720	$293,875
7				$387				$386,720	$282,573
8				$387				$386,720	$271,704
9				$387				$386,720	$261,254
10				$387				$386,720	$251,206
11				$387				$386,720	$241,544
12				$387				$386,720	$232,254
13				$387				$386,720	$223,321
14				$387				$386,720	$214,732
15				$387				$386,720	$206,473
16				$387				$386,720	$198,532
17				$387				$386,720	$190,896
18				$387				$386,720	$183,554
19				$387				$386,720	$176,494
20				$387				$386,720	$169,706
Total	$8,670	$66,138	$38,672	$7,734	$0	$500	$0	$121,714,400	$116,841,588

Present Value = Future Value (in Constant Dollars) / (1 + Real Discount Rate) ^ Year

2A

HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	1,835		1,835	
Weaving Volume	0		0	
Truck Volume	181		181	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	3,759		3,759	
Weaving Volume	0		0	
Truck Volume	372		372	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	2,187		2,187	
Weaving Volume	0		0	
Truck Volume	216		216	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	4,479		4,479	
Weaving Volume	0		0	
Truck Volume	443		443	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Build				
Year 1				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	1,911		1,911	
Weaving Volume	0		0	
Truck Volume	189		189	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	3,914		3,914	
Weaving Volume	0		0	
Truck Volume	387		387	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	2,249		2,249	
Weaving Volume	0		0	
Truck Volume	222		222	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	4,607		4,607	
Weaving Volume	0		0	
Truck Volume	456		456	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.33		0.33	
PDO Accidents	1.63		1.63	
Total Accidents	1.966			
Hwy Safety or Weaving Improvement		52%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.4850		0.4850	
Injury Accidents	0.4850		0.4850	
PDO Accidents	0.4850		0.4850	
Build				
Fatal Accidents	0.003		0.003	
Injury Accidents	0.16		0.16	
PDO Accidents	0.79		0.79	
Total Accidents	0.954			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	837,108	871,698	34,590
Truck Trips	66,233	68,969	2,737
Non-Peak Period			
Non-HOV Trips	1,715,050	1,785,917	70,868
Truck Trips	135,696	141,303	5,607
Total Trips	2,754,087	2,867,888	113,802
Year 20			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	997,529	1,025,991	28,462
Truck Trips	78,925	81,177	2,252
Non-Peak Period			
Non-HOV Trips	2,043,719	2,102,031	58,312
Truck Trips	161,701	166,315	4,614
Total Trips	3,281,875	3,375,515	93,640

C

SUMMARY OF ACCIDENT REDUCTION BENEFITS

Year	HIGHWAY								TRANSIT	Present Value of Accident Benefits	Constant Dollars
	Peak HOV	Peak Non-HOV	Peak Weaving	Peak Truck	Peak Arterial	Non-Peak Non-HOV	Non-Peak Weaving	Non-Peak Truck	All Periods		
1	$0	$39,774	$0	$3,932	$0	$81,431	$0	$8,055	$0	$133,191	$144,060
20	$0	$22,767	$0	$2,252	$0	$46,646	$0	$4,613	$0	$76,277	$173,818
2	$0	$38,658	$0	$3,821	$0	$79,152	$0	$7,829	$0	$129,461	$145,626
3	$0	$37,570	$0	$3,714	$0	$76,927	$0	$7,609	$0	$125,820	$147,192
4	$0	$36,508	$0	$3,609	$0	$74,757	$0	$7,394	$0	$122,269	$148,758
5	$0	$35,473	$0	$3,507	$0	$72,639	$0	$7,185	$0	$118,804	$150,325
6	$0	$34,463	$0	$3,407	$0	$70,574	$0	$6,980	$0	$115,425	$151,891
7	$0	$33,478	$0	$3,310	$0	$68,560	$0	$6,781	$0	$112,130	$153,457
8	$0	$32,518	$0	$3,215	$0	$66,597	$0	$6,587	$0	$108,917	$155,023
9	$0	$31,583	$0	$3,123	$0	$64,683	$0	$6,398	$0	$105,786	$156,589
10	$0	$30,671	$0	$3,033	$0	$62,819	$0	$6,213	$0	$102,735	$158,156
11	$0	$29,782	$0	$2,945	$0	$61,001	$0	$6,033	$0	$99,762	$159,722
12	$0	$28,917	$0	$2,859	$0	$59,231	$0	$5,858	$0	$96,865	$161,288
13	$0	$28,074	$0	$2,776	$0	$57,507	$0	$5,687	$0	$94,044	$162,854
14	$0	$27,253	$0	$2,695	$0	$55,827	$0	$5,521	$0	$91,297	$164,421
15	$0	$26,454	$0	$2,616	$0	$54,192	$0	$5,360	$0	$88,622	$165,987
16	$0	$25,676	$0	$2,539	$0	$52,600	$0	$5,202	$0	$86,017	$167,553
17	$0	$24,919	$0	$2,464	$0	$51,050	$0	$5,049	$0	$83,482	$169,119
18	$0	$24,182	$0	$2,391	$0	$49,542	$0	$4,899	$0	$81,015	$170,686
19	$0	$23,464	$0	$2,321	$0	$48,074	$0	$4,754	$0	$78,613	$172,252
Total	**$0**	**$612,185**	**$0**	**$60,528**	**$0**	**$1,253,811**	**$0**	**$124,009**	**$0**	**$2,050,532**	**$3,178,777**

Southbound On-Ramp

District: District 4

PROJECT: US 101/Produce Ave Interchange - SB On-Ramp

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	On-Ramp Widening	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	2	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	4	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		2	2
Number of HOV/HOT Lanes			
HOV Restriction (2 or 3)			
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		25	40
Length (in miles)	Highway Segment		0.0
	Impacted Length	0.0	0.0

Average Daily Traffic			
	Current	2,020	
		No Build	Build
	Base (Year 1)	2,079	2,176
	Forecast (Year 20)	2,646	2,722
Average Hourly HOV/HOT Lane Traffic			0
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		0.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		55	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	800	328
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.25	1.25
	Peak	1.25	1.25
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	2	0.90
Fatal Accidents (Fat)		0.006
Injury Accidents (Inj)	1	0.45
Property Damage Only (PDO) Accidents	1	0.45

Statewide Basic Average Accident Rate	No Build	Build
Rate Group		
Accident Rate (per million vehicle-miles)		
Percent Fatal Accidents (Pct Fat)		
Percent Injury Accidents (Pct Inj)		

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		33%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
A ge Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS				Constant Dollars	Present Value
	Project Support	R / W	Construction	Maint./ Op.	Rehab.				
Construction Period									
1	$4,335	$33,069	$19,336			$250		$56,990,000	$56,990,000
2	$4,335	$33,069	$19,336			$250		$56,990,000	$54,798,077
3								$0	$0
4								$0	$0
5								$0	$0
6								$0	$0
7								$0	$0
8								$0	$0
Project Open									
1				$387				$386,720	$357,544
2				$387				$386,720	$343,793
3				$387				$386,720	$330,570
4				$387				$386,720	$317,856
5				$387				$386,720	$305,630
6				$387				$386,720	$293,875
7				$387				$386,720	$282,573
8				$387				$386,720	$271,704
9				$387				$386,720	$261,254
10				$387				$386,720	$251,206
11				$387				$386,720	$241,544
12				$387				$386,720	$232,254
13				$387				$386,720	$223,321
14				$387				$386,720	$214,732
15				$387				$386,720	$206,473
16				$387				$386,720	$198,532
17				$387				$386,720	$190,896
18				$387				$386,720	$183,554
19				$387				$386,720	$176,494
20				$387				$386,720	$169,706
Total	$8,670	$66,138	$38,672	$7,734	$0	$500	$0	$121,714,400	$116,841,588

Present Value = Future Value (in Constant Dollars) / (1 + Real Discount Rate) ^ Year

2A

HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	641		641	
Weaving Volume	0		0	
Truck Volume	63		63	
HOV Speed	55.0		55.0	
Non-HOV Speed	63.4		63.4	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	1,271		1,271	
Weaving Volume	0		0	
Truck Volume	126		126	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	816		816	
Weaving Volume	0		0	
Truck Volume	81		81	
HOV Speed	55.0		55.0	
Non-HOV Speed	63.4		63.4	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	1,618		1,618	
Weaving Volume	0		0	
Truck Volume	160		160	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Build				
Year 1				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	649		649	
Weaving Volume	0		0	
Truck Volume	64		64	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	1,331		1,331	
Weaving Volume	0		0	
Truck Volume	132		132	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	812		812	
Weaving Volume	0		0	
Truck Volume	80		80	
HOV Speed	55.0		55.0	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Non-Peak Period				
Non-HOV Volume	1,665		1,665	
Weaving Volume	0		0	
Truck Volume	165		165	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.45		0.45	
PDO Accidents	0.45		0.45	
Total Accidents	0.906			
Hwy Safety or Weaving Improvement		50%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.5000		0.5000	
Injury Accidents	0.5000		0.5000	
PDO Accidents	0.5000		0.5000	
Build				
Fatal Accidents	0.003		0.003	
Injury Accidents	0.23		0.23	
PDO Accidents	0.23		0.23	
Total Accidents	0.453			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	283,121	296,331	13,210
Truck Trips	22,401	23,446	1,045
Non-Peak Period			
Non-HOV Trips	580,053	607,117	27,064
Truck Trips	45,894	48,036	2,141
Total Trips	931,470	974,930	43,460
Year 20			
Peak Period			
HOV Trips	0	0	
Non-HOV Trips	360,336	370,686	10,350
Truck Trips	28,510	29,329	819
Non-Peak Period			
Non-HOV Trips	738,250	759,454	21,204
Truck Trips	58,411	60,089	1,678
Total Trips	1,185,507	1,219,558	34,051

C

SUMMARY OF ACCIDENT REDUCTION BENEFITS

Year	HIGHWAY								TRANSIT	Present Value of Accident Benefits	Constant Dollars
	Peak HOV	Peak Non-HOV	Peak Weaving	Peak Truck	Peak Arterial	Non-Peak Non-HOV	Non-Peak Weaving	Non-Peak Truck	All Periods		
1	$0	$14,732	$0	$1,457	$0	$27,839	$0	$2,753	$0	$46,780	$50,598
20	$0	$8,899	$0	$880	$0	$17,133	$0	$1,695	$0	$28,607	$65,189
2	$0	$14,368	$0	$1,421	$0	$27,186	$0	$2,689	$0	$45,664	$51,366
3	$0	$14,011	$0	$1,386	$0	$26,542	$0	$2,625	$0	$44,564	$52,134
4	$0	$13,660	$0	$1,351	$0	$25,908	$0	$2,562	$0	$43,481	$52,902
5	$0	$13,316	$0	$1,317	$0	$25,283	$0	$2,501	$0	$42,416	$53,670
6	$0	$12,977	$0	$1,283	$0	$24,668	$0	$2,440	$0	$41,368	$54,438
7	$0	$12,645	$0	$1,251	$0	$24,062	$0	$2,380	$0	$40,338	$55,206
8	$0	$12,320	$0	$1,218	$0	$23,467	$0	$2,321	$0	$39,326	$55,974
9	$0	$12,000	$0	$1,187	$0	$22,882	$0	$2,263	$0	$38,333	$56,742
10	$0	$11,687	$0	$1,156	$0	$22,308	$0	$2,206	$0	$37,357	$57,510
11	$0	$11,381	$0	$1,126	$0	$21,743	$0	$2,150	$0	$36,400	$58,278
12	$0	$11,080	$0	$1,096	$0	$21,189	$0	$2,096	$0	$35,461	$59,046
13	$0	$10,786	$0	$1,067	$0	$20,646	$0	$2,042	$0	$34,541	$59,814
14	$0	$10,498	$0	$1,038	$0	$20,113	$0	$1,989	$0	$33,639	$60,582
15	$0	$10,217	$0	$1,010	$0	$19,590	$0	$1,938	$0	$32,755	$61,350
16	$0	$9,941	$0	$983	$0	$19,078	$0	$1,887	$0	$31,889	$62,117
17	$0	$9,672	$0	$957	$0	$18,577	$0	$1,837	$0	$31,042	$62,885
18	$0	$9,408	$0	$930	$0	$18,085	$0	$1,789	$0	$30,213	$63,653
19	$0	$9,151	$0	$905	$0	$17,604	$0	$1,741	$0	$29,401	$64,421
Total	**$0**	**$232,750**	**$0**	**$23,019**	**$0**	**$443,905**	**$0**	**$43,903**	**$0**	**$743,577**	**$1,157,872**

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

SAN MATEO COUNTY
US 101/WOODSIDE ROAD INTERCHANGE

For additional information, contact:
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California Transportation Commission

Agencies may use the following table B3 to identify by proposed project, or in summary for all proposed projects, changes to the built environment.

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type Or Mode	Change to Built Environment	Indicator/ Measure	Benefits or Performance Improvement at Project Completion
State Highway	New general purpose lane-miles.		
	New HOV/HOT lane-miles.		
	Lane-miles rehabilitated.		
	New or upgrade bicycle lane/sidewalk miles.	See Note 1	below
	Operational improvements.	See Note 2	below
	New or reconstructed interchanges.	See Note 3	below
	New or reconstructed bridges.		
Transit or Intercity Rail	Additional transit service miles.		
	Additional transit vehicles.		
	New rail track miles.		
	Rail crossing improvements.		
	Station improvements.		
Local streets and roads	New lane-miles.		
	Lane-miles rehabilitated.		
	New or upgrade bicycle lane/sidewalk miles.		
	Operational improvements.		
	New or reconstructed bridges.		

Note 1: The project would provide approximately 3 miles of new bikeways and sidewalks, were none currently exist, to greatly enhance connections across US 101 for bicyclists and pedestrians. See Pedestrian and Bicycle Facilities on page 2-47 of Section 2.1.7 Traffic and Transportation / Pedestrian and Bicycle Facilities, which was excerpted from the Project IS/EA and is attached.

Note 2: The project would provide operational improvements at Project study intersections as detailed in “Intersections” on page 2-43, which would reduce average vehicle delays as shown in Tables 2.1.7-5 (Year 2022) and 2.1.7-6 (2042) of the attached IS/EA excerpt referenced in Note 1.

B3 - Evaluation (cont'd)

Note 3: The Project would reconstruct the interchange to improved freeway access by providing conventional ramp connections with increased capacities, improve vehicle capacities and traffic controls at foot of ramp junctions and nearby intersections, and establish a new direct connect ramp to Veterans Boulevard to optimize function. The US 101 Mainline section, beginning on page 2-41 and including Tables 2.1.7-3 (2022) and 2.1.7-4 (2042) present concise summaries of benefits of the Project (Alternative 3) compared to the No-Build Alternative (VMT, Travel Time, Travel Speed, and Delay).

In addition, the Project will provide very positive cost-effectiveness benefits as described in Section e. Cost-Effectiveness of Redwood City's 2016 FASTLANE Grant Application

2.1.7 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.1.7.1 Regulatory Setting

The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy

federally assisted programs is governed by the USDOT regulations (49 CFR Part 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

2.1.7.2 Affected Environment

The information from this section is based on the *Traffic Operations Analysis Report* (Fehr & Peers 2015) completed in December 2015.

Roadway Network

As stated in Section 1.1, US 101 is an eight-lane divided freeway with three general purpose lanes and one high-occupancy vehicle (HOV) lane in each direction. There is an auxiliary lane in each direction to the south and north of the Woodside Road on- and off-ramps. All ramps at the interchange have ramp meters.

SR 84 is signed as an east-west route in the region, although in the project area, Woodside Road is a four- to six-lane north-south road. North of El Camino Real, Woodside Road is categorized as an expressway with access only provided at signalized key intersections or right-in/right-out only connections. In the project area, Woodside Road has a speed limit of 35 miles per hour (mph), no on-street parking or sidewalks, and a raised center median.

South of US 101, local east-west roads include Veterans Boulevard, Broadway, and Spring Street. Local north-south roads include Chestnut Street and Maple Street (west of Woodside Road) and Charter Street (east of Woodside Road).

North of US 101, local east-west roads include Blomquist Street and East Bayshore Road, and one local north-south road: Seaport Boulevard. Project area roadways are shown in Figure 2.1.7-1.

The Redwood City General Plan (City of Redwood City 2010a) designates US 101, Woodside Road/Seaport Boulevard, Broadway, Bay Road, Spring Street, Middlefield Road, Chestnut Street, and Charter as truck routes, in the project area.

Transit in the project area is described in Section 1.2.2.3.

Pedestrian and Bicycle Facilities

Sections 1.2.2.2 and 2.1.3.1 provide a detailed description of bicycle and pedestrian facilities in the project area, and Section 2.1.3.2 and Appendix B describe the Bay Trail segment in the project area.

Two nearby projects include improvements to pedestrian and bicycle facilities in or adjacent to the project area:

- A correctional center was recently constructed just northeast of Maple Street and US 101, and included a sidewalk on the south side of Maple Street and a sidewalk on the east side of Blomquist Street to accommodate a new bus stop.
- The Redwood City Inner Harbor Specific Plan includes a 100-acre area north of US 101 between Redwood Creek to the west and the eastern boundary of the former Malibu Grand Prix property to the east. The Inner Harbor Specific Plan would provide planning policies and guidelines for the inclusion of additional open space, redevelopment, and relocation of "floating communities" (City of Redwood City 2014b, 2014c). Roadways in the Inner Harbor Specific Plan area would include sidewalks in the public right-of-way and Class II bikeways on Blomquist Street and Maple Street. In addition, a multi-use trail is proposed that would provide a new Bay Trail segment between Bair Island Road and Seaport Boulevard.

Traffic Operations Analysis Study Area and Methods

The study area for traffic operations consisted of two mainline segments of US 101 and 12 local roadway intersections. The mainline segments of US 101 were between the Willow Road and Holly Street interchanges, encompassing a total of six interchanges in the northbound direction; and between the Hillsdale Boulevard and Willow Road interchanges, encompassing a total of eight interchanges in the southbound direction. The number and length of the segments studied in each direction was based on congestion patterns for each direction of travel. The project area is approximately in the middle of the mainline segments studied.

The following 12 local roadway intersections were analyzed:

1. Blomquist Street/Seaport Boulevard
2. Lyngso Access/Seaport Boulevard
3. Veterans Boulevard/Woodside Road
4. Broadway/Woodside Road
5. Bay Road/Woodside Road
6. Spring Street/Woodside Road
7. Middlefield Road/Woodside Road
8. Blomquist Street/Maple Street
9. Oddstad Drive/Maple Street
10. Veterans Boulevard/Maple Street
11. Veterans Boulevard/Chestnut Street
12. Broadway/Chestnut Street

The numbers correspond to those shown in Figure 2.1.7-1. The traffic study analyzed peak period and peak hour conditions on local roads and US 101. For local roads, the peak period is

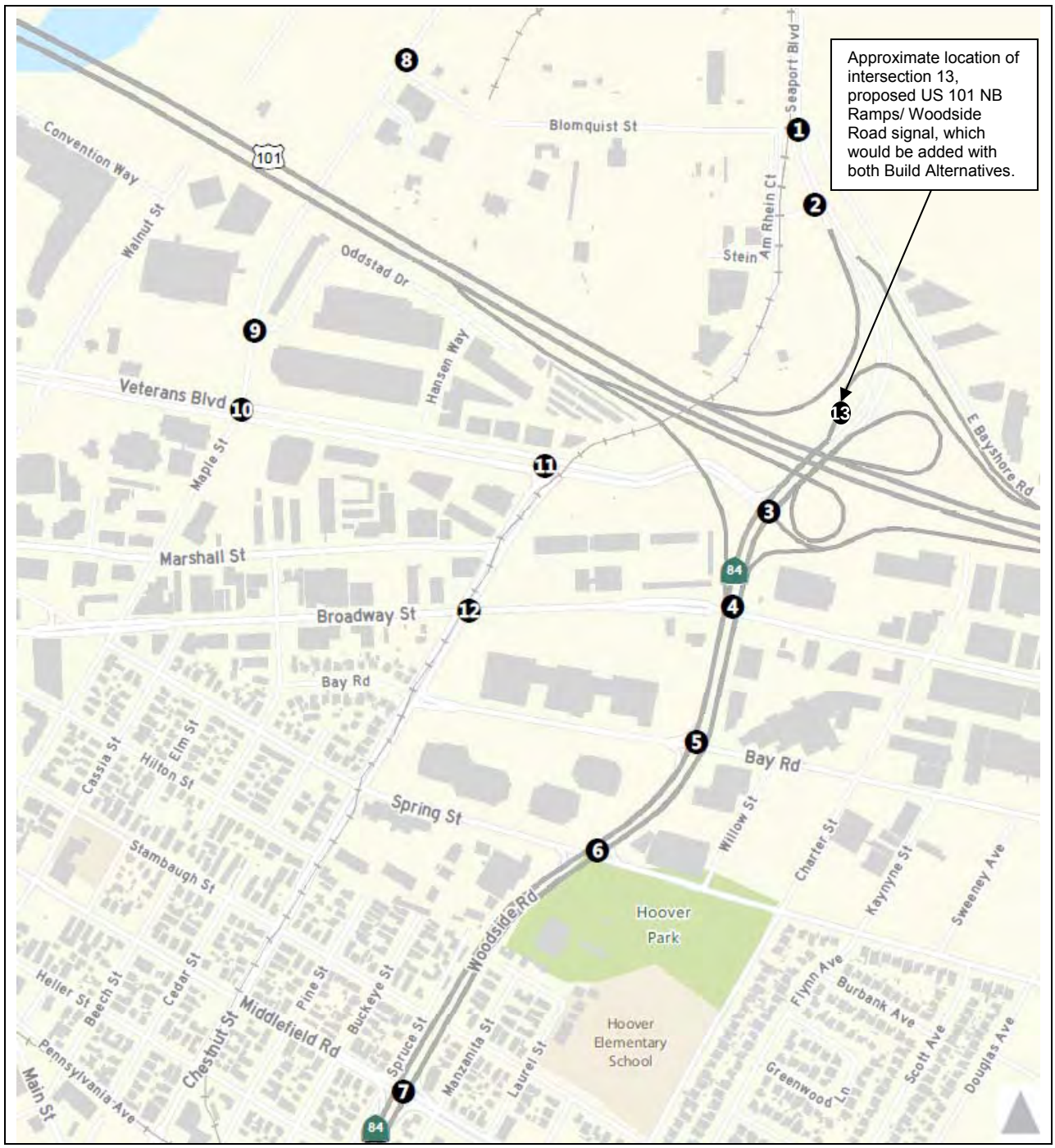


Figure 2.1.7-1: Local Roadway Intersections

defined as 7 AM to 9 AM (AM peak) and 4 PM to 7 PM (PM peak), and the peak hour within the peak period is defined as 7:30 AM to 8:30 AM and 5 PM to 6 PM. For US 101, the peak period is defined as 6 AM to 9 AM (AM peak) and 3 PM to 7 PM (PM peak), and the peak hour within the peak period is defined as 8 AM to 9 AM and 5 PM to 6 PM. Models were calibrated and validated to replicate existing conditions for freeway, ramp, and intersection volumes;

bottleneck locations; and observed queues. Figure 1.2.2-1 describes the levels of service for signalized intersections.

The future traffic forecasts for intersections were developed using the Furnessing Method. The forecasts used the joint Santa Clara Valley Transportation Authority and City/County Association of Governments of San Mateo County travel demand model, which contains 2020 and 2040 population and employment projects from the Association of Bay Area Governments. Households are anticipated to grow by about 0.74 percent per year while employment is anticipated to grow by about 0.78 percent per year. In San Mateo County, 316,100 households and 443,300 jobs are anticipated to be reached by 2040. These estimates were refined in the project area to reflect approved and pending development projects in the City of Redwood City. The major land use developments in the Woodside Road interchange area include Jay Paul Development, Inner Harbor Plan, Downtown Redwood City Precise Plan, Kaiser Hospital Specific Plan and Stanford in Redwood City. Transportation projects that are anticipated to be in place by 2020, and are included in the forecast analysis, include a new bridge over Redwood Creek between Blomquist Street and the Bair Island Road area and the US 101/Willow Road interchange converted to a partial cloverleaf (the informational sources are in the Traffic Operations Analysis Report for this project, prepared by Fehr & Peers 2015).

Intersection operations were analyzed using Synchro/SimTraffic 8.0 software. Mainline operations on US 101 were analyzed using the FREQ macroscopic traffic model.

Existing Conditions

Mainline

This section describes existing traffic conditions in the project area. Table 2.1.7-1 describes the existing conditions on US 101. For this study, vehicle delay is the extra time it takes to travel a segment of US 101 during the peak hour as compared to the time it would take at free-flow speeds (approximately 65 mph). For the study segments, the delay is greatest during the AM peak hour traveling southbound and during the PM peak hour traveling northbound. This is consistent with the commute patterns in the study area.

Table 2.1.7-1: Existing US 101 Peak Hour Measures of Effectiveness

Measures of Effectiveness	Northbound AM[1]	Southbound AM[2]	Northbound PM[1]	Southbound PM[2]
Vehicle Miles of Travel (vehicle-miles)	56,942	71,080	48,842	65,977
Average Travel Time (min:sec)	7:31	21:47	21:09	14:30
Average Travel Speed (mph)	62	27	25	40
Vehicle Delay (vehicle-hours)	38	1,121	1,557	635
Maximum Individual Vehicle Delay (min:sec)	0:22	14:01	16:47	6:53

Source: Fehr & Peers 2015
Notes:
1. Study segment of northbound US 101 extends between the University Avenue on-ramp and the Ralston Avenue off-ramp
2. Study segment of southbound US 101 extends between the Hillsdale Boulevard diagonal on-ramp and University Avenue off-ramp

Local Intersections

In accordance with the City of Redwood City planning criteria, the traffic analysis used LOS D or better as a threshold for an acceptable level of performance, while LOS E or F indicated unacceptable levels as the study intersections and roadway segments.

Table 2.1.7-2 lists the traffic control device at each intersection as well as the current operating delay and LOS for both the AM and PM peak hours. All of the intersections in the project area currently operate at LOS D or better during the AM and PM peak hours except the Lyngso Access/Seaport Boulevard, Veterans Boulevard/Woodside Road, and Broadway/Woodside Road intersections, as shown in Table 2.1.7-2.

Operations at the Veterans Boulevard and Broadway intersections with Woodside Road are affected by the southbound US 101 on-ramp connection to Veterans Boulevard and the southbound US 101 off-ramp connection to Broadway/Woodside Road, where high vehicle volumes exceed the available storage for the majority of intersection movements.

Table 2.1.7-2: Existing Peak Hour Intersection Analysis

Intersection	Traffic Control[1]	Peak Hour	Delay (seconds/ vehicle)	LOS[2]
1. Blomquist Street/Seaport Boulevard	Signal	AM	20	B
		PM	26	C
2. Lyngso Access/Seaport Boulevard	Side Street Stop on Lyngso Access	AM	21	C
		PM	38	**E**
3. Veterans Boulevard/ Woodside Road	Signal	AM	30	C
		PM	81	**F**
4. Broadway/Woodside Road	Signal	AM	66	**E**
		PM	134	**F**
5. Bay Road/Woodside Road	Signal	AM	39	D
		PM	50	D
6. Spring Street/Woodside Road	Side Street Yield on Spring Street	AM	20	C
		PM	13	B
7. Middlefield Road/Woodside Road	Signal	AM	46	D
		PM	45	D
8. Blomquist Street/Maple Street	Side Street Stop on Blomquist Street	AM	5	A
		PM	6	A
9. Oddstad Drive/Maple Street	Side Street Stop on Oddstad Drive	AM	7	A
		PM	11	B
10. Veterans Boulevard/Maple Street	Signal	AM	24	C
		PM	30	C
11. Veterans Boulevard/Chestnut Street	Signal	AM	8	A
		PM	8	A
12. Broadway/Chestnut Street	Signal	AM	14	B
		PM	26	C

Source: Fehr & Peers 2015

Notes: Results are based on SimTraffic.

1. Signal = signalized intersection, Side Street Stop or Yield = The indicated side street has a stop or yield sign on the street indicated, while the other direction is not controlled/signed.

2. Level of service. **Bold** indicates unacceptable level of service (LOS E or F).

2.1.7.3 Environmental Consequences

US 101 Mainline

Neither of the Build Alternatives include direct changes to US 101; however the proposed changes to local intersections and ramps would affect operations on US 101. Tables 2.1.7-3 and 2.1.7-4 list the opening year (2022) and the design year (2042) peak hour measures of effectiveness for US 101 with the No Build Alternative, Alternative 3, and Alternative 8B. Under the No Build Alternative in both 2022 and 2042, the vehicle queues from the northbound and southbound off-ramps to Woodside Road are anticipated to extend past the mainline gore points (the locations where the ramps split from the freeway). When this occurs, the traffic backups would extend beyond the exit ramps and into the auxiliary lanes that connect to the ramps, delaying traffic from exiting the freeway.

Table 2.1.7-3: Opening Year (2022) US 101 Peak Hour Measures of Effectiveness

Scenario	Measure of Effectiveness	No Build Alternative	Alternative 3		Alternative 8B	
			Results	% Change	Results	% Change
Northbound AM	Vehicle Miles of Travel (vehicle-miles)	56,496	57,894	2%	57,892	2%
	Average Travel Time (min:sec)	11:10	8:08	-27%	8:08	-27%
	Average Travel Speed (mph)	43	60	37%	60	37%
	Mainline Vehicle Delay (vehicle-hours)	384	77	-80%	77	-80%
	Maximum Individual Vehicle Delay (min:sec)	3:43	0:41	-82%	0:40	-82%
Southbound AM	Vehicle Miles of Travel (vehicle-miles)	58,464	58,782	1%	58,800	1%
	Average Travel Time (min:sec)	35:01	35:07	0%	35:00	0%
	Average Travel Speed (mph)	17	17	0%	17	0%
	Mainline Vehicle Delay (vehicle-hours)	2,149	2,138	-1%	2,136	-1%
	Maximum Individual Vehicle Delay (min:sec)	26:03	26:08	0%	26:01	0%
Northbound PM	Vehicle Miles of Travel (vehicle-miles)	45,358	45,403	0%	45,403	0%
	Average Travel Time (min:sec)	33:07	33:25	1%	33:25	1%
	Average Travel Speed (mph)	15	15	-1%	15	-1%
	Mainline Vehicle Delay (vehicle-hours)	2,288	2,325	2%	2,325	2%
	Maximum Individual Vehicle Delay (min:sec)	25:40	25:58	1%	25:58	1%
Southbound PM	Vehicle Miles of Travel (vehicle-miles)	58,056	57,961	0%	57,684	-1%
	Average Travel Time (min:sec)	36:43	36:55	1%	37:05	1%
	Average Travel Speed (mph)	16	16	0%	16	0%
	Mainline Vehicle Delay (vehicle-hours)	2,593	2,622	1%	2,613	1%
	Maximum Individual Vehicle Delay (min:sec)	27:44	27:56	1%	28:06	1%

Source: Fehr & Peers 2015

Table 2.1.7-4: Design Year (2042) US 101 Peak Hour Measures of Effectiveness

Scenario	Measure of Effectiveness	No Build Alternative	Alternative 3		Alternative 8B	
			Results	% Change	Results	% Change
Northbound AM	Vehicle Miles of Travel (vehicle-miles)	55,336	55,044	0%	55,059	0%
	Average Travel Time (min:sec)	42:28	42:54	1%	42:52	1%
	Average Travel Speed (mph)	18	18	0%	18	0%
	Mainline Vehicle Delay (vehicle-hours)	3,212	3,308	3%	3,305	3%
	Maximum Individual Vehicle Delay (min:sec)	30:23	30:49	1%	30:47	1%
Southbound AM	Vehicle Miles of Travel (vehicle-miles)	54,124	53,867	0%	53,867	0%
	Average Travel Time (min:sec)	85:51	86:40	1%	86:40	1%
	Average Travel Speed (mph)	14	14	0%	14	0%
	Mainline Vehicle Delay (vehicle-hours)	6,320	6,350	0%	6,350	0%
	Maximum Individual Vehicle Delay (min:sec)	67:27	68:16	1%	68:16	1%
Northbound PM	Vehicle Miles of Travel (vehicle-miles)	41,917	41,843	0%	41,843	0%
	Average Travel Time (min:sec)	107:37	106:40	-1%	106:40	-1%
	Average Travel Speed (mph)	15	15	0%	15	0%
	Mainline Vehicle Delay (vehicle-hours)	6,569	6,461	-2%	6,461	-2%
	Maximum Individual Vehicle Delay (min:sec)	101:23	101:23	0%	101:23	0%
Southbound PM	Vehicle Miles of Travel (vehicle-miles)	51,646	51,646	0%	51,646	0%
	Average Travel Time (min:sec)	85:11	85:11	0%	85:11	0%
	Average Travel Speed (mph)	13	13	0%	13	0%
	Mainline Vehicle Delay (vehicle-hours)	5,708	5,708	0%	5,708	0%
	Maximum Individual Vehicle Delay (min:sec)	67:42	67:42	0%	67:42	0%

Source: Fehr & Peers 2015

Opening Year (2022)

In 2022, the Build Alternatives would eliminate the northbound US 101 bottleneck that would develop during the AM peak hour at the Woodside Road off-ramp under No Build conditions. In the northbound AM peak hour, both Build Alternatives would reduce average travel time by 27 percent and reduce individual vehicle delay by 82 percent compared with the No Build Alternative. Conditions on US 101 during the southbound AM peak hour and both directions in the PM peak hour would be essentially the same with the No Build Alternative and both Build Alternatives, as shown in Table 2.1.7-3.

Design Year (2042)

In 2042, conditions on US 101 would be the same or similar with the No Build Alternative and both Build Alternatives, as shown in Table 2.1.7-4.

Intersections

In general, the Build Alternatives are expected to reduce delays at most of the intersection locations where intersection improvements are proposed. Neither of the Build Alternatives would degrade the traffic level of service at any of the study locations in 2022 or 2042, except the PM peak hour level of service in 2042 at the intersection of Lyngso Access and Seaport Boulevard. At that intersection in 2042, delay will increase and the LOS is predicted to degrade from E (No Build) to F (both Build Alternatives). Some locations would continue to operate at unacceptable service levels in the future due to traffic demand growth that is unrelated to the project and the Build Alternatives would increase delays at several locations where additional traffic is able to access the interchange vicinity.

In opening year 2022 and future year 2042, the majority of the study intersections are anticipated to operate at LOS F under the No Build Alternative. With the No Build Alternative, the projected traffic demand is anticipated to far exceed the available roadway capacity. As a result, vehicle queues will exceed available storage at most study locations, meaning that the vehicles attempting to enter an intersection's turning lanes would build up and extend into adjacent through lanes. Where intersections along Woodside Road lack left-turn pockets, such as at Bay Road, left-turning vehicles are expected to delay an entire through-lane of traffic, substantially adding to congestion. In addition, queues from one intersection would affect operations at adjacent intersections, where congestion would prevent vehicles from entering an intersection when the light changes.

The project would provide operational benefits at most of the intersections studied because of the following changes, which are common to both Build Alternatives:

- Additional turn pocket storage approaching the Blomquist Street/Seaport Boulevard and Bay Road/Woodside Road intersections
- The Veterans Boulevard flyover ramps, which separate traffic traveling between US 101 and Veterans Boulevard and thereby remove those vehicles and the resulting congestion from Woodside Road
- The greater distance between the US 101 southbound ramps and Broadway on Woodside Road
- A new intersection for the US 101 northbound ramps with Woodside Road.

Opening Year (2022)

In 2022, most intersection levels of service would improve with Alternatives 3 and 8B compared with the No Build Alternative (Table 2.1.7-5). In 2022, 11 existing intersections would operate at an unacceptable level of service (LOS E or F) in the AM and/or PM peak hours with the No Build Alternative, compared with five intersections with both Build Alternatives. The new northbound US 101 ramps/Woodside Road intersection that would be included with both Build Alternatives would operate at LOS B during the AM and PM peak hours.

Table 2.1.7-5: Opening Year (2022) Peak Hour Intersection Analysis

Intersection	Peak Hour	No Build Alternative		Alternative 3		Alternative 8B	
		Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
1. Blomquist Street / Seaport Boulevard	AM	72	**E**	32	C	32	C
	PM	82	**F**	38	D	39	D
2. Lyngso Access / Seaport Boulevard	AM	86	**F**	49	**E**	70	**F**
	PM	156	**F**	30	D	48	**E**
3. Veterans Boulevard / Woodside Road (US 101 SB Ramps/Woodside Road with Build Alternatives)	AM	316	**F**	23	C	18	B
	PM	132	**F**	25	C	19	B
4. Broadway / Woodside Road	AM	417	**F**	46	D	48	D
	PM	273	**F**	45	D	47	D
5. Bay Road / Woodside Road	AM	86	**F**	37	D	37	D
	PM	169	**F**	31	C	38	D
6. Spring Street / Woodside Road	AM	63	**F**	15	C	15	C
	PM	88	**F**	139	**F**	342	**F**
7. Middlefield Road / Woodside Road	AM	156	**F**	139	**F**	138	**F**
	PM	343	**F**	378	**F**	369	**F**
8. Blomquist Street / Maple Street	AM	5	A	5	A	5	A
	PM	5	A	6	A	5	A
9. Oddstad Drive / Maple Street	AM	26	D	11	B	13	B
	PM	362	**F**	406	**F**	425	**F**
10. Veterans Boulevard / Maple Street	AM	69	**E**	29	C	30	C
	PM	41	D	46	D	48	D
11. Veterans Boulevard / Chestnut Street	AM	150	**F**	14	B	16	B
	PM	52	D	43	D	36	D
12. Broadway / Chestnut Street	AM	216	**F**	30	C	29	C
	PM	192	**F**	87	**F**	81	**F**
13. US 101 NB Ramps/Woodside Road Signal	AM	Does not exist		16	B	18	B
	PM			12	B	17	B

Source: Fehr & Peers 2015, **Bold** indicates unacceptable condition (LOS E or F).

The additional vehicle throughput at some locations would cause both Build Alternatives to have higher delay times in the 2022 PM peak hour than the No Build Alternative. This would occur at the Spring Street/Woodside Road intersection (by 51 seconds with Alternative 3 and 254 seconds [4.2 minutes] with Alternative 8B), Middlefield Road/Woodside Road intersection (by 35 seconds with Alternative 3 and 26 seconds with Alternative 8B), Oddstad Drive/Maple Street intersection (by 44 seconds with Alternative 3 and 63 seconds with Alternative 8B), and Veterans Boulevard/Maple Street intersection (by 5 seconds with Alternative 3 and 7 seconds with Alternative 8B).

All other intersections would improve with the Build Alternatives. Compared with the No Build Alternative, both of the Build Alternatives would reduce delay by approximately 2 minutes or more during the AM or PM peak hours at the following intersections:

- Lyngso Access/Seaport Boulevard (approximately 2 minutes in the PM peak)
- Veterans Boulevard /Woodside Road (approximately 5 minutes in the AM peak)
- Broadway/Woodside Road (more than 6 minutes in the AM peak and close to 4 minutes in the PM peak)
- Bay Road/Woodside Road (more than 2 minutes in the PM peak)

- Veterans Boulevard/Chestnut Street (more than 2 minutes in the AM peak)
- Broadway/Chestnut Street (approximately 3 minutes in the AM peak and close to 2 minutes in the PM peak)

At many of these intersections, operations would improve from LOS F under the No Build Alternative to LOS B through D with Alternatives 3 and 8B.

The additional capacity at intersections on Woodside Road/Seaport Boulevard between Blomquist Street and Bay Road would improve traffic operations and reduce vehicle queue lengths in 2022 compared to the No Build conditions. With the No Build Alternative, during the AM peak hour, vehicle queue spillback from the northbound US 101 off-ramp to Woodside Road would extend to the Willow Road on-ramp, two interchanges to the south. Both Alternatives 3 and 8B would provide adequate vehicle storage to avoid vehicle queuing from the northbound and southbound off-ramps onto the mainline of US 101.

Design Year (2042)

In 2042, 11 existing intersections would operate at LOS E or F in the AM and/or PM peak hours with the No Build Alternative, compared with 10 intersections under Alternative 3. Alternative 8B is projected to also have 11 intersections that operate at LOS E or F in the AM and/or PM peak hours. As shown in Table 2.1.7-6, levels of service and/or delay times would generally improve with both Build Alternatives at all but four study intersections. Compared with the No Build Alternative, delay times would increase by 30 seconds or more at the Lyngso Access/Seaport Boulevard, Spring Street/Woodside Road, Middlefield Road/Woodside Road, and Oddstad Drive/Maple Street intersections. Notably, delay times with Alternative 8B would increase by 2 minutes or more at the intersections of Lyngso Access/Seaport Boulevard (2.2 minutes in the AM peak hour and 2.9 minutes in the PM peak hour) and Spring Street/Woodside Road (5.1 minutes in the AM peak hour). In general, delays would increase at these locations because the improvements at the interchange with the Build Alternatives would allow more vehicles to reach these intersections than with the No Build Alternative.

Table 2.1.7-6: Design Year (2042) Peak Hour Intersection Analysis

Intersection	Peak Hour	No Build Alternative		Alternative 3		Alternative 8B	
		Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
1. Blomquist Street / Seaport Boulevard	AM	212	**F**	41	D	41	D
	PM	223	**F**	58	**E**	153	**F**
2. Lyngso Access / Seaport Boulevard	AM	51	**F**	101	**F**	180	**F**
	PM	45	**E**	105	**F**	221	**F**
3. Veterans Boulevard / Woodside Road (US 101 SB Ramps/Woodside Road with Build Alternatives)	AM	119	**F**	23	C	20	B
	PM	109	**F**	29	C	19	B
4. Broadway / Woodside Road	AM	353	**F**	64	**E**	63	**E**
	PM	287	**F**	58	**E**	54	D
5. Bay Road / Woodside Road	AM	157	**F**	65	**E**	66	**E**
	PM	528	**F**	44	D	45	D
6. Spring Street / Woodside Road	AM	110	**F**	153	**F**	418	**F**
	PM	388	**F**	11	B	21	C

	Peak Hour	No Build Alternative		Alternative 3		Alternative 8B	
		Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
7. Middlefield Road / Woodside Road	AM	332	**F**	362	**F**	382	**F**
	PM	419	**F**	473	**F**	446	**F**
8. Blomquist Street / Maple Street	AM	7	A	6	A	7	A
	PM	6	A	6	A	6	A
9. Oddstad Drive / Maple Street	AM	12	B	14	B	16	C
	PM	120	**F**	304	**F**	280	**F**
10. Veterans Boulevard / Maple Street	AM	31	C	31	C	31	C
	PM	105	**F**	81	**F**	99	**F**
11. Veterans Boulevard / Chestnut Street	AM	72	**E**	17	B	17	B
	PM	144	**F**	102	**F**	72	**E**
12. Broadway / Chestnut Street	AM	261	**F**	48	D	50	D
	PM	362	**F**	258	**F**	244	**F**
13. US 101 NB Ramps/Woodside Road Signal	AM	Does not exist		15	B	18	B
	PM			17	B	126	**F**

Source: Fehr & Peers 2015, **Bold** indicates unacceptable condition (LOS E or F).

At other intersections, the Build Alternatives would reduce delay compared to the No Build Alternative. Both of the Build Alternatives would reduce delay by 2 minutes or more during the AM or PM peak hours at the following intersections:

- Blomquist Street/Seaport Boulevard (approximately 3 minutes in the AM peak)
- Broadway/Woodside Road (approximately 5 minutes in the AM peak and approximately 4 minutes in the PM peak)
- Bay Road/Woodside Road (more than 8 minutes in the PM peak)
- Spring Street/Woodside Road (more than 6 minutes in the PM peak)
- Broadway/Chestnut Street (more than 3 minutes in the AM peak)

In addition, Alternative 3 would reduce delay by approximately 3 minutes in the PM peak at the Blomquist Street/Seaport Boulevard intersection, and Alternative 8B would reduce delay by approximately 2 minutes in the PM peak at the Broadway/Chestnut Street intersection.

In 2042, under the No Build condition, the southbound and northbound US 101 off-ramp vehicle queues would extend onto the US 101 mainline due to congestion at the ramp intersections with Woodside Road/Seaport Boulevard during both the AM and PM peaks. No peak hour queue spillback onto US 101 is anticipated with either of the Build Alternatives. However, for the PM peak hour, both Build Alternatives would have queue spillback into the local street system from the ramp meters at the northbound and southbound US 101 on-ramps. With Alternative 8B, queue spillback from the northbound US 101 ramp meters would worsen PM peak hour operations at the following intersections compared with Alternative 3:

- Blomquist Street/Seaport Boulevard (58 seconds of delay and LOS E with Alternative 3; 153 seconds [2.6 minutes] of delay and LOS F with Alternative 8B)

- US 101 northbound ramps/Woodside Road: (17 seconds of delay and LOS B with Alternative 3; 126 seconds [just over 2 minutes] of delay and LOS F with Alternative 8B).

The difference in operations at these intersections with Alternative 8B would result from the way westbound and eastbound Woodside Road traffic accesses US 101 and the amount of vehicle storage provided at the on-ramp meters. Because Alternative 8B would allow less traffic to access the local street system, operations at the Broadway/Woodside Road and Veterans Boulevard/Chestnut Street would improve compared with Alternative 3.

In general, for 2042, Alternative 3 would result in a greater reduction of peak hour traffic congestion at the US 101/Woodside Road interchange than Alternative 8B.

Construction Impacts

Some nighttime lane closures of US 101 would be required for safety reasons during construction. In addition, some nighttime freeway closures would be required to construct parts of the northbound off-ramp connector to Veterans Boulevard. Short-term closures of existing interchange ramps, sidewalks, and the Bay Trail may be necessary during construction. Vehicle, bicycle, and pedestrian access throughout the interchange area would be maintained throughout project construction.

Pedestrian and Bicycle Facilities

The No Build Alternative would not improve pedestrian or bicycle facilities in the project area. Sidewalks and bikeways are proposed as part of the correctional center project that is under construction northeast of Maple Street and US 101 and would be included in future projects in the Inner Harbor Specific Plan area. However, these improvements would be northeast of the US 101/Woodside Road interchange and would not increase pedestrian or bicycle access in the project area.

Both Build Alternatives would provide two locations where pedestrians and bicyclists can cross under US 101: Woodside Road and the proposed Class I bikeway along the UPRR tracks. Sidewalks and Class IV bikeways would be added to both sides of Woodside Road between Broadway and Bay Road. Both Build Alternatives would provide a combination of Class I and IV bikeways and sidewalks on Woodside Road between Broadway and Blomquist Street.

Alternative 3 would also provide a new Class I bikeway along the west side of the relocated segment of Veterans Boulevard, between Charter Street and Chestnut Street.

The proposed improvements would be compatible with sidewalk and bikeway facilities that are planned or proposed as part of the correctional center and other future projects in the Inner Harbor Specific Plan area.

Access through the project area would be designed with consideration of low-mobility groups. The Build Alternatives would upgrade existing and build new sidewalks in the project limits to meet Americans with Disabilities Act standards, California Code of Regulations Title 24 requirements, and the Department's Design Information Bulletin 82-05 standards. Design features would include ramped curbs at intersections and accessible locations for public transit stops.

2.1.7.4 Avoidance and Minimization Measures

As an avoidance measure, the Department will develop a TMP to address impacts to motor vehicle, transit, bicycle, and pedestrian access during project construction. The TMP for the project would be developed and refined during the detailed design phase and supported by detailed traffic studies to evaluate traffic operations. The TMP would include press releases to notify and inform motorists, businesses, community groups, local entities, and emergency services of upcoming closures or detours. Various TMP elements such as portable Changeable Message Signs and the Construction Zone Enhance Enforcement Program may be used to alleviate and minimize delay to the traveling public. These are typical measures required of the contractor, and would be developed or defined in detail in the TMP during the design phase of the project.

FastLane Grants – USDOT – CFDA 20.934
Nationally Significant Freight and Highway Projects
Opportunity Number: NSFHP-16-FASTLANE16 -Close Date: 4/14/2016

Project Name: **United States Highway 101/State Route 84 (Woodside Road) Interchange Improvement Project**	
Previously Incurred Project Cost	$4.2M
Total Project Cost	$139M
Future Eligible Project Cost	$134.8M
NSFHP Request	$70.0M
Total Federal Funding Including (NSFHP)	$70.0M
Are matching funds restricted to a specific project component?	No
Is the project or a portion of the project currently located on the National Highway Freight Network?	Yes
Is the Project or a portion of the project located on the National Highway System • Does the project add capacity to the Interstate system? • Is the Project in a national scenic area?	Yes Yes No
Do the project components include a rail-highway grade crossing or grade separation project	Yes
Do the project components include an intermodal or freight rail project, or freight project within the boundaries of the public or private freight rail, water (including ports) or intermodal facility?	No
If answered yes to either of the two component questions above, how much of requested NSFHP funds will be spent on each of these project components?	$13.0M
State(s) in which project is located	California
Small or large project	Large
Also submitting an application to TIGER for this project?	Yes
Urbanized Area in which project is located, if applicable	San Francisco—Oakland, CA
Population of Urbanized Area	3,281,212
Is the project currently programmed in the: • TIP • STIP • MPO Long Range Transportation Plan • State Long Range Transportation Plan • State Freight Plan	 Yes No Yes Yes No

v. Amount Requested

The total FASTLANE grant funds being requested for the Project is $70M which is less than 60% of the total eligible project funding. All federal funds combined including Fastlane are less than 80% and the local match is over 20%.

Proposed Funds Source	Amount*	Percent
Federal - Program NSFHP		
FASTLANE-Program	$ 70,000	
Sub-Total	**$ 70,000**	**51.93%**
Local		
Redwood City	$ 10,900	
Measure M	$ 41,900	
STIP/RIP	$ 12,000	
Sub-Total	**$ 64,800**	**48.07%**
TOTAL	**$ 134,800**	100.00%
* in $1,000's		

e. Cost Effectiveness

As stipulated in the Notice of Funding Availability for the Department of Transportation's Nationally Significant Freight and Highway Projects (FASTLANE Grants) for Fiscal Year 2016, grant applications are strongly encouraged to provide a benefit-cost analysis (BCA) to evaluate its project's cost-effectiveness. Below is a summary of the BCA findings. The complete BCA is included in Appendix A.

The City's Benefit-Cost Analysis model was developed to estimate the Project's total future costs and benefits. Benefits were estimated over a 20 year period after construction would be completed in January of 2023 and continuing until December of 2043.

Benefits are estimated over a 20 year period after construction is completed and it begins operating in January 2023 until December in 2043. The base year for the BCA is 2016 and consequently all monetary values are presented in 2016 dollars.

i. Time Savings for Passenger and Freight

The Project's value of travel time savings depends on the composition of the highway user population, the mode, time, purpose of travel, and in some cases the location and/or availability of alternative transportation modes. The value users assign to their travel time depends on their opportunity cost for that time. Travel time may consist of work travel time or personal time.

The following table shows the projected future travel time savings during peak period operations in 2022 and 2042. The proposed Project is conservatively projected to result in over 1 million hours of travel time saving in 2023 and continue to result in over 1 million hours of travel time savings in 2043. Over its full 20 year operating lifespan, the Project is expected to result in total time travel savings of over 22.6 million hours for future highway users, including over 1.2 million hours for truck operators.

Travel Time Savings Summary

Description	Annual Hours Saved (Peak Period)		Total Hours Saved (Peak Period)
	2023	2043	2023 - 2043
Trucks	71,171	49,627	1,268,374
Passenger Vehicles	1,056,344	982,366	21,406,452
Total VHT Savings	**1,127,515**	**1,031,993**	**22,674,826**

Note: Annual VHT estimates were based on 250 workdays a year.

The annual total value of the expected VHT savings is based on the travel type (passenger vehicle or truck) and its corresponding value of time estimates.

The Project's estimated annual total travel time savings benefits between 2023 and 2043 are shown in the following table.

Estimated Value of Total Vehicle Hours Traveled Savings (2016 dollars)

Annual VHT Benefit	Discounted Net Benefits	
	7%	3%
$646,198,279	**$188,828,121**	**$370,257,034**

Over its entire 20 year operating period, the Project is expected to result in total user travel time savings totaling more than $646 million. The net present value of that total travel time savings benefits is estimated to be about $188 million (using a 7 percent discount rate) and over $370 million (using a 3 percent discount rate).

ii. Benefits Not Quantified

The City expects the project will produce substantial additional benefits that could not be adequately quantified for inclusion in BCA. The BCA excludes a number of societal or user benefits because they are difficult to measure given the currently available traffic data. Inclusion of these additional benefits would increase the overall benefit-cost ratio. Notable unquantified benefits include:

- Vehicle operating cost reductions
- Air quality improvements
- Reduced accidents (and related delays);
- State of good repair improvement for roadway;
- Increased travel time reliability for highway users, and
- Enhanced livability for the region's residents and workers.

iii. Benefit-Cost Analysis Findings

The following table shows the overall BCA results for the total Project. BCA metrics are presented with both the standard USDOT recommended 7 percent discount rate and a lower 3 percent discount rate that is applicable for government funded Projects. The proposed Project has a positive BCR and NPV under both discount rates. The ROI is also favorable for both discount rates. At a 7-percent real discount rate, the Project generates a NPV of over $98 million, BCR of 1.39, and ROI of 72 percent. At a 3-percent real discount rate, the Project generates a NPV over $253 million, BCR of 2.46, and ROI of 181 percent.

Benefit-Cost Analysis Results

Metric	7% Discount Rate	3% Discount Rate
Net Present Value (NPV) (2016 $)	$98,069,556	$253,242,709
Benefit-Cost Ratio (BCR)	1.39	2.46
Return on Investment (ROI)	72%	181%

The BCA findings for each year are presented in the following table in millions of 2016 dollars. Based on the BCA, the Project is expected to generate approximately $395 million in undiscounted benefits (savings from travel time, vehicle operating cost savings and reduced emissions) and $145.2 million in undiscounted costs.

Summary of Benefit-Cost Analysis Results (in millions of 2016 dollars)

Total Project Costs	Travel Time Savings	Net Benefits	Discounted Net Benefits	
			7%	3%
$143.66	$136.20	$502.54	$98.07	$253.24

f. Project Readiness

The Project is currently in the PA&ED phase which is scheduled to be completed in November of this year. The Project is on schedule to begin construction in August 2019.

i. Technical Feasibility

All preliminary engineering and environmental studies have been completed. The design of the Project will be advanced during the PS&E phase.

ii. Project Schedule

Project Milestones		Milestone Date (Month/Day/Year)	Milestone Designation (Target/Actual)
PROGRAM PROJECT	M015		Jun/13/2006
BEGIN ENVIRONMENTAL	M020		Dec/12/2013
CIRCULATE DED EXTERNALLY	M120	Apr/11/2016	
PA & ED	M200	Nov/11/2016	
PS&E TO DOE	M377	Nov/8/2018	
RIGHT OF WAY CERTIFICATION	M410	Jan/31/2019	
READY TO LIST	M460	Mar/28/2019	
FUND ALLOCATION	M470	Jun/20/2019	
HEADQUARTERS ADVERTISE	M480	May/2/2019	
AWARD	M495	Jul/11/2019	
APPROVE CONTRACT	M500	Aug/9/2019	
CONTRACT ACCEPTANCE	M600	Jan/16/2023	
END PROJECT	M800	Mar/13/2023	

District: 4

PROJECT: US 101/Woodside Road Interchange Improvement Project

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	Intersection	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	4	years
One- or Two-Way Data	2	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	4	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		6	6
Number of HOV/HOT Lanes		1	1
HOV Restriction (2 or 3)		2	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	1.9	1.9
	Impacted Length	1.9	1.9

Average Daily Traffic			
	Current	212,000	
		No Build	Build
	Base (Year 1)	223,000	223,000
	Forecast (Year 20)	283,000	283,000
Average Hourly HOV/HOT Lane Traffic		825	825
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		100.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		55	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	3500	1500
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)	3	

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	742	3.20
Fatal Accidents (Fat)	1	0.004
Injury Accidents (Inj)	195	0.84
Property Damage Only (PDO) Accidents	546	2.35

Statewide Basic Average Accident Rate	No Build	Build
Rate Group		
Accident Rate (per million vehicle-miles)	0.91	0.91
Percent Fatal Accidents (Pct Fat)	0.4%	0.4%
Percent Injury Accidents (Pct Inj)	30.8%	30.8%

1D RAIL AND TRANSIT DATA

Annual Person-Trips	No Build	Build
Base (Year 1)		
Forecast (Year 20)		
Percent Trips during Peak Period	33%	
Percent New Trips from Parallel Highway		100%

Annual Vehicle-Miles	No Build	Build
Base (Year 1)		
Forecast (Year 20)		
Average Vehicles/Train (if rail project)		

Reduction in Transit Accidents		
Percent Reduction (if safety project)		

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows. Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS					
	Project Support	R / W	Construction	Maint./ Op.	Rehab.			Constant Dollars	Present Value
Construction Period									
1	$3,000	$38,000	$17,550					$58,550,000	$58,550,000
2	$3,000		$17,550					20,550,000	19,759,615
3	$3,000		$17,550					20,550,000	18,999,630
4	$3,000		$17,550					20,550,000	18,268,875
5								0	0
6								0	0
7								0	0
8								0	0
Project Open									
1				$200				$200,000	$170,961
2				$200				200,000	164,385
3				$200				200,000	158,063
4				$200				200,000	151,984
5				$200				200,000	146,138
6				$200				200,000	140,517
7				$200				200,000	135,113
8				$200				200,000	129,916
9				$200				200,000	124,919
10				$200				200,000	120,115
11				$200				200,000	115,495
12				$200				200,000	111,053
13				$200				200,000	106,782
14				$200				200,000	102,675
15				$200				200,000	98,726
16				$200				200,000	94,928
17				$200				200,000	91,277
18				$200				200,000	87,767
19				$200				200,000	84,391
20				$200				200,000	81,145
Total	$12,000	$38,000	$70,200	$4,000	$0	$0	$0	$124,200,000	$117,994,471

$$\text{Present Value} = \frac{\text{Future Value (in Constant Dollars)}}{(1 + \text{Real Discount Rate})^{\text{Year}}}$$

2A HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	3,300		3,300	
Non-HOV Volume	63,261		63,261	
Weaving Volume	0		0	
Truck Volume	6,583		6,583	
HOV Speed	64.8		64.8	
Non-HOV Speed	6.8		6.8	
Weaving Speed	55.0		55.0	
Truck Speed	6.8		6.8	
Non-Peak Period				
Non-HOV Volume	136,369		136,369	
Weaving Volume	0		0	
Truck Volume	13,487		13,487	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	3,300		3,300	
Non-HOV Volume	81,170		81,170	
Weaving Volume	0		0	
Truck Volume	8,354		8,354	
HOV Speed	64.8		64.8	
Non-HOV Speed	3.6		5.0	
Weaving Speed	55.0		55.0	
Truck Speed	5.0		5.0	
Non-Peak Period				
Non-HOV Volume	173,060		173,060	
Weaving Volume	0		0	
Truck Volume	17,116		17,116	
Non-HOV Speed	64.7		64.7	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Build				
Year 1				
Peak Period				
HOV Volume	3,300		3,300	
Non-HOV Volume	63,261		63,261	
Weaving Volume	0		0	
Truck Volume	6,583		6,583	
HOV Speed	64.8		64.8	
Non-HOV Speed	6.8		6.8	
Weaving Speed	55.0		55.0	
Truck Speed	6.8		6.8	
Non-Peak Period				
Non-HOV Volume	136,369		136,369	
Weaving Volume	0		0	
Truck Volume	13,487		13,487	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	
Year 20				
Peak Period				
HOV Volume	3,300		3,300	
Non-HOV Volume	81,170		81,170	
Weaving Volume	0		0	
Truck Volume	8,354		8,354	
HOV Speed	64.8		64.8	
Non-HOV Speed	3.6		5.0	
Weaving Speed	55.0		55.0	
Truck Speed	5.0		5.0	
Non-Peak Period				
Non-HOV Volume	173,060		173,060	
Weaving Volume	0		0	
Truck Volume	17,116		17,116	
Non-HOV Speed	64.7		64.7	
Weaving Speed	55.0		55.0	
Truck Speed	55.0		55.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.004		0.004	
Injury Accidents	0.84		0.84	
PDO Accidents	2.35		2.35	
Total Accidents	3.194			
Hwy Safety or Weaving Improvement		0%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	1.0000	0.5000	0.5000	Off ramp widening reduces accident exposure
Injury Accidents	3.0000	1.5000	1.5000	Off ramp widening reduces accident exposure
PDO Accidents	3.7540	1.8800	1.8800	Off ramp widening reduces accident exposure
Build				
Fatal Accidents	0.002		0.002	
Injury Accidents	0.42		0.42	
PDO Accidents	1.18		1.18	
Total Accidents	1.599			

2C RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n) N

Aggregate Segment Length (estimate as VMT/total volume)

All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	2,589,675	2,589,675	
Non-HOV Trips	26,553,822	26,553,822	0
Truck Trips	2,402,780	2,402,780	0
Non-Peak Period			
Non-HOV Trips	64,707,072	64,707,072	0
Truck Trips	4,922,770	4,922,770	0
Total Trips	101,176,118	101,176,118	0
Year 20			
Peak Period			
HOV Trips	2,589,675	2,589,675	
Non-HOV Trips	34,071,040	34,071,040	0
Truck Trips	3,049,268	3,049,268	0
Non-Peak Period			
Non-HOV Trips	82,117,046	82,117,046	0
Truck Trips	6,247,282	6,247,282	0
Total Trips	128,074,311	128,074,311	0

District: 4

PROJECT: US 101/Woodside Road Interchange Improvement Project

EA:
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$118.0
Life-Cycle Benefits (mil. $)	$104.8
Net Present Value (mil. $)	-$13.2
Benefit / Cost Ratio:	0.9
Rate of Return on Investment:	2.9%
Payback Period:	15 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$0.0	$0.0	$0.0	$0.0
Veh. Op. Cost Savings	$0.0	$0.0	$0.0	$0.0
Accident Cost Savings	$95.4	$9.4	$104.8	$5.2
Emission Cost Savings	$0.0	$0.0	$0.0	$0.0
TOTAL BENEFITS	$95.4	$9.4	$104.8	$5.2

Person-Hours of Time Saved	0	0
CO_2 Emissions Saved (tons)	0	0
CO_2 Emissions Saved (mil. $)	$0.0	$0.0

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y (Default = Y)
2) Vehicle Operating Costs? (y/n)	Y (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y (Default = Y)

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

SAN MATEO COUNTY
US 101 MANAGED LANE PROJECT

For additional information, contact:
Jean Higaki
San Mateo City/County Association of Governments (SM C/CAG)
(650) 599-1462
jhigaki@smcgov.org

US 101 High Occupancy/ Express Lane Project from Santa Clara County Line to I-380

Agencies may use the following table B3 to identify by proposed project, or in summary for all proposed projects, changes to the built environment.

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type Or Mode	Change to Built Environment	Indicator/ Measure	Benefits or Performance Improvement at Project Completion
State Highway	New general purpose lane-miles.	Lane-Miles	30 lane-miles
	New HOV/HOT lane-miles.	Lane-Miles	46 lane-miles
	Lane-miles rehabilitated.	Lane-Miles	178 lane-miles
	New or upgrade bicycle lane/sidewalk miles.	Each	1 each (200 ft. pedestrian / bike overcrossing)
	Operational improvements.	Lane-Miles	26 lane miles of auxiliary lanes
	New or reconstructed interchanges.		
	New or reconstructed bridges.	Each	1 each (pedestrian / bike overcrossing)
Transit or Intercity Rail	Additional transit service miles.		
	Additional transit vehicles.		
	New rail track miles.		
	Rail crossing improvements.		
	Station improvements.		
Local streets and roads	New lane-miles.		
	Lane-miles rehabilitated.		
	New or upgrade bicycle lane/sidewalk miles.		
	Operational improvements.		
	New or reconstructed bridges.		

District: 4

PROJECT: US 101 Managed Lanes: I-380 to Whipple Ave (Northbound)

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	HOT Lane Addition	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	4	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	8	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		4	4
Number of HOV/HOT Lanes		0	1
HOV Restriction (2 or 3)		3	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	14.0	14.0
	Impacted Length	14.0	14.0

Average Daily Traffic			
	Current	127,000	
		No Build	Build
	Base (Year 1)	135,000	143,000
	Forecast (Year 20)	144,000	151,000
Average Hourly HOV/HOT Lane Traffic		0	1,650
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave			0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		45	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	1031	0.53
Fatal Accidents (Fat)	2	0.001
Injury Accidents (Inj)	295	0.15
Property Damage Only (PDO) Accidents	734	0.38

Statewide Basic Average Accident Rate	No Build	Build
Rate Group	H 60	H 61
Accident Rate (per million vehicle-miles)	1.19	0.89
Percent Fatal Accidents (Pct Fat)	0.4%	0.4%
Percent Injury Accidents (Pct Inj)	31.0%	31.0%

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		100%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Average Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		
	Peak (in minutes)		
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS					
	Project Support	R / W	Construction	Maint./ Op.	Rehab.			Constant Dollars	Present Value
Construction Period									
1	$100,203	$16,062						$116,264,840	$116,264,840
2			$126,135					126,135,154	117,883,321
3			$189,203					189,202,731	165,256,992
4			$63,068					63,067,577	51,481,929
5								0	0
6								0	0
7								0	0
8								0	0
Project Open									
1				$1,081				$1,080,620	$824,399
2				$1,081				1,080,620	770,467
3				$1,081				1,080,620	720,062
4				$1,081				1,080,620	672,956
5				$1,081				1,080,620	628,930
6				$1,081				1,080,620	587,785
7				$1,081				1,080,620	549,332
8				$1,081				1,080,620	513,395
9				$1,081				1,080,620	479,808
10				$1,081				1,080,620	448,419
11				$1,081	$5,403			6,483,717	2,514,497
12				$1,081				1,080,620	391,666
13				$1,081				1,080,620	366,043
14				$1,081				1,080,620	342,096
15				$1,081				1,080,620	319,716
16				$1,081				1,080,620	298,800
17				$1,081				1,080,620	279,253
18				$1,081				1,080,620	260,984
19				$1,081				1,080,620	243,910
20				$1,081				1,080,620	227,953
Total	$100,203	$16,062	$378,405	$21,612	$5,403	$0	$0	$521,685,791	$462,327,557

Present Value = Future Value (in Constant Dollars)
(1 + Real Discount Rate) ^ Year

2A

HIGHWAY SPEED AND VOLUME INPUTS

No Build

Year 1

Peak Period

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
HOV Volume	0		0	
Non-HOV Volume	74,693		74,693	
Weaving Volume	0		0	
Truck Volume	7,387		7,387	
HOV Speed	55.0		55.0	
Non-HOV Speed	19.1		19.1	
Weaving Speed	55.0		55.0	
Truck Speed	19.1		19.1	

Non-Peak Period

Non-HOV Volume	48,157		48,157	
Weaving Volume	0		0	
Truck Volume	4,763		4,763	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	

Year 20

Peak Period

HOV Volume	0		0	
Non-HOV Volume	79,672		79,672	
Weaving Volume	0		0	
Truck Volume	7,880		7,880	
HOV Speed	55.0		55.0	
Non-HOV Speed	11.6		11.6	
Weaving Speed	55.0		55.0	
Truck Speed	11.6		11.6	

Non-Peak Period

Non-HOV Volume	51,368		51,368	
Weaving Volume	0		0	
Truck Volume	5,080		5,080	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	

Build

Year 1

Peak Period

HOV Volume	13,200		13,200	
Non-HOV Volume	65,919		65,919	
Weaving Volume	0		0	
Truck Volume	7,825		7,825	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	35.6		35.6	
Weaving Speed	55.0		55.0	
Truck Speed	35.6		35.6	

Non-Peak Period

Non-HOV Volume	51,011		51,011	
Weaving Volume	0		0	
Truck Volume	5,045		5,045	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	

Year 20

Peak Period

HOV Volume	13,200		13,200	
Non-HOV Volume	70,345		70,345	
Weaving Volume	0		0	
Truck Volume	8,263		8,263	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	25.4		25.4	
Weaving Speed	55.0		55.0	
Truck Speed	25.4		25.4	

Non-Peak Period

Non-HOV Volume	53,865		53,865	
Weaving Volume	0		0	
Truck Volume	5,327		5,327	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.001		0.001	
Injury Accidents	0.15		0.15	
PDO Accidents	0.38		0.38	
Total Accidents	0.531			
Hwy Safety or Weaving Improvement		0%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.2064		0.2064	
Injury Accidents	0.4078		0.4078	
PDO Accidents	0.4665		0.4665	
Build				
Fatal Accidents	0.001		0.001	
Injury Accidents	0.11		0.11	
PDO Accidents	0.29		0.29	
Total Accidents	0.398			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	0	10,358,700	
Non-HOV Trips	31,352,303	27,669,517	7,145,723
Truck Trips	2,696,328	2,856,110	(310,026)
Non-Peak Period			
Non-HOV Trips	22,850,591	24,204,701	1,354,109
Truck Trips	1,738,422	1,841,440	103,018
Total Trips	58,637,644	66,930,468	8,292,823
Year 20			
Peak Period			
HOV Trips	0	10,358,700	
Non-HOV Trips	33,442,456	29,527,431	6,827,294
Truck Trips	2,876,083	3,015,893	(243,810)
Non-Peak Period			
Non-HOV Trips	24,373,964	25,558,810	1,184,845
Truck Trips	1,854,317	1,944,457	90,140
Total Trips	62,546,820	70,405,291	7,858,470

District: 4

PROJECT: US 101 Managed Lanes: I-380 to Whipple Ave (Northbound)

EA:
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$462.3
Life-Cycle Benefits (mil. $)	$1,927.7
Net Present Value (mil. $)	$1,465.4
Benefit / Cost Ratio:	4.2
Rate of Return on Investment:	25.6%
Payback Period:	3 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$1,427.2	$336.5	$1,763.8	$88.2
Veh. Op. Cost Savings	$87.4	$3.8	$91.2	$4.6
Accident Cost Savings	$45.7	$4.5	$50.2	$2.5
Emission Cost Savings	$13.6	$8.9	$22.5	$1.1
TOTAL BENEFITS	$1,574.0	$353.8	$1,927.7	$96.4
Person-Hours of Time Saved			295,607,482	14,780,374
CO_2 Emissions Saved (tons)			2,024,785	101,239
CO_2 Emissions Saved (mil. $)			$11.7	$0.6

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y (Default = Y)
2) Vehicle Operating Costs? (y/n)	Y (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y (Default = Y)

District: 4

PROJECT: US 101 Managed Lanes: I-380 to Whipple Ave (Southbound)

EA:

PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	HOT Lane Addition	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	4	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	8	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		4	4
Number of HOV/HOT Lanes		0	1
HOV Restriction (2 or 3)		3	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	14.2	14.2
	Impacted Length	14.2	14.2

Average Daily Traffic			
	Current	122,000	
		No Build	Build
	Base (Year 1)	124,000	133,000
	Forecast (Year 20)	133,000	147,000
Average Hourly HOV/HOT Lane Traffic		0	1,650
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave			0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		45	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		3.15	3.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	1066	0.56
Fatal Accidents (Fat)	7	0.004
Injury Accidents (Inj)	356	0.19
Property Damage Only (PDO) Accidents	703	0.37

Statewide Basic Average Accident Rate	No Build	Build
Rate Group	H 60	H 61
Accident Rate (per million vehicle-miles)	1.20	0.90
Percent Fatal Accidents (Pct Fat)	0.4%	0.4%
Percent Injury Accidents (Pct Inj)	31.5%	31.5%

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		61%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Average Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		
	Peak (in minutes)		
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS					
	Project Support	R / W	Construction	Maint./ Op.	Rehab.			Constant Dollars	Present Value
Construction Period									
1				<-- Must enter a cost -->				$0	$0
2				<-- Must enter a cost -->				0	0
3				<-- Must enter a cost -->				0	0
4				<-- Must enter a cost -->				0	0
5								0	0
6								0	0
7								0	0
8								0	0
Project Open									
1								$0	$0
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
9								0	0
10								0	0
11								0	0
12								0	0
13								0	0
14								0	0
15								0	0
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0

$$\text{Present Value} = \frac{\text{Future Value (in Constant Dollars)}}{(1 + \text{Real Discount Rate})^{\text{Year}}}$$

2A

HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	68,607		68,607	
Weaving Volume	0		0	
Truck Volume	6,785		6,785	
HOV Speed	55.0		55.0	
Non-HOV Speed	32.0		32.0	
Weaving Speed	55.0		55.0	
Truck Speed	32.0		32.0	
Non-Peak Period				
Non-HOV Volume	44,233		44,233	
Weaving Volume	0		0	
Truck Volume	4,375		4,375	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Year 20				
Peak Period				
HOV Volume	0		0	
Non-HOV Volume	73,586		73,586	
Weaving Volume	0		0	
Truck Volume	7,278		7,278	
HOV Speed	55.0		55.0	
Non-HOV Speed	21.1		21.1	
Weaving Speed	55.0		55.0	
Truck Speed	21.1		21.1	
Non-Peak Period				
Non-HOV Volume	47,444		47,444	
Weaving Volume	0		0	
Truck Volume	4,692		4,692	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Build				
Year 1				
Peak Period				
HOV Volume	13,200		13,200	
Non-HOV Volume	60,386		60,386	
Weaving Volume	0		0	
Truck Volume	7,278		7,278	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	48.2		48.2	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Non-Peak Period				
Non-HOV Volume	47,444		47,444	
Weaving Volume	0		0	
Truck Volume	4,692		4,692	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Year 20				
Peak Period				
HOV Volume	13,200		13,200	
Non-HOV Volume	68,132		68,132	
Weaving Volume	0		0	
Truck Volume	8,044		8,044	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	30.4		30.4	
Weaving Speed	55.0		55.0	
Truck Speed	30.4		30.4	
Non-Peak Period				
Non-HOV Volume	52,438		52,438	
Weaving Volume	0		0	
Truck Volume	5,186		5,186	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.004		0.004	
Injury Accidents	0.19		0.19	
PDO Accidents	0.37		0.37	
Total Accidents	0.564			
Hwy Safety or Weaving Improvement		0%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.8036		0.8036	
Injury Accidents	0.5027		0.5027	
PDO Accidents	0.4540		0.4540	
Build				
Fatal Accidents	0.003		0.003	
Injury Accidents	0.14		0.14	
PDO Accidents	0.28		0.28	
Total Accidents	0.423			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	0	15,176,700	
Non-HOV Trips	28,797,671	25,347,124	12,560,230
Truck Trips	2,476,627	2,656,382	(654,321)
Non-Peak Period			
Non-HOV Trips	20,988,691	22,512,064	1,523,373
Truck Trips	1,596,773	1,712,668	115,895
Total Trips	53,859,762	67,404,938	13,545,176
Year 20			
Peak Period			
HOV Trips	0	15,176,700	
Non-HOV Trips	30,887,824	28,598,474	14,998,925
Truck Trips	2,656,382	2,936,002	(1,831,955)
Non-Peak Period			
Non-HOV Trips	22,512,064	24,881,755	2,369,691
Truck Trips	1,712,668	1,892,948	180,281
Total Trips	57,768,938	73,485,879	15,716,941

District: 4

PROJECT: US 101 Managed Lanes: I-380 to Whipple Ave (Southbound)

EA:
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$0.0
Life-Cycle Benefits (mil. $)	$484.5
Net Present Value (mil. $)	$484.5
Benefit / Cost Ratio:	N/A
Rate of Return on Investment:	#NUM!
Payback Period:	N/A

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$479.7	$110.5	$590.3	$29.5
Veh. Op. Cost Savings	-$138.6	-$49.9	-$188.4	-$9.4
Accident Cost Savings	$74.6	$7.4	$82.0	$4.1
Emission Cost Savings	$2.2	-$1.6	$0.7	$0.0
TOTAL BENEFITS	$418.0	$66.5	$484.5	$24.2

Person-Hours of Time Saved	103,047,305	5,152,365
CO_2 Emissions Saved (tons)	252,058	12,603
CO_2 Emissions Saved (mil. $)	$1.3	$0.1

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y (Default = Y)
2) Vehicle Operating Costs? (y/n)	Y (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y (Default = Y)

District: 4

PROJECT: US 101 Managed Lanes: Whipple Ave to SCL Express Lanes - Northbound

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	HOT Lane Conversion	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	4	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	8	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		3	3
Number of HOV/HOT Lanes		1	1
HOV Restriction (2 or 3)		2	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	7.9	7.9
	Impacted Length	7.9	7.9

Average Daily Traffic			
	Current	117,000	
		No Build	Build
	Base (Year 1)	123,000	128,000
	Forecast (Year 20)	136,000	139,000
Average Hourly HOV/HOT Lane Traffic		1,200	1,650
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave			0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		45	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	679	0.67
Fatal Accidents (Fat)	2	0.002
Injury Accidents (Inj)	237	0.23
Property Damage Only (PDO) Accidents	440	0.43

Statewide Basic Average Accident Rate	No Build	Build
Rate Group	H 60	H 60
Accident Rate (per million vehicle-miles)	1.14	0.95
Percent Fatal Accidents (Pct Fat)	0.4%	0.0%
Percent Injury Accidents (Pct Inj)	31.5%	27.4%

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		61%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Average Vehicles/Train (if rail project)			

Reduction in Transit Accidents		
Percent Reduction (if safety project)		

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		
	Peak (in minutes)		
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS					
	Project Support	R / W	Construction	Maint./ Op.	Rehab.			Constant Dollars	Present Value
Construction Period									
1				<-- Must enter a cost -->				$0	$0
2				<-- Must enter a cost -->				0	0
3				<-- Must enter a cost -->				0	0
4				<-- Must enter a cost -->				0	0
5								0	0
6								0	0
7								0	0
8								0	0
Project Open									
1								$0	$0
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
9								0	0
10								0	0
11								0	0
12								0	0
13								0	0
14								0	0
15								0	0
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0

$$\text{Present Value} = \frac{\text{Future Value (in Constant Dollars)}}{(1 + \text{Real Discount Rate})^{\text{Year}}}$$

2A

HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	9,600		9,600	
Non-HOV Volume	58,453		58,453	
Weaving Volume	0		0	
Truck Volume	6,731		6,731	
HOV Speed	61.6	45.0	45.0	
Non-HOV Speed	12.3		12.3	
Weaving Speed	55.0		55.0	
Truck Speed	12.3		12.3	
Non-Peak Period				
Non-HOV Volume	43,877		43,877	
Weaving Volume	0		0	
Truck Volume	4,339		4,339	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Year 20				
Peak Period				
HOV Volume	9,600		9,600	
Non-HOV Volume	65,646		65,646	
Weaving Volume	0		0	
Truck Volume	7,442		7,442	
HOV Speed	61.6	45.0	45.0	
Non-HOV Speed	4.5		5.0	
Weaving Speed	55.0		55.0	
Truck Speed	5.0		5.0	
Non-Peak Period				
Non-HOV Volume	48,514		48,514	
Weaving Volume	0		0	
Truck Volume	4,798		4,798	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Build				
Year 1				
Peak Period				
HOV Volume	13,200		13,200	
Non-HOV Volume	57,620		57,620	
Weaving Volume	0		0	
Truck Volume	7,004		7,004	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	13.2		13.2	
Weaving Speed	55.0		55.0	
Truck Speed	13.2		13.2	
Non-Peak Period				
Non-HOV Volume	45,660		45,660	
Weaving Volume	0		0	
Truck Volume	4,516		4,516	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Year 20				
Peak Period				
HOV Volume	13,200		13,200	
Non-HOV Volume	63,706		63,706	
Weaving Volume	0		0	
Truck Volume	7,606		7,606	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	5.7		5.7	
Weaving Speed	55.0		55.0	
Truck Speed	5.7		5.7	
Non-Peak Period				
Non-HOV Volume	49,584		49,584	
Weaving Volume	0		0	
Truck Volume	4,904		4,904	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.002		0.002	
Injury Accidents	0.23		0.23	
PDO Accidents	0.43		0.43	
Total Accidents	0.662			
Hwy Safety or Weaving Improvement		0%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.4177		0.4177	
Injury Accidents	0.6397		0.6397	
PDO Accidents	0.5544		0.5544	
Build				
Fatal Accidents	0.000		0.000	
Injury Accidents	0.17		0.17	
PDO Accidents	0.38		0.38	
Total Accidents	0.549			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	7,533,600	10,358,700	
Non-HOV Trips	24,535,831	24,185,928	3,603,521
Truck Trips	2,456,654	2,556,518	(1,028,460)
Non-Peak Period			
Non-HOV Trips	20,819,428	21,665,746	846,318
Truck Trips	1,583,896	1,648,282	64,386
Total Trips	56,929,409	60,415,174	3,485,765
Year 20			
Peak Period			
HOV Trips	7,533,600	10,358,700	
Non-HOV Trips	27,554,942	26,740,560	2,235,083
Truck Trips	2,716,301	2,776,219	(164,447)
Non-Peak Period			
Non-HOV Trips	23,019,855	23,527,646	507,791
Truck Trips	1,751,299	1,789,931	38,632
Total Trips	62,575,997	65,193,056	2,617,059

District: 4

PROJECT: US 101 Managed Lanes: Whipple Ave to SCL Express Lanes - Northbound

EA:
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$0.0
Life-Cycle Benefits (mil. $)	$235.2
Net Present Value (mil. $)	$235.2
Benefit / Cost Ratio:	N/A
Rate of Return on Investment:	#NUM!
Payback Period:	N/A

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$83.8	$85.5	$169.4	$8.5
Veh. Op. Cost Savings	-$24.5	-$8.9	-$33.5	-$1.7
Accident Cost Savings	$89.2	$8.8	$98.0	$4.9
Emission Cost Savings	$1.0	$0.3	$1.3	$0.1
TOTAL BENEFITS	$149.4	$85.8	$235.2	$11.8

Person-Hours of Time Saved	50,172,979	2,508,649
CO_2 Emissions Saved (tons)	102,603	5,130
CO_2 Emissions Saved (mil. $)	$0.6	$0.0

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y (Default = Y)
2) Vehicle Operating Costs? (y/n)	Y (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y (Default = Y)

District: 4

PROJECT: US 101 Managed Lanes: Whipple Ave to SCL Express Lanes: Southbound

EA:
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	HOT Lane Conversion	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	4	years
One- or Two-Way Data	1	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	8	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		3	3
Number of HOV/HOT Lanes		1	1
HOV Restriction (2 or 3)		2	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	7.8	7.8
	Impacted Length	7.8	7.8

Average Daily Traffic			
	Current	110,000	
		No Build	Build
	Base (Year 1)	112,000	116,000
	Forecast (Year 20)	122,000	130,000
Average Hourly HOV/HOT Lane Traffic		1,200	1,650
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave			0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed		45	

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		2.15	2.15

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)	959	1.02
Fatal Accidents (Fat)	2	0.002
Injury Accidents (Inj)	262	0.28
Property Damage Only (PDO) Accidents	695	0.74

Statewide Basic Average Accident Rate	No Build	Build
Rate Group	H 60	H 60
Accident Rate (per million vehicle-miles)	1.17	0.97
Percent Fatal Accidents (Pct Fat)	0.4%	0.0%
Percent Injury Accidents (Pct Inj)	31.5%	27.4%

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		61%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Average Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows. Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Year	DIRECT PROJECT COSTS					Mitigation	Transit Agency Cost Savings	TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS					
	Project Support	R / W	Construction	Maint./ Op.	Rehab.			Constant Dollars	Present Value
Construction Period									
1				<-- Must enter a cost -->				$0	$0
2				<-- Must enter a cost -->				0	0
3				<-- Must enter a cost -->				0	0
4				<-- Must enter a cost -->				0	0
5								0	0
6								0	0
7								0	0
8								0	0
Project Open									
1								$0	$0
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
9								0	0
10								0	0
11								0	0
12								0	0
13								0	0
14								0	0
15								0	0
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0

$$\text{Present Value} = \frac{\text{Future Value (in Constant Dollars)}}{(1 + \text{Real Discount Rate})^{\text{Year}}}$$

2A

HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	9,600		9,600	
Non-HOV Volume	52,367		52,367	
Weaving Volume	0		0	
Truck Volume	6,129		6,129	
HOV Speed	61.6	45.0	45.0	
Non-HOV Speed	26.6		26.6	
Weaving Speed	55.0		55.0	
Truck Speed	26.6		26.6	
Non-Peak Period				
Non-HOV Volume	39,953		39,953	
Weaving Volume	0		0	
Truck Volume	3,951		3,951	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Year 20				
Peak Period				
HOV Volume	9,600		9,600	
Non-HOV Volume	57,900		57,900	
Weaving Volume	0		0	
Truck Volume	6,676		6,676	
HOV Speed	61.6	45.0	45.0	
Non-HOV Speed	13.3		13.3	
Weaving Speed	55.0		55.0	
Truck Speed	13.3		13.3	
Non-Peak Period				
Non-HOV Volume	43,520		43,520	
Weaving Volume	0		0	
Truck Volume	4,304		4,304	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Build				
Year 1				
Peak Period				
HOV Volume	13,200		13,200	
Non-HOV Volume	50,980		50,980	
Weaving Volume	0		0	
Truck Volume	6,348		6,348	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	29.8		29.8	
Weaving Speed	55.0		55.0	
Truck Speed	29.8		29.8	
Non-Peak Period				
Non-HOV Volume	41,380		41,380	
Weaving Volume	0		0	
Truck Volume	4,092		4,092	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	
Year 20				
Peak Period				
HOV Volume	13,200		13,200	
Non-HOV Volume	58,726		58,726	
Weaving Volume	0		0	
Truck Volume	7,114		7,114	
HOV Speed	38.2	45.0	45.0	
Non-HOV Speed	11.4		11.4	
Weaving Speed	55.0		55.0	
Truck Speed	11.4		11.4	
Non-Peak Period				
Non-HOV Volume	46,374		46,374	
Weaving Volume	0		0	
Truck Volume	4,586		4,586	
Non-HOV Speed	65.0	45.0	45.0	
Weaving Speed	55.0		55.0	
Truck Speed	45.0		45.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B

HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.002		0.002	
Injury Accidents	0.28		0.28	
PDO Accidents	0.74		0.74	
Total Accidents	1.022			
Hwy Safety or Weaving Improvement		0%	collision reduction factor (per HSIP Guidelines)	
Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	0.4070		0.4070	
Injury Accidents	0.7588		0.7588	
PDO Accidents	0.9296		0.9296	
Build				
Fatal Accidents	0.000		0.000	
Injury Accidents	0.20		0.20	
PDO Accidents	0.65		0.65	
Total Accidents	0.856			

2C

RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n)	N	
Aggregate Segment Length (estimate as VMT/total volume)		
All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D

ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	7,533,600	10,358,700	
Non-HOV Trips	21,981,199	21,399,056	2,692,335
Truck Trips	2,236,954	2,316,845	(369,486)
Non-Peak Period			
Non-HOV Trips	18,957,528	19,634,582	677,055
Truck Trips	1,442,246	1,493,755	51,509
Total Trips	52,151,527	55,202,939	3,051,412
Year 20			
Peak Period			
HOV Trips	7,533,600	10,358,700	
Non-HOV Trips	24,303,592	24,650,406	2,280,868
Truck Trips	2,436,682	2,596,464	1,050,829
Non-Peak Period			
Non-HOV Trips	20,650,164	22,004,273	1,354,109
Truck Trips	1,571,018	1,674,036	103,018
Total Trips	56,495,056	61,283,880	4,788,823

District: 4

PROJECT: US 101 Managed Lanes: Whipple Ave to SCL Express Lanes: Southbound

EA:
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$0.0
Life-Cycle Benefits (mil. $)	-$85.3
Net Present Value (mil. $)	-$85.3
Benefit / Cost Ratio:	N/A
Rate of Return on Investment:	21.3%
Payback Period:	N/A

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	-$81.2	-$28.8	-$110.0	-$5.5
Veh. Op. Cost Savings	-$54.1	-$13.9	-$68.0	-$3.4
Accident Cost Savings	$84.7	$8.4	$93.1	$4.7
Emission Cost Savings	-$0.2	-$0.2	-$0.4	-$0.0
TOTAL BENEFITS	-$50.8	-$34.5	-$85.3	-$4.3
Person-Hours of Time Saved			-16,137,444	-806,872
CO_2 Emissions Saved (tons)			-83,380	-4,169
CO_2 Emissions Saved (mil. $)			-$0.3	-$0.0

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y (Default = Y)
2) Vehicle Operating Costs? (y/n)	Y (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y (Default = Y)

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

SANTA CLARA COUNTY
US 101 EXPRESS LANES - PHASE 3

For additional information, contact:
Marcella Rensi
Santa Clara Valley Transportation Authority (VTA)
(408) 321-5717
marcella.rensi@vta.org

District: 4

PROJECT: VTA Phase 3 Express Lanes on US 101 North

EA: 1K551
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	HOT Lane Conversion	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	2	years
One- or Two-Way Data	2	enter 1 or 2
Length of Peak Period(s) (up to 24 hrs)	Current: 8	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

		No Build	Build
Highway Design			
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		6	6
Number of HOV/HOT Lanes		2	2
HOV Restriction (2 or 3)		2	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	3.9	3.9
	Impacted Length	3.9	3.9

Average Daily Traffic			
	Current	189,000	
		No Build	Build
	Base (Year 1)	190,857	190,857
	Forecast (Year 20)	208,500	208,500
Average Hourly HOV/HOT Lane Traffic		2,096	2,583
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		0.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed			

	Peak	Non-Peak
On-Ramp Volume		
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

	Year 1	Year 20
Queue Formation (if queuing or grade crossing project)		
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

		No Build	Build
Pavement Condition (if pavement project)			
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

		No Build	Build
Average Vehicle Occupancy (AVO)			
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		2.24	1.88

1C HIGHWAY ACCIDENT DATA

	Count (No.)	Rate
Actual 3-Year Accident Data (from Table B)		
Total Accidents (Tot)		0.85
Fatal Accidents (Fat)		0.006
Injury Accidents (Inj)		0.29
Property Damage Only (PDO) Accidents		0.55

	No Build	Build
Statewide Basic Average Accident Rate		
Rate Group		
Accident Rate (per million vehicle-miles)		
Percent Fatal Accidents (Pct Fat)		
Percent Injury Accidents (Pct Inj)		

1D RAIL AND TRANSIT DATA

		No Build	Build
Annual Person-Trips			
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		61%	
Percent New Trips from Parallel Highway			100%

		No Build	Build
Annual Vehicle-Miles			
	Base (Year 1)		
	Forecast (Year 20)		
Average Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

		No Build	Build
Average Transit Travel Time			
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

	Current	Year 1	Year 20
Highway Grade Crossing			
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

	No Build	Build
Transit Agency Costs (if TMS project)		
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows. Project costs (including maintenance and operating costs) should be net of costs without project.

1E PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
	DIRECT PROJECT COSTS							TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS			Transit Agency		
Year	Project Support	R / W	Construction	Maint./ Op.	Rehab.	Mitigation	Cost Savings	Constant Dollars	Present Value
Construction Period									
1	$8,850	$0	$0					$8,850,000	$8,850,000
2	13,550	368	33,550					47,468,000	45,642,308
3	0	0	0					0	0
4	0	0	0					0	0
5	0	0	0					0	0
6								0	0
7								0	0
8								0	0
Project Open									
1								$0	$0
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
9								0	0
10								0	0
11								0	0
12								0	0
13								0	0
14								0	0
15								0	0
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
Total	$22,400	$368	$33,550	$0	$0	$0	$0	$56,318,000	$54,492,308

Present Value = Future Value (in Constant Dollars) / (1 + Real Discount Rate) ^ Year

2A HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	16,768		16,768	
Non-HOV Volume	88,829		88,829	
Weaving Volume	0		0	
Truck Volume	10,444		10,444	
HOV Speed	63.8		63.8	
Non-HOV Speed	50.8		50.8	
Weaving Speed	55.0		55.0	
Truck Speed	50.8		50.8	
Non-Peak Period				
Non-HOV Volume	68,083		68,083	
Weaving Volume	0		0	
Truck Volume	6,733		6,733	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Year 20				
Peak Period				
HOV Volume	16,768		16,768	
Non-HOV Volume	98,591		98,591	
Weaving Volume	0		0	
Truck Volume	11,409		11,409	
HOV Speed	63.8		63.8	
Non-HOV Speed	36.5		36.5	
Weaving Speed	55.0		55.0	
Truck Speed	36.5		36.5	
Non-Peak Period				
Non-HOV Volume	74,376		74,376	
Weaving Volume	0		0	
Truck Volume	7,356		7,356	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Build				
Year 1				
Peak Period				
HOV Volume	20,664		20,664	
Non-HOV Volume	84,933		84,933	
Weaving Volume	0		0	
Truck Volume	10,444		10,444	
HOV Speed	59.1		59.1	
Non-HOV Speed	54.7		54.7	
Weaving Speed	55.0		55.0	
Truck Speed	54.7		54.7	
Non-Peak Period				
Non-HOV Volume	68,083		68,083	
Weaving Volume	0		0	
Truck Volume	6,733		6,733	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Year 20				
Peak Period				
HOV Volume	20,664		20,664	
Non-HOV Volume	94,695		94,695	
Weaving Volume	0		0	
Truck Volume	11,409		11,409	
HOV Speed	59.1		59.1	
Non-HOV Speed	42.1		42.1	
Weaving Speed	55.0		55.0	
Truck Speed	42.1		42.1	
Non-Peak Period				
Non-HOV Volume	74,376		74,376	
Weaving Volume	0		0	
Truck Volume	7,356		7,356	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.29		0.29	
PDO Accidents	0.55		0.55	
Total Accidents	0.846			

Hwy Safety or Weaving Improvement 0% collision reduction factor (per HSIP Guidelines)

Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	1.0000		1.0000	
Injury Accidents	1.0000		1.0000	
PDO Accidents	1.0000		1.0000	
Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.29		0.29	
PDO Accidents	0.55		0.55	
Total Accidents	0.846			

2C RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n) N

Aggregate Segment Length (estimate as VMT/total volume)

All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	13,709,517	14,179,637	
Non-HOV Trips	37,286,157	35,650,811	(1,165,226)
Truck Trips	3,811,952	3,811,952	0
Non-Peak Period			
Non-HOV Trips	32,305,175	32,305,175	0
Truck Trips	2,457,706	2,457,706	0
Total Trips	89,570,506	88,405,280	(1,165,226)
Year 20			
Peak Period			
HOV Trips	13,709,517	14,179,637	
Non-HOV Trips	41,383,522	39,748,176	(1,165,226)
Truck Trips	4,164,329	4,164,329	0
Non-Peak Period			
Non-HOV Trips	35,291,469	35,291,469	0
Truck Trips	2,684,896	2,684,896	0
Total Trips	97,233,733	96,068,507	(1,165,226)

District: 4

PROJECT: VTA Phase 3 Express Lanes on US 101 North

EA: 1K551
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$54.5
Life-Cycle Benefits (mil. $)	$329.5
Net Present Value (mil. $)	$275.0
Benefit / Cost Ratio:	6.0
Rate of Return on Investment:	31.2%
Payback Period:	4 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$267.7	$52.0	$319.7	$16.0
Veh. Op. Cost Savings	$11.9	-$2.1	$9.8	$0.5
Accident Cost Savings	-$0.0	$0.0	-$0.0	-$0.0
Emission Cost Savings	$1.6	-$1.6	-$0.0	-$0.0
TOTAL BENEFITS	$281.2	$48.3	$329.5	$16.5

Person-Hours of Time Saved	33,545,828	1,677,291
CO_2 Emissions Saved (tons)	31,321	1,566
CO_2 Emissions Saved (mil. $)	$0.8	$0.0

Should benefit-cost results include:

1) Induced Travel? (y/n)	y (Default = Y)
2) Vehicle Operating Costs? (y/n)	Y (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y (Default = Y)

US-101 Phase 3

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type Or Mode	Change to Built Environment	Indicator/ Measure	Benefits or Performance Improvement at Project
State Highway	New general purpose lane-miles.	N/A	
	New HOV/HOT lane-miles.	Lane miles	19.3 lane-miles
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	N/A	
	Operational improvements.	N/A	
	New or reconstructed interchanges.	N/A	
	New or reconstructed bridges.	N/A	
Transit or Intercity Rail	Additional transit service miles.	N/A	
	Additional transit vehicles.	N/A	
	New rail track miles.	N/A	
	Rail crossing improvements.	N/A	
	Station improvements.	N/A	
Local streets and roads	New lane-miles.	N/A	
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	N/A	
	Operational improvements.	N/A	
	New or reconstructed bridges.	N/A	

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

SANTA CLARA COUNTY
US 101 EXPRESS LANES - PHASE 4

For additional information, contact:
Marcella Rensi
Santa Clara Valley Transportation Authority (VTA)
(408) 321-5717
marcella.rensi@vta.org

District: 4

PROJECT: VTA Phase 4 Express Lanes on US 101 and SR 85

EA: 1K552
PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	HOT Lane Conversion	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	3	years
One- or Two-Way Data	2	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	8	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		4	4
Number of HOV/HOT Lanes		2	2
HOV Restriction (2 or 3)		2	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	6.0	6.0
	Impacted Length	6.0	6.0

Average Daily Traffic			
	Current	126,900	
		No Build	Build
	Base (Year 1)	129,014	129,014
	Forecast (Year 20)	142,400	142,400
Average Hourly HOV/HOT Lane Traffic		1,208	1,509
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		0.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed			

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		2.24	1.88

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)		0.85
Fatal Accidents (Fat)		0.006
Injury Accidents (Inj)		0.29
Property Damage Only (PDO) Accidents		0.55

Statewide Basic Average Accident Rate	No Build	Build
Rate Group		
Accident Rate (per million vehicle-miles)		
Percent Fatal Accidents (Pct Fat)		
Percent Injury Accidents (Pct Inj)		

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		61%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Average Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
	DIRECT PROJECT COSTS							TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS					
Year	Project Support	R / W	Construction	Maint./ Op.	Rehab.	Mitigation	Transit Agency Cost Savings	Constant Dollars	Present Value
Construction Period									
1	$2,750	$50	$0					$2,800,000	$2,800,000
2	8,600	600	0					9,200,000	8,846,154
3	0	0	29,200					29,200,000	26,997,041
4	0	0	0					0	0
5	0	0	0					0	0
6								0	0
7								0	0
8								0	0
Project Open									
1								$0	$0
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
9								0	0
10								0	0
11								0	0
12								0	0
13								0	0
14								0	0
15								0	0
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
Total	$11,350	$650	$29,200	$0	$0	$0	$0	$41,200,000	$38,643,195

Present Value = Future Value (in Constant Dollars) / (1 + Real Discount Rate) ^ Year

2A HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	9,664		9,664	
Non-HOV Volume	61,717		61,717	
Weaving Volume	0		0	
Truck Volume	7,060		7,060	
HOV Speed	65.0		65.0	
Non-HOV Speed	46.1		46.1	
Weaving Speed	55.0		55.0	
Truck Speed	46.1		46.1	
Non-Peak Period				
Non-HOV Volume	46,022		46,022	
Weaving Volume	0		0	
Truck Volume	4,552		4,552	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Year 20				
Peak Period				
HOV Volume	9,664		9,664	
Non-HOV Volume	69,123		69,123	
Weaving Volume	0		0	
Truck Volume	7,792		7,792	
HOV Speed	65.0		65.0	
Non-HOV Speed	28.8		28.8	
Weaving Speed	55.0		55.0	
Truck Speed	28.8		28.8	
Non-Peak Period				
Non-HOV Volume	50,797		50,797	
Weaving Volume	0		0	
Truck Volume	5,024		5,024	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Build				
Year 1				
Peak Period				
HOV Volume	12,072		12,072	
Non-HOV Volume	59,309		59,309	
Weaving Volume	0		0	
Truck Volume	7,060		7,060	
HOV Speed	64.9		64.9	
Non-HOV Speed	50.5		50.5	
Weaving Speed	55.0		55.0	
Truck Speed	50.5		50.5	
Non-Peak Period				
Non-HOV Volume	46,022		46,022	
Weaving Volume	0		0	
Truck Volume	4,552		4,552	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Year 20				
Peak Period				
HOV Volume	12,072		12,072	
Non-HOV Volume	66,715		66,715	
Weaving Volume	0		0	
Truck Volume	7,792		7,792	
HOV Speed	64.9		64.9	
Non-HOV Speed	34.0		34.0	
Weaving Speed	55.0		55.0	
Truck Speed	34.0		34.0	
Non-Peak Period				
Non-HOV Volume	50,797		50,797	
Weaving Volume	0		0	
Truck Volume	5,024		5,024	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.29		0.29	
PDO Accidents	0.55		0.55	
Total Accidents	0.846			

Hwy Safety or Weaving Improvement 0% collision reduction factor (per HSIP Guidelines)

Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	1.0000		1.0000	
Injury Accidents	1.0000		1.0000	
PDO Accidents	1.0000		1.0000	
Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.29		0.29	
PDO Accidents	0.55		0.55	
Total Accidents	0.846			

2C RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n) N

Aggregate Segment Length (estimate as VMT/total volume)

All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	7,901,286	8,283,806	
Non-HOV Trips	25,905,570	24,894,812	(628,238)
Truck Trips	2,576,764	2,576,764	0
Non-Peak Period			
Non-HOV Trips	21,837,318	21,837,318	0
Truck Trips	1,661,334	1,661,334	0
Total Trips	59,882,272	59,254,034	(628,238)
Year 20			
Peak Period			
HOV Trips	7,901,286	8,283,806	
Non-HOV Trips	29,014,409	28,003,651	(628,238)
Truck Trips	2,844,127	2,844,127	0
Non-Peak Period			
Non-HOV Trips	24,103,142	24,103,142	0
Truck Trips	1,833,713	1,833,713	0
Total Trips	65,696,678	65,068,440	(628,238)

District: 4

PROJECT: VTA Phase 4 Express Lanes on US 101 and SR 85

EA: 1K552
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$38.6
Life-Cycle Benefits (mil. $)	$303.1
Net Present Value (mil. $)	$264.5
Benefit / Cost Ratio:	7.8
Rate of Return on Investment:	31.6%
Payback Period:	4 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$241.9	$43.7	$285.7	$14.3
Veh. Op. Cost Savings	$17.5	-$1.5	$15.9	$0.8
Accident Cost Savings	$0.0	$0.0	$0.0	$0.0
Emission Cost Savings	$2.6	-$1.1	$1.5	$0.1
TOTAL BENEFITS	$262.0	$41.1	$303.1	$15.2

Person-Hours of Time Saved	31,777,615	1,588,881
CO_2 Emissions Saved (tons)	65,090	3,255
CO_2 Emissions Saved (mil. $)	$1.8	$0.1

Should benefit-cost results include:

1) Induced Travel? (y/n)	y (Default = Y)
2) Vehicle Operating Costs? (y/n)	Y (Default = Y)
3) Accident Costs? (y/n)	Y (Default = Y)
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y (Default = Y)

US-101 Phase 4

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type Or Mode	Change to Built Environment	Indicator/ Measure	Benefits or Performance Improvement at Project
State Highway	New general purpose lane-miles.	N/A	
	New HOV/HOT lane-miles.	Lane miles	12.5 lane miles
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	N/A	
	Operational improvements.	N/A	
	New or reconstructed interchanges.	N/A	
	New or reconstructed bridges.	N/A	
Transit or Intercity Rail	Additional transit service miles.	N/A	
	Additional transit vehicles.	N/A	
	New rail track miles.	N/A	
	Rail crossing improvements.	N/A	
	Station improvements.	N/A	
Local streets and roads	New lane-miles.	N/A	
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	N/A	
	Operational improvements.	N/A	
	New or reconstructed bridges.	N/A	

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

PROJECT-LEVEL PERFORMANCE EVALUATION

SANTA CLARA COUNTY
US 101 EXPRESS LANES - PHASE 5

For additional information, contact:
Marcella Rensi
Santa Clara Valley Transportation Authority (VTA)
(408) 321-5717
marcella.rensi@vta.org

District: 4

PROJECT: VTA Phase 5 Express Lanes on US 101

EA: 1K553

PPNO:

1A PROJECT DATA

Type of Project		
Select project type from list	HOT Lane Conversion	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)	2	
Length of Construction Period	4	years
One- or Two-Way Data	2	enter 1 or 2
	Current	
Length of Peak Period(s) (up to 24 hrs)	8	hours

1B HIGHWAY DESIGN AND TRAFFIC DATA

Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		6	6
Number of HOV/HOT Lanes		2	2
HOV Restriction (2 or 3)		2	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed		65	65
Ramp Design Speed (if aux. lane/off-ramp proj.)		35	35
Length (in miles)	Highway Segment	5.5	5.5
	Impacted Length	5.5	5.5

Average Daily Traffic			
	Current	203,500	
		No Build	Build
	Base (Year 1)	206,700	206,700
	Forecast (Year 20)	221,900	221,900
Average Hourly HOV/HOT Lane Traffic		1,797	2,347
Percent of Induced Trips in HOV (if HOT or 2-to-3 conv.)			100%
Percent Traffic in Weave		0.0%	0.0%
Percent Trucks (include RVs, if applicable)		9%	9%
Truck Speed			

On-Ramp Volume	Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ramp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)		

Queue Formation (if queuing or grade crossing project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	0	0
Departure Rate (in vehicles per hour)	0	0

Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile)	Base (Year 1)		
	Forecast (Year 20)		

Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic	Non-Peak	1.30	1.30
	Peak	1.15	1.15
High Occupancy Vehicle (if HOV/HOT lanes)		2.24	1.88

1C HIGHWAY ACCIDENT DATA

Actual 3-Year Accident Data (from Table B)	Count (No.)	Rate
Total Accidents (Tot)		0.85
Fatal Accidents (Fat)		0.006
Injury Accidents (Inj)		0.29
Property Damage Only (PDO) Accidents		0.55

Statewide Basic Average Accident Rate	No Build	Build
Rate Group		
Accident Rate (per million vehicle-miles)		
Percent Fatal Accidents (Pct Fat)		
Percent Injury Accidents (Pct Inj)		

1D RAIL AND TRANSIT DATA

Annual Person-Trips		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Percent Trips during Peak Period		61%	
Percent New Trips from Parallel Highway			100%

Annual Vehicle-Miles		No Build	Build
	Base (Year 1)		
	Forecast (Year 20)		
Average Vehicles/Train (if rail project)			

Reduction in Transit Accidents	
Percent Reduction (if safety project)	

Average Transit Travel Time		No Build	Build
In-Vehicle	Non-Peak (in minutes)		0.0
	Peak (in minutes)		0.0
Out-of-Vehicle	Non-Peak (in minutes)	0.0	0.0
	Peak (in minutes)	0.0	0.0

Highway Grade Crossing	Current	Year 1	Year 20
Annual Number of Trains		0	
Avg. Gate Down Time (in min.)		0.0	

Transit Agency Costs (if TMS project)	No Build	Build
Annual Capital Expenditure		$0
Annual Ops. and Maintenance Expenditure		$0

Model should be run for both roads for intersection or bypass highway projects, and may be run twice for connectors. Press button below to prepare model to enter data for second road. After data are entered, results reflect total project benefits.

Prepare Model for Second Road

Enter all project costs (in today's dollars) in columns 1 to 7. Costs during construction should be entered in the first eight rows.
Project costs (including maintenance and operating costs) should be net of costs without project.

1E

PROJECT COSTS (enter costs in thousands of dollars)

Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
	DIRECT PROJECT COSTS							TOTAL COSTS (in dollars)	
	INITIAL COSTS			SUBSEQUENT COSTS					
Year	Project Support	R / W	Construction	Maint./ Op.	Rehab.	Mitigation	Transit Agency Cost Savings	Constant Dollars	Present Value
Construction Period									
1	$10,594	$0	$0					$10,594,000	$10,594,000
2	17,806	0	0					17,806,000	17,121,154
3	0	1,400	0					1,400,000	1,294,379
4	0	0	98,600					98,600,000	87,655,041
5	0	0	0					0	0
6								0	0
7								0	0
8								0	0
Project Open									
1								$0	$0
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
9								0	0
10								0	0
11								0	0
12								0	0
13								0	0
14								0	0
15								0	0
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
Total	$28,400	$1,400	$98,600	$0	$0	$0	$0	$128,400,000	$116,664,574

Present Value = Future Value (in Constant Dollars) / (1 + Real Discount Rate) ^ Year

2A HIGHWAY SPEED AND VOLUME INPUTS

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Year 1				
Peak Period				
HOV Volume	14,376		14,376	
Non-HOV Volume	99,987		99,987	
Weaving Volume	0		0	
Truck Volume	11,311		11,311	
HOV Speed	64.6		64.6	
Non-HOV Speed	34.6		34.6	
Weaving Speed	55.0		55.0	
Truck Speed	34.6		34.6	
Non-Peak Period				
Non-HOV Volume	73,734		73,734	
Weaving Volume	0		0	
Truck Volume	7,292		7,292	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Year 20				
Peak Period				
HOV Volume	14,376		14,376	
Non-HOV Volume	108,397		108,397	
Weaving Volume	0		0	
Truck Volume	12,142		12,142	
HOV Speed	64.6		64.6	
Non-HOV Speed	22.0		22.0	
Weaving Speed	55.0		55.0	
Truck Speed	22.0		22.0	
Non-Peak Period				
Non-HOV Volume	79,156		79,156	
Weaving Volume	0		0	
Truck Volume	7,829		7,829	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Build				
Year 1				
Peak Period				
HOV Volume	18,776		18,776	
Non-HOV Volume	95,587		95,587	
Weaving Volume	0		0	
Truck Volume	11,311		11,311	
HOV Speed	62.1		62.1	
Non-HOV Speed	41.0		41.0	
Weaving Speed	55.0		55.0	
Truck Speed	41.0		41.0	
Non-Peak Period				
Non-HOV Volume	73,734		73,734	
Weaving Volume	0		0	
Truck Volume	7,292		7,292	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	
Year 20				
Peak Period				
HOV Volume	18,776		18,776	
Non-HOV Volume	103,997		103,997	
Weaving Volume	0		0	
Truck Volume	12,142		12,142	
HOV Speed	62.1		62.1	
Non-HOV Speed	27.7		27.7	
Weaving Speed	55.0		55.0	
Truck Speed	27.7		27.7	
Non-Peak Period				
Non-HOV Volume	79,156		79,156	
Weaving Volume	0		0	
Truck Volume	7,829		7,829	
Non-HOV Speed	65.0		65.0	
Weaving Speed	55.0		55.0	
Truck Speed	65.0		65.0	

Model speed estimates based on Highway Capacity Manual, pavement research, and research on weaving impacts

2B HIGHWAY ACCIDENT RATES

	Calculated by Model	Changed by User	Used for Proj. Eval.	Reason for Change
No Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.29		0.29	
PDO Accidents	0.55		0.55	
Total Accidents	0.846			

Hwy Safety or Weaving Improvement 0% collision reduction factor (per HSIP Guidelines)

Adjustment Factor (Actual/Statewide Avg. Existing)				
Fatal Accidents	1.0000		1.0000	
Injury Accidents	1.0000		1.0000	
PDO Accidents	1.0000		1.0000	
Build				
Fatal Accidents	0.006		0.006	
Injury Accidents	0.29		0.29	
PDO Accidents	0.55		0.55	
Total Accidents	0.846			

2C RAMP AND ARTERIAL INPUTS

(if detailed information is available for a TMS or an arterial signal management project)

Detailed Information Available? (y/n) N

Aggregate Segment Length (estimate as VMT/total volume)

All Ramps		miles
Arterials		miles

	Entered by User	Used for Proj. Eval.	Source/Notes
No Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Build (Peak Period Only)			
Year 1			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	
Year 20			
Aggregate Ramp Volume		0	
Aggregate Arterial Volume		0	
Average Ramp Speed		5.0	
Average Arterial Speed		5.0	

2D ANNUAL PERSON-TRIPS

(for HOV and HOT lane projects that affect average vehicle occupancy)

	No Build	Build	Induced
Year 1			
Peak Period			
HOV Trips	11,753,818	12,884,091	
Non-HOV Trips	41,969,533	40,122,633	(716,626)
Truck Trips	4,128,378	4,128,378	0
Non-Peak Period			
Non-HOV Trips	34,986,794	34,986,794	0
Truck Trips	2,661,717	2,661,717	0
Total Trips	95,500,240	94,783,614	(716,626)
Year 20			
Peak Period			
HOV Trips	11,753,818	12,884,091	
Non-HOV Trips	45,499,570	43,652,670	(716,626)
Truck Trips	4,431,964	4,431,964	0
Non-Peak Period			
Non-HOV Trips	37,559,602	37,559,602	0
Truck Trips	2,857,451	2,857,451	0
Total Trips	102,102,405	101,385,778	(716,626)

District: 4

PROJECT: VTA Phase 5 Express Lanes on US 101

EA: 1K553
PPNO:

3

INVESTMENT ANALYSIS

SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$116.7
Life-Cycle Benefits (mil. $)	$372.3
Net Present Value (mil. $)	$255.6
Benefit / Cost Ratio:	3.2
Rate of Return on Investment:	17.7%
Payback Period:	6 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$276.0	$55.0	$331.0	$16.5
Veh. Op. Cost Savings	$33.9	$1.4	$35.3	$1.8
Accident Cost Savings	$0.0	$0.0	$0.0	$0.0
Emission Cost Savings	$5.6	$0.3	$5.9	$0.3
TOTAL BENEFITS	$315.4	$56.8	$372.3	$18.6

Person-Hours of Time Saved	37,590,252	1,879,513
CO_2 Emissions Saved (tons)	192,364	9,618
CO_2 Emissions Saved (mil. $)	$5.5	$0.3

Should benefit-cost results include:

1) Induced Travel? (y/n)	y	Default = Y
2) Vehicle Operating Costs? (y/n)	Y	Default = Y
3) Accident Costs? (y/n)	Y	Default = Y
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y	Default = Y

US-101 Phase 5

B3 Evaluation - Project Changes or Increased Capacity Benefits			
Project Type Or Mode	Change to Built Environment	Indicator/ Measure	Benefits or Performance Improvement at Project
State Highway	New general purpose lane-miles.	N/A	
	New HOV/HOT lane-miles.	Lane miles	30.4 lane-miles
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	N/A	
	Operational improvements.	N/A	
	New or reconstructed interchanges.	N/A	
	New or reconstructed bridges.	N/A	
Transit or Intercity Rail	Additional transit service miles.	N/A	
	Additional transit vehicles.	N/A	
	New rail track miles.	N/A	
	Rail crossing improvements.	N/A	
	Station improvements.	N/A	
Local streets and roads	New lane-miles.	N/A	
	Lane-miles rehabilitated.	N/A	
	New or upgrade bicycle lane/sidewalk miles.	N/A	
	Operational improvements.	N/A	
	New or reconstructed bridges.	N/A	

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

E. DETAILED PROJECT INFORMATION

E. Detailed Project Information

Section 14. Overview of Projects Programmed with RIP Funding

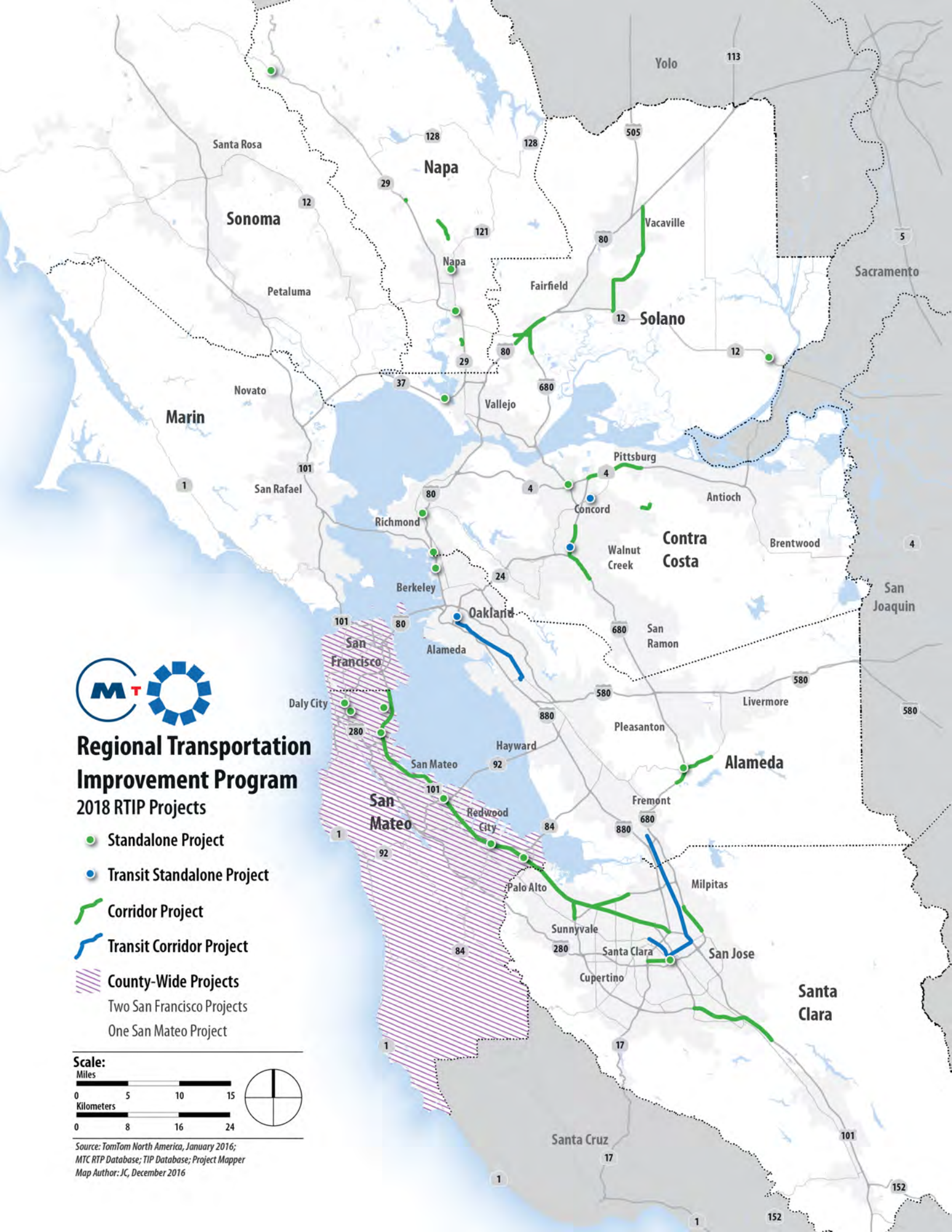
The 2018 RTIP funds 38 projects throughout the Bay Area, excluding planning funds.

County	Number Projects in the 2018 RTIP
Contra Costa County	8
San Mateo County	7
Santa Clara County	7
Napa County	6
Alameda County	4
Solano County	4
San Francisco County	2
Marin County*	0
Sonoma County*	0
Total	**38**

*Marin and Sonoma Counties do not have new programming capacity since those counties are still paying back prior STIP commitments.

Project types range from major highway improvements (such as the US-101 Managed Lane Project in San Mateo County), major transit improvements (such as the BART Extension from Berryessa to Santa Clara in Santa Clara County), transit rehabilitation (such as the Restoration of SFMTA Light Rail Lines), local roadway improvements (such as the Silverado Five-Way Intersection Improvement project in Napa County), and numerous bicycle and pedestrian improvements (such as the I-80 Gilman Interchange Reconstruction and Access Improvement project in Alameda County).

Project locations are generally illustrated in the map on the following page. For more detailed location information, refer to the Project Programming Request (PPR) forms in Section 15, or online at MTC's Fund Management System (FMS) – http://fms.mtc.ca.gov.



Regional Transportation Improvement Program

2018 RTIP Projects

- Standalone Project
- Transit Standalone Project
- Corridor Project
- Transit Corridor Project
- County-Wide Projects
  - Two San Francisco Projects
  - One San Mateo Project

Scale:

Miles: 0 5 10 15

Kilometers: 0 8 16 24

Source: TomTom North America, January 2016; MTC RTP Database; TIP Database; Project Mapper
Map Author: JC, December 2016

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

F. APPENDICES

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

SECTION 16. COMMISSION RESOLUTION OF RTIP APPROVAL

Date: October 25, 2017
W.I.: 1515
Referred by: PAC
Revised: 12/20/17-C

ABSTRACT

Resolution No. 4308, Revised

This resolution adopts the policies, procedures, project selection criteria, and program of projects for the 2018 Regional Transportation Improvement Program (RTIP) for the San Francisco Bay Area, for submission to the California Transportation Commission (CTC), consistent with the provisions of Senate Bill 45 (Chapter 622, Statutes 1997).

Attachment A – Policies, Procedures and Project Selection Criteria for the 2018 RTIP (with appendices)

Attachment B – 2018 RTIP Program of Projects

Attachment C – STIP Amendment / Extension Rules and Procedures

This resolution was revised by Commission Action on December 20, 2017 to update Attachment B – 2018 RTIP Program of Projects with the final project listing.

Further discussion of these actions is contained in the Summary Sheet to the MTC Programming and Allocations Committee dated October 11, 2017 and December 13, 2017.

Date: October 25, 2017
W.I.: 1515
Referred by: PAC

RE: Adoption of 2018 Regional Transportation Improvement Program (RTIP)
Program Policies, Procedures, Project Selection Criteria, and Program of Projects

METROPOLITAN TRANSPORTATION COMMISSION
RESOLUTION NO. 4308

WHEREAS, the Metropolitan Transportation Commission (MTC) is the regional transportation planning agency for the San Francisco Bay Area pursuant to Government Code Section 66500 *et seq.*; and

WHEREAS, MTC has adopted and periodically revises, pursuant to Government Code Sections 66508 and 65080, a Regional Transportation Plan (RTP); and

WHEREAS, MTC shares responsibility with the Association of Bay Area Governments (ABAG) for developing and implementing a Sustainable Communities Strategy (SCS) that integrates transportation, land use, and housing to meet greenhouse gas (GHG) reduction goals (Government Code Section 65080(b) 2(B)).

WHEREAS, MTC adopts, pursuant to Government Code Section 65082, a Regional Transportation Improvement Program (RTIP) when additional State Transportation Improvement Program funding is available, that is submitted, pursuant to Government Code Section 14527, to the California Transportation Commission (CTC) and the California Department of Transportation (Caltrans); and

WHEREAS, MTC has developed, in cooperation with Caltrans, operators of publicly owned mass transportation services, congestion management agencies, countywide transportation planning agencies, and local governments, policies, procedures and project selection criteria to be used in the development of the 2018 RTIP, and a five-year program for the funding made available for highways, roadways and state-funded mass transit guideways and other transit capital improvement projects, to include projects programmed in fiscal years 2018-19 through 2022-23; and

WHEREAS, using the process and criteria set forth in the Attachments to this resolution, attached hereto as though set forth at length, a set of capital priorities for the 2018 Regional Transportation Improvement Program (RTIP) was developed; and

WHEREAS, the 2018 RTIP has been developed consistent with the policies and procedures outlined in this resolution, and with the STIP Guidelines adopted by the CTC on August 16, 2017; and

WHEREAS, the 2018 RTIP will be subject to public review and comment; now, therefore, be it

RESOLVED, that MTC approves the process and criteria to be used in the evaluation of candidate projects for inclusion in the 2018 RTIP, as set forth in Attachment A of this resolution, and be it further

RESOLVED, that MTC adopts the 2018 RTIP Program of Projects, attached hereto as Attachment B and incorporated herein as though set forth at length, and finds it consistent with the RTP; and, be it further

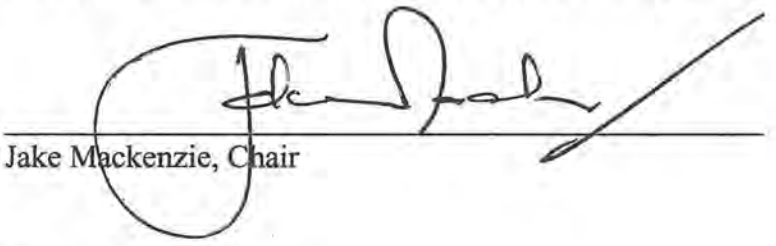
RESOLVED, that MTC approves the STIP Amendment / Extension Rules and Procedures to be used in processing STIP amendment and extension requests, as set forth in Attachment C of this resolution, and be it further

RESOLVED, that the Executive Director may make adjustments to Attachment B in consultation with the respective Congestion Management Agency (CMA) or County Transportation Planning Agency, to respond to direction from the California Transportation Commission and/or the California Department of Transportation; and, be it further

RESOLVED, that MTC's adoption of the programs and projects in the 2018 RTIP is for planning purposes only, with each project still subject to MTC's project review and application approval pursuant to MTC Resolution Nos. 3115 and 3757; and, be it further

RESOLVED, that the Executive Director shall forward a copy of this resolution, and such other information as may be required to the CTC, Caltrans, and to such other agencies as may be appropriate.

METROPOLITAN TRANSPORTATION COMMISSION



Jake Mackenzie, Chair

The above resolution was entered into by the Metropolitan Transportation Commission at a regular meeting of the Commission held in San Francisco, California, on October 25, 2017.

2018
Regional Transportation Improvement Program

Policies, Procedures, and Project Selection Criteria

October 25, 2017

MTC Resolution No. 4308
Attachment A

Metropolitan Transportation Commission
Programming and Allocations Section
http://www.mtc.ca.gov/our-work/fund-invest

2018 RTIP
Regional Transportation Improvement Program
Policies, Procedures and Project Selection Criteria
Table of Contents

2018 Regional Transportation Improvement Program (RTIP)
Policies, Procedures and Project Selection Criteria

Background

The State Transportation Improvement Program (STIP) provides funding for transportation projects around the State. As the Regional Transportation Planning Agency (RTPA) for the Bay Area, the Metropolitan Transportation Commission (MTC) is responsible for developing regional STIP project priorities for the nine counties of the Bay Area.

The Regional Transportation Improvement Program (RTIP) is the region's proposal to the State for STIP funding, and is due to the California Transportation Commission (CTC) by December 15, 2017. The 2018 STIP will include programming for the five fiscal years from 2018-19 through 2022-23.

2018 RTIP Development

The following principles will frame the development of MTC's 2018 RTIP, the region's contribution to the 2018 STIP.

- MTC will work with CTC staff, CMAs, transit operators, Caltrans, and project sponsors to prepare the 2018 STIP.
- Investments made in the RTIP must carry out the objectives of the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), and be consistent with its improvements and programs.
- MTC may choose to consult with counties to consider programming a portion of their RTIP shares for projects that meet a regional objective.
- MTC will continue to work with CMAs, transit operators, Caltrans and project sponsors to aggressively seek project delivery solutions. Through the use of AB 3090 authority, GARVEE financing, and federal, regional, and local funds and funding exchanges, MTC will work with its transportation partners to deliver projects in the region.
- Each county's project list must be constrained within the county share limits unless arrangements have been made with other counties to aggregate the county share targets. MTC continues to support aggregation of county share targets to deliver ready-to-go projects in the region. CMAs that submit a list that exceeds their county share must identify and prioritize those projects that exceed the county share target.

Key Policies and Guidance

The following policies serve as the primary guidance in the development of the 2018 RTIP.

Key Eligibility Policies

Consistency with Regional and Local Plans

RTP/SCS Consistency

Plan Bay Area 2040, the 2017 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), lays out a vision of what the Bay Area land use patterns and transportation network could look like in 2040. An objective of *Plan Bay Area 2040* is to encourage and promote the safe and efficient management, operation and development of a regional intermodal transportation system that will serve the mobility needs of people and goods. Programming

policies governing the STIP and other flexible, multi-modal discretionary funding sources such as the federal Surface Transportation Block Grant Program (STBG), Congestion Mitigation and Air Quality Improvement (CMAQ), and Regional Transportation Improvement Program (RTIP) funds must be responsive to the strategies and goals of the Plan. New projects submitted for RTIP consideration must include a statement addressing how the project meets the strategies and goals set forth in the RTP.

Local Plans
Projects included in the RTIP must be included in a Congestion Management Plan (CMP) or Capital Improvement Program (CIP).

CTC Guidance

The California Transportation Commission (CTC) 2018 STIP guidelines were adopted on August 16, 2017. The MTC 2018 RTIP Policies, Procedures and Project Selection Criteria includes all changes in STIP policy implemented by the CTC. The entire CTC STIP Guidelines are available on the internet at: http://www.dot.ca.gov/hq/transprog/ocip.htm or http://www.catc.ca.gov/programs/stip.htm. All CMAs and project sponsors must follow the MTC and CTC STIP guidelines in the development and implementation of the 2018 RTIP/STIP.

2018 RTIP Development Schedule

Development of the 2018 RTIP under these procedures will be done in accordance with the schedule outlined in Appendix A-1 of these policies and procedures.

RTIP County Share Targets

Appendix A-2 of the Policies and Procedures provides the county share targets for each county for the 2018 RTIP. Each county's project list, due to MTC in draft form by October 20, 2017, should be constrained within these county share limits; however, advancement of future county shares is possible through Advance Project Development Element (for more detail on project advancement please refer to the APDE section on page 13). It is expected that MTC's RTIP will be developed using a region-wide aggregate of county-share targets and advancement of future county shares.

Project Eligibility

SB 45 (Chapter 622, Statutes 1997) defines the range of projects that are eligible for consideration in the RTIP. Eligible projects include state highway improvements, local road improvements and rehabilitation, public transit, intercity rail, pedestrian, and bicycle facilities, and grade separation, transportation system management, transportation demand management, soundwall projects, intermodal facilities, and safety.

RTIP Project Solicitation

Each county congestion management agency (CMA), or countywide transportation planning agency for those counties that have opted out of the CMA requirement, is responsible for soliciting projects for its county share of the RTIP where the county target is greater than $0. The CMA must notify all eligible project sponsors, including Caltrans and transit operators, of the process and deadlines for applying for RTIP funding.

Public Involvement Process

MTC is committed to having the CMAs as full partners in development of the RTIP. That participation likewise requires the full commitment of the CMAs to a broad, inclusive public involvement process consistent with MTC's adopted Public Participation Plan (available online at http://mtc.ca.gov/about-mtc/public-participation/public-participation-plan) and federal regulations, including Title VI of the Federal Civil Rights Act of 1964. Federal regulations call for active outreach and public comment opportunities in any metropolitan planning process, and such opportunities an important step to any project selection process for the RTIP. CMAs shall document their public involvement opportunities, including how they included communities covered under Title VI, and submit the documentation along with their list of candidate projects.

RTIP Projects in the Transportation Improvement Program (TIP)

In accordance with state and federal requirements, RTIP-funded projects must be programmed in the TIP prior to seeking a CTC allocation. In addition, a federal authorization to proceed (E-76) request must be submitted simultaneously with the RTIP allocation request to Caltrans and the CTC when the request includes federal funds. In the 2018 RTIP, all projects are subject to be a mix of federal and state funds, and may require a federal authorization to proceed. Additionally, all STIP projects are to be included in the TIP and must have funds escalated to the year of expenditure, in accordance with federal regulations.

Regional Policies

Regional Set-Aside Programming

In order to expedite obligation and expenditure of American Recovery and Reinvestment Act of 2009 (ARRA) funds, and to address the State's lack of funding at the time, MTC programmed $31 million in ARRA funds to backfill unavailable STIP funds for the Caldecott Tunnel Fourth Bore project. Of the $31 million, $29 million came from Contra Costa's STIP county share, and $2 million from Alameda's STIP county share. Further, in 2012, MTC programmed $15 million to the Improved Bicycle/Pedestrian Access to the San Francisco-Oakland Bay Bridge project from a portion of each county's STIP share (from former Transportation Enhancement (TE) funds). To address lack of funding in the 2016 STIP, MTC de-programmed both the $31 million and $15 million commitments to regional projects (total $46 million). In January 2017 MTC committed the $46 million to additional contingency for the Caltrain Peninsula Corridor Electrification Project (PCEP), through MTC Resolution No. 4267. If any of the funds are de-programmed, the RTIP funds will be re-programmed to another regional priority project(s) at MTC's discretion. These funds have the highest priority for funding in the RTIP, after GARVEE, AB 3090, and PPM projects.

Housing Production and Preservation Incentive

The One Bay Area Grant (OBAG 2) program (MTC Resolution No. 4202) includes a challenge grant program for the production of affordable housing. The purpose of the program is to reward local jurisdictions that produce the most housing at the very low, low, and moderate levels. This challenge grant program sets a six year target for production of low and moderate income housing units (2015 through 2020), based on the housing unit needs identified through the Regional Housing Needs Allocation (RHNA) for 2015-2022. The target for the proposed challenge grant period is

approximately 80,000 very low, low and moderate income units (35,000 very low, 22,000 low and 25,000 moderate units, for a total of 82,000 units, derived from the years of the current RHNA cycle). The units must be located in Priority Development Areas (PDAs) or in Transit Priority Areas (TPAs). Additionally, to be credited towards reaching the production targets, very low and low income units must be deed restricted; moderate income units do not require deed restriction to be credited in the program. In addition, the number of existing affordable housing units a jurisdiction preserves is also included for the purposes of this incentive program. At the end of the production and preservation challenge cycle, MTC will distribute grant funds to the jurisdictions that contribute the most toward reaching the regional production target.

As part of the 2018 RTIP, the OBAG 2 Housing Production Incentive challenge grant program described immediately above (also known as '80k by 2020') is augmented with $46 million of regionally-controlled RTIP funds identified in the regional set-aside programming section above, conditioned on these funds not being needed for Caltrain's project contingency, either because the project can be completed within budget or because substitute contingency funds are identified. The increased incentive amount at $76 million allows the '80k by 2020' top ten producers of affordable housing to be increased to the top fifteen producers and preservers of affordable housing among the region's 109 local jurisdictions. Further, at least one top city housing producer from each of the nine counties will be included in the top 15. Staff will provide progress reports on production of affordable housing units as part of OBAG 2 implementation updates.

The RTIP funding provided may be either federal or state funds, must be used only for federally- or State Highway Account-eligible transportation purposes, and must meet CTC STIP Guideline requirements.

By July 1, 2018, MTC/ABAG integrated staff will present recommendations to the MTC Programming and Allocations Committee on defining how these funds are distributed among the top 15 affordable housing-producing/preserving cities, and how to further develop the expanded '80k by 2020' housing challenge to work in concert with other funding criteria recommendations to incentivize housing outcomes across the region.

Supplemental Housing Condition Criteria Development

As the Regional Transportation Planning Agency (RTPA) for the Bay Area, MTC is responsible for developing RTIP project priorities consistent with the region's Regional Transportation Plan and also shares responsibility with the Association of Bay Area Governments (ABAG) for developing and implementing a Sustainable Communities Strategy (SCS) that integrates transportation, land use, and housing policies to meet greenhouse gas (GHG) reduction goals (Government Code Section 65080(b) 2(B)). A key component of the combined RTP/SCS, per state statutory requirements, is that the plan demonstrate how the region can house 100% of the region's projected growth at all income levels. MTC's statutory responsibilities also require the RTP to consider the impact of transportation systems on a variety of facets of the region, including housing (Government Code Section 66509(b)), as well as the short- and long-term needs identified by plans prepared and adopted by ABAG (Government Code Section 66509(c)).

Consistent with the strategies and policies set forth in the current combined RTP/SCS, Plan Bay Area 2040, and MTC's statutory responsibilities to further encourage the production of affordable housing to meet identified needs, MTC/ABAG integrated staff will develop by July 1, 2018, supplemental housing condition criteria, including housing production, preservation, and protection, that would consider all funding sources, for public and stakeholder review. Following such review, staff will present revised criteria to a special Commission workshop, which will deliberate on the matter and recommend funding, legislative, or other actions as appropriate to the Commission for approval.

Further, by April 1, 2018, staff will work with staff of the nine Bay Area county Congestion Management Agencies (CMAs) to assess the Priority Development Area (PDA) planning process to identify action steps and constraints for housing production and affordable housing in PDAs.

Survey of State Housing Law Compliance

The MTC/ABAG integrated staff will survey local jurisdictions for compliance with four different state housing laws, and report the results to the Commission by July 1, 2018. The four state housing requirements are:

- State Housing Element Law: status of required rezoning of housing sites identified in local housing elements at appropriate minimum densities;
- Surplus Lands Act: status of required local implementation ordinances;
- State Density Bonus Law (AB 2135): status of required local density bonus implementation ordinances; and
- Accessory Dwelling Unit Streamlining (SB 1069, AB 2299, AB 2406): status of required local accessory dwelling unit streamlining ordinances.

County Programming Priorities

Alameda County

Alameda County Transportation Commission (ACTC) Resolution No. 14-007 (Revised) identifies RTIP funds as a source to meet ACTC's $40 million commitment to AC Transit's East Bay Bus Rapid Transit (BRT) project. Further, Commission action for the Regional Measure 2 (RM2) Strategic Plan in May 2014, and the March 2015 RM2 allocation to AC Transit for the BRT project require that ACTC commit the RTIP or other funds for the BRT project in order to retire the BRT commitment by the 2018 STIP cycle. MTC may program funds directly from Alameda County's STIP share if no other fund source is identified by the 2018 STIP.

San Francisco County

MTC Resolution No. 4035, Revised, which sets forth the second cycle of federal Surface Transportation Program/Congestion Mitigation and Air Quality Improvement (STP/CMAQ) funding, advanced $34 million in federal funds for the Doyle Drive Replacement / Presidio Parkway project. In exchange, $34 million San Francisco's STIP share shall be reserved for regional Freeway Performance Initiative (FPI)/Columbus Day Initiative (CDI)/Express Lanes projects. San Francisco shall commit these funds after PPM programming and the remaining commitment to the Central Subway project (about $75.5 million).

Regional Advanced Mitigation Program (RAMP)

As a part of *Plan Bay Area 2040* and through MTC Resolution No. 4290, MTC identified Regional Advance Mitigation Program (RAMP) as a mitigation strategy for the Bay Area. RAMP would mitigate certain environmental impacts from groups of planned transportation projects, rather than mitigating on an inefficient per-project level. RTIP funds may be used to implement RAMP, including purchasing mitigation land bank credits, establishing a greenfield mitigation site, contributing to an existing Habitat Conservation Plan, and purchasing conservation land easements and their endowments, as allowed under state and federal law. In instances where RTIP funds are not eligible for RAMP implementation, MTC encourages sponsors to exchange RTIP funds with eligible non-federal funds for RAMP. Such exchanges must be consistent with MTC's fund exchange policy, MTC Resolution No. 3331.

Regional Planning, Programming, and Monitoring (PPM) funds

Passage of Assembly Bill 2538 (Wolk, 2006) allows all counties to program up to 5% of their county share to Planning, Programming, and Monitoring (PPM) purposes in the STIP. Appendix A-2 identifies PPM amounts each county may program. As agreed with the CMAs, MTC will program a portion of each county's PPM for regional PPM activities each year. MTC's currently programmed amounts for regional PPM activities in FY 2018-19 and FY 2019-20 will not change in the 2018 RTIP; the CMAs may choose to respread their county portion of the PPM funds programmed in FY 2018-19 and FY 2019-20. Due to county share period restrictions, new PPM amounts may only be programmed in FY 2020-21, FY 2021-22, and FY 2022-23.

Caltrans Project Nomination

Senate Bill 1768 (Chapter 472, Statutes 2002) authorizes the Department of Transportation to nominate or recommend projects to be included in the RTIP to improve state highways using regional transportation improvement funds. To be considered for funding in the RTIP, the Department must submit project nominations directly to the applicable CMA (or countywide transportation planning agency for those counties that have opted out of the CMA requirement). The Department should also identify any additional state highway improvement needs within the county that could be programmed within the 3 years beyond the end of the current STIP period. The Department must submit these programming recommendations and identification of state highway improvement needs to the CMA within the timeframe and deadline prescribed by the applicable CMA. In addition, the Department must also provide a list of projects and funding amounts for projects currently planned on the State Highway System over the 2018 STIP period to be funded with local and regional funds.

Title VI Compliance

Investments made in the RTIP must be consistent with federal Title VI requirements. Title VI prohibits discrimination on the basis of race, color, disability, and national origin in programs and activities receiving federal financial assistance. Public outreach to and involvement of individuals in low income and minority communities covered under Title VI of the Civil Rights Act and the Executive Order pertaining to Environmental Justice is critical to both local and regional decisions. The CMA must consider equitable solicitation and selection of project candidates in accordance with federal Title VI and Environmental Justice requirements.

Intelligent Transportation Systems Policy

In collaboration with federal, state, and local partners, MTC developed the regional Intelligent Transportation Systems (ITS) Architecture. The San Francisco Bay Area Regional ITS Architecture is a roadmap for integrated and collaborative ITS projects in the Bay Area over the next 10 years and beyond. The Architecture provides the knowledge base necessary to make the most out of technological advances for planning and deployment of intelligent transportation systems that are connected and standardized across the region and beyond.

MTC, state and federal agencies require projects funded with federal highway trust funds to meet applicable ITS Architecture requirements. Since the 2006 RTIP, MTC requires all applicable projects to conform to the regional ITS architecture. Through the on-line Fund Management System (FMS) application process, 2018 RTIP project sponsors will identify the appropriate ITS category, if applicable. Information on the regional ITS architecture can be found at: http://mtc.ca.gov/our-work/operate-coordinate/intelligent-transportation-systems-its.

MTC Resolution No. 4104 Compliance – Traffic Operations System Policy

All major new freeway projects included in *Plan Bay Area 2040* and subsequent regional transportation plans shall include the installation and activation of freeway traffic operations system (TOS) elements to effectively operate the region's freeway system and coordinate with local transportation management systems. MTC requires all applicable RTIP projects to conform to the regional policy. For purposes of this policy, a major freeway project is a project that adds lanes to a freeway, constructs a new segment of freeway, upgrades a segment to freeway status, modifies a freeway interchange, modifies freeway ramps, or reconstructs an existing freeway. TOS elements may include, but are not limited to, changeable message signs, closed-circuit television cameras, traffic monitoring stations and detectors, highway advisory radio, and ramp meters.

As set forth in MTC Resolution No. 4104, for any jurisdiction in which MTC finds that ramp metering and TOS elements are installed but not activated or in operation, MTC will consider suspending fund programming actions for STIP funding until the Ramp Metering Plan is implemented and the ramp meters and related TOS elements are activated and remain operational, and MTC deems the requirements of the regional TOS policy have been met. Furthermore, in any county in which a jurisdiction fails to include the installation and activation of TOS elements in an applicable freeway project, including ramp metering as identified in the Ramp Metering Plan, projects to install and activate the appropriate ramp meters and TOS elements omitted from the project shall have priority for programming of new STIP funding for that county. STIP projects that do not meet the provisions of MTC Resolution No. 4104 are subject to de-programming from the federal TIP.

Columbus Day Initiative, Managed Lanes Implementation Plan and Regional Express Lane (HOT) Network

All projects on the state highway system must demonstrate a scope and funding plan that includes Traffic Operations System (TOS) elements, consistent with the section above. Projects must also include any additional traffic operations recommendations resulting from MTC's Columbus Day

Initiative (CDI) and/or Managed Lanes Implementation Plan (MLIP). As part of CDI, advanced technologies to support connected vehicles (dedicated short-range communications equipment, advanced wireless communications, advanced vehicle-sensors, etc.) should be included where possible. Additionally, projects on the State Highway System proposed for programming in the 2018 RTIP should be consistent with the planned Regional Express Lane (High-Occupancy Toll) Network and the MLIP. For new RTIP funding commitments on the Regional Express Lane Network, the CMAs should work with MTC to determine the appropriateness of advance construction elements (such as structures and conduit) to support the future conversion of general purpose/HOV lanes to express lanes if identified.

Bay Area Interregional Transportation Improvement Program (ITIP) Priorities

In order to support Caltrans District 4 in successfully programming ITIP projects in the Bay Area, MTC worked with the CMAs and District to formulate four guiding principles for prioritizing ITIP projects. The principles are:

- Support high cost-benefit ratio projects on the State Highway System
- Support High-Occupancy Vehicle (HOV) lane gap closures, with emphasis on those that support the Regional Express Lane Network.
- Support high speed rail early investments and intercity/commuter rail
- Support future goods movement and trade corridors

These principles are consistent with *Plan Bay Area 2040* assumptions. MTC supported these principles in a comment letter to Caltrans regarding the 2015 Interregional Transportation Strategic Plan (ITSP), which was adopted in August.

MTC Resolution No. 3866 Compliance – Transit Coordination Implementation Plan

On February 24, 2010, MTC approved Resolution No. 3866, which documents coordination requirements for Bay Area transit operators to improve the transit customer experience when transferring between transit operators and in support of regional transit projects. *If a transit operator fails to comply with Res. 3866 requirements, MTC may withhold, restrict or reprogram funds or allocations*. Res. 3866 supersedes MTC's earlier coordination plan, Res. 3055.

One goal in establishing Res. 3866 was to incorporate detailed project information through reference rather than directly in the resolution in order to facilitate future updates of project-specific requirements. Transit operators must comply with these more detailed documents in order to comply with Res. 3866. MTC may periodically update these documents in consultation with transit agencies.

Accommodations for Bicyclists, Pedestrians and Persons with Disabilities

Federal, state and regional policies and directives emphasize the accommodation of bicyclists, pedestrians, and persons with disabilities when designing transportation facilities. Of particular note is Caltrans Deputy Directive 64 which stipulates: "pedestrians, bicyclists and persons with disabilities must be considered in all programming, planning, maintenance, construction, operations, and project development activities and products." In addition, MTC's Resolution No. 3765 requires project

sponsors to complete a checklist that considers the needs of bicycles and pedestrians for applicable projects. MTC's Regional Bicycle Plan, adopted as a component of the 2001 RTP, requires that "all regionally funded projects consider enhancement of bicycle transportation consistent with Deputy Directive 64".

In selecting projects for inclusion in the RTIP, the CMAs and project sponsors must consider federal, state and regional policies and directives regarding non-motorized travel, including, but limited to, the following:

Federal Policy Mandates
The Federal Highways Administration Program Guidance on bicycle and pedestrian issues makes a number of clear statements of intent, and provides best practices concepts as outlined in the US DOT "Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations." (https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/policy_accom.cfm)

State Policy Mandates
The California Complete Streets Act (AB 1358) of 2008 encourages cities to make the most efficient use of urban land and transportation infrastructure, and improve public health by encouraging physical activity to reduce vehicle miles traveled (VMT). Government Code Section 65302(b)(2)(A) and (B) states that any substantial revision of the circulation element of the General Plan to consider all users.

California Government Code Section 65089(b)(1)(B)(5) requires that the design, construction and implementation of roadway projects proposed for funding in the RTIP must consider maintaining bicycle access and safety at a level comparable to that which existed prior to the improvement or alteration.

Caltrans Deputy Directive 64 (http://www.dot.ca.gov/hq/tpp/offices/bike/sites_files/DD-64-R1_Signed.pdf), states: "the Department fully considers the needs of non-motorized travelers (including pedestrians, bicyclists, and persons with disabilities) in all programming, planning, maintenance, construction, operations, and project development activities and products. This includes incorporation of the best available standards in all of the Department's practices. The Department adopts the best practices concept in the US DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure."

Regional Policy Mandates
All projects programmed during the RTIP must consider the impact to bicycle transportation, pedestrians and persons with disabilities, consistent with MTC Resolution No. 3765. The Complete Streets Checklist (also known as "Routine Accommodations Checklist") is incorporated as Part 5 of the Project Application. Furthermore, it is encouraged that all bicycle projects programmed in the RTIP support the Regional Bicycle Network. Guidance on considering bicycle transportation can be found in MTC's 2009 Regional Bicycle Plan (a component of Transportation 2035) and Caltrans Deputy Directive 64. MTC's Regional Bicycle Plan, containing federal, state and regional polices for accommodating bicycles and non-

motorized travel, is available on MTC's Web site at: http://mtc.ca.gov/our-work/plans-projects/bicycle-pedestrian-planning.

To be eligible for RTIP funds, a local jurisdiction with local streets and roads must have either a complete streets policy or resolution, or general plan updated after 2010, that complies with the Complete Streets Act of 2008 prior to January 31, 2016. Further information is available online at: http://mtc.ca.gov/sites/default/files/OBAG_2_Reso_Guidance_Final.pdf.

State Policies

Grant Anticipation Revenue Vehicle (GARVEE) Bonding

Chapter 862 of the Statutes of 1999 (SB 928) authorizes the State Treasurer to issue GARVEE bonds and authorizes the California Transportation Commission (CTC) to select projects for accelerated construction from bond proceeds. Bond repayment is made through annual set asides of the county share of future State Transportation Improvement Program (STIP) funds. Bond repayments are typically made over several STIP programming periods.

In accordance with state statute and the CTC GARVEE guidelines, GARVEE debt repayment will be the highest priority for programming and allocation within the particular county Regional Improvement Program (RIP) share until the debt is repaid. In the event that the RIP county share balance is insufficient to cover the GARVEE debt service and payment obligations, the RIP county share balance for that particular county will become negative through the advancement of future RIP county share. Should a negative balance or advancement of capacity be unattainable, then funding for other projects using RIP county share within that particular county would need to be reprogrammed or deleted, to accommodate the GARVEE debt service and payment obligations.

The CTC is responsible for programming the funds, derived from federal sources, as GARVEE debt service and the State Treasurer is responsible for making the debt service payments for these projects. In the 2018 STIP, CTC will consider new GARVEE projects via STIP amendment only, and not during the 2018 STIP process.

AB 3090 Project Replacement or Reimbursement

AB 3090 (Statutes of 1992, Chapter 1243) allows a local jurisdiction to advance a project included in the STIP to an earlier fiscal year through the use of locally-controlled funds. With the concurrence of the appropriate CMA, MTC, the California Transportation Commission and Caltrans, one or more replacement state transportation project shall be identified and included in the STIP for an equivalent amount and in the originally scheduled fiscal year or a later year of the advanced project. Alternately, the advanced project can be reimbursed in the originally scheduled fiscal year or a later year.

Projects approved for AB 3090 consideration must award a contract within six months of the CTC approval. The allocation of AB 3090 reimbursement projects is the highest priority in the MTC region. In the 2018 STIP, CTC will consider new AB 3090 requests via STIP amendment only, and not during the 2018 STIP process. Sponsors wishing to use AB 3090s for their projects should

contact MTC and CTC for inclusion in the AB 3090 Plan of Projects, which is updated on an as-needed basis.

SB 184 Advance Expenditure of Funds

SB 184 (Statutes of 2007, Chapter 462) authorizes a regional or local entity to expend its own funds for any component of a transportation project within its jurisdiction that is programmed in the current fiscal year and for which the Commission has not made an allocation. The amount expended would be authorized to be reimbursed by the state, subject to annual appropriation by the Legislature, if (1) the commission makes an allocation for, and the department executes a fund transfer agreement for, the project during the same fiscal year as when the regional or local expenditure was made; (2) expenditures made by the regional or local entity are eligible for reimbursement in accordance with state and federal laws and procedures; and (3) the regional or local entity complies with all legal requirements for the project, as specified.

MTC discourages the use of SB 184 since allocation of funds is not guaranteed. Therefore, sponsors are exposing themselves to the risk of expending local funds with no guarantee that the STIP funds will be allocated.

Should a sponsor want to proceed with an SB 184 request, the sponsor must notify the CMA, MTC and Caltrans in writing on agency letterhead in accordance with Caltrans Local Assistance procedures.

AB 608 Contract Award Provisions

AB 608 authorizes the adjustment by the CTC of a programmed project amount in the STIP if the Caltrans-sponsored construction contract award amount for a project is less than 80% of the engineer's final estimate, excluding construction engineering.

The CTC will not approve any AB 608 request after 120 days from the contract award. Sponsors intending to take advantage of AB 608 project savings must notify Caltrans and the CMA within 30 days of the contract award, to ensure the request to the CTC can be processed in time to meet the CTC's deadline.

Federal and State-Only Funding

In 2011, the State adopted AB 105, which eliminates the sales tax on gasoline and replaces it with a commensurate increase in the excise tax on gasoline. Excise taxes are deposited into the State Highway Account, which also includes federal funds. Therefore, projects programmed in the 2018 STIP may receive a combination of state and federal funds. Project sponsors must federalize their projects by completing NEPA documentation and complying with federal project delivery rules, if they are assigned federal funds.

In 2017, Senate Bill 1 passed into law, which reset the price-based excise tax to 17.3 cents starting in FY 2019-20, with annual adjustments for inflation. SB 1 stabilizes STIP revenues, though Caltrans will determine the funding split between state-only and federal funding for projects funded in the STIP.

Article XIX Compliance for Transit Projects

Article XIX of the California State Constitution restricts the use of State Highway Account (SHA) funds on transit projects. In order for existing and new projects to be programmed in the STIP, the project sponsor or the CMA must provide documentation that verifies the STIP transit project is either 1) eligible for federal funds, or 2) meets Article XIX requirements that only fixed guideway projects in a county that has passed a measure authorizing the use of SHA funds on transit projects may use SHA funds. Also refer to the next section regarding "Matching Requirements."

Matching Requirements on Highway and Transit Projects

A local match is not required for projects programmed in the STIP, except under special situations affecting projects subject to Article XIX restrictions established by the State Constitution. Article XIX limits the use of state revenues in the State Highway Account (SHA) to state highways, local roads, and fixed guideway facilities. Other projects, such as rail rolling stock and buses, are not eligible to receive state funds from the SHA. Article XIX restricted projects must therefore be funded with either a combination of federal STIP funding and matching STIP funds from the Public Transportation Account (PTA), or with 100 percent federal STIP funds in the State Highway Account (which requires a non-federal local match of 11.47% from a non-STIP local funding source or approved use of toll credits).

Project sponsors wishing to use STIP PTA funds as matching funds for Article XIX restricted projects must note such a request in the "Special Funding Conditions" section of the RTIP Application Nomination sheet, and obtain approval from Caltrans through the state-only approval process as previously described. Otherwise, the CTC may assume any Article XIX restricted STIP project will be funded with 100 percent federal funds.

Governor's Executive Orders

The STIP Guidelines adopted by the CTC recognizes two proclamations and executive orders by Governor Brown. First, in recognition of the historic drought, the CTC expects any landscape projects currently programmed but not yet allocated and awarded, or any new landscape projects, will include drought tolerant plants and irrigation. Second, consistent with Executive Order B-30-15 (April 29, 2015), projects proposed for RTIP funds must consider the State's greenhouse gas emission reduction targets. Projects subject to a project-level performance evaluation are expected to include measures and analyses that address greenhouse gas emission reductions.

General Guidance

Project Advancements

If a project or project component is ready for implementation earlier than the fiscal year that it is programmed in the STIP, the implementing agency may request an allocation in advance of the programmed year. The CTC will consider making advanced allocations based on a finding that the allocation will not delay availability of funding for other projects programmed in earlier years than the project to be advanced and with the approval of the responsible regional agency if county share funds are to be advanced. In project and financial planning, sponsors should not expect the CTC to advance any projects.

Advance Project Development Element (APDE)
The 2018 STIP Fund Estimate identifies funding for APDE. This will provide funding for environmental and permits and plans, specifications and estimates. The target for APDE is determined by calculating 25% of the STIP formula share of the estimated capacity in the next STIP cycle. Projects programmed using APDE capacity will be identified and tracked separately as they will be treated as advances of regular future county shares. APDE funds may be proposed in any year of the 2018 STIP. Counties must identify projects using APDE separately when submitting their project lists to MTC.

Unprogrammed Shares
The counties and the region may propose to leave county share STIP funds unprogrammed for a time to allow adequate consideration of funding options for future projects. The CTC particularly encourages Caltrans and the regional agencies to engage in early consultations to coordinate their ITIP and RTIP proposals for such projects. Counties intending to maintain an unprogrammed balance of its county share for future program amendments prior to the next STIP must include a statement of the intentions for the funds, including the anticipated use of the funds, as well as the amount and timing of the intended STIP amendment(s). However, access to any unprogrammed balance is subject to availability of funds, and is not expected to be approved by the CTC until the next STIP programming cycle.

Countywide RTIP Listing
By October 20, 2017, each county Congestion Management Agency or countywide transportation planning agency must submit to MTC a draft proposed countywide RTIP project listing showing the proposed programming of county shares. The final list is due to MTC by November 8, 2017, and must include the final project applications for any new projects added to the STIP (or any significantly revised existing STIP projects), identification of projects using APDE, details of projects completed since the last STIP, and appropriate project level performance measure analysis.

Project Screening Criteria, Including Readiness
In addition to the CTC Guidelines, all projects included in the 2018 RTIP must meet all MTC project-screening criteria listed in Appendix A-3 of this guidance, including the planning and the project readiness requirements.

RTIP Applications
Project sponsors must complete an application for each new project proposed for funding in the RTIP, consisting of the items included in Appendix A-4 of this guidance. In addition to MTC's Fund Management System (FMS) application, project sponsors must use the latest Project Programming Request (PPR) forms provided by Caltrans for all projects. CMAs should submit PPRs for all projects (including existing projects with no changes) on the revised form provided by Caltrans. The nomination sheet must be submitted electronically for upload into the regional and statewide databases. Existing projects already programmed in the STIP with proposed changes should propose an amendment in MTC's FMS, and submit both electronically and in hard copy a revised PPR provided by Caltrans.

STIP Performance Measures: Regional and Project-Level Analyses

The CTC continues to require performance measures in the RTIP and ITIP review process for the 2018 RTIP. According to the STIP guidelines, a regional, system-level performance report must be submitted along with the RTIP submission. MTC staff will compile this report, focusing on applying the measures at the Regional Transportation Plan (RTP) level.

In addition, the 2018 STIP Guidelines require a project-level performance measure evaluation on all projects with total project costs over $50 million or over $15 million in STIP funds programmed. The project-level evaluation should address performance indicators and measures identified in Table A of the 2018 STIP Guidelines (see Appendix A-4 Part 4). The evaluation should also include a Caltrans-generated benefit/cost estimate, estimated impacts the project will have on the annual cost of operating and maintaining the state's transportation system, and estimated impact to greenhouse gas reduction efforts. The project-level evaluation must also be completed, if it has not already, on existing STIP projects with construction programmed, that exceed $50 million in total project cost/$15 million in STIP programming, and have had CEQA completed after December 2011. The CMAs are required to submit the project-level performance measures to MTC by the final application due date.

Completed Project Reporting

The 2018 STIP Guidelines require a report on all RTIP projects over $20 million in total project cost completed between the adoption of the RTIP and the adoption of the previous RTIP (from December 2015 to December 2017). The report must include a summary of the funding plan and programming/allocation/expenditure history, as well as a discussion of project benefits that were anticipated prior to construction compared with an estimate of the actual benefits achieved. The CMAs are required to submit the completed project reporting information to MTC by the final application due date.

Regional Projects

Applications for projects with regionwide or multi-county benefits should be submitted to both MTC and the affected county CMAs for review. Regional projects will be considered for programming in the context of other county project priorities. MTC staff will work with the interested parties (CMAs and project sponsors) to determine the appropriate level of funding for these projects and negotiate county contributions of the project cost. County contributions would be based on population shares of the affected counties, or other agreed upon distribution formulas.

85-115% Adjustments

MTC may, pursuant to Streets and Highways Code Section 188.8 (k), pool the county shares within the region, provided that each county shall receive no less than 85 percent and not more than 115 percent of its county share for any single STIP programming period and 100 percent of its county share over two STIP programming cycles.

MTC may recommend use of the 85%-115% rule provided for in SB 45 to ensure, as needed, that the proper scope of projects submitted for programming can be accommodated. MTC will also work

with CMAs to recommend other options, such as phased programming across STIP cycles, to ensure that sufficient funding and concerns such as timely use of funds are adequately addressed.

MTC Resolution No. 3606 Compliance – Regional Project Delivery Policy

SB 45 established strict timely use of funds and project delivery requirements for transportation projects programmed in the STIP. Missing critical milestones could result in deletion of the project from the STIP, and a permanent loss of the funds to the county and region. Therefore, these timely use of funds deadlines must be considered in programming the various project phases in the STIP. While SB 45 provides some flexibility with respect to these deadlines by allowing for deadline extensions under certain circumstances, the CTC is very clear that deadline extensions will be the exception rather than the rule. MTC Resolution No. 3606, Revised, details the Regional Project Delivery Policy for Regional Discretionary Funding, which may be more restrictive than the State's delivery policy. See Attachment C to MTC Resolution No. 4308 for additional extension and amendment procedures.

Allocation of Funds - Requirements

To ensure there is no delay in the award of the construction contract (which CTC guidelines and MTC Resolution No. 3606 require within six months of allocation), STIP allocation requests for the construction phase of federally-funded projects must be accompanied by the complete and accurate Request for Authorization (RFA) package (also known as the E-76 package). Concurrent submittal of the CTC allocation request and the RFA will minimize delays in contract award. Additionally, for the allocation of any non-environmental phase funds (such as for final design, right of way, or construction), the project sponsor must demonstrate that both CEQA and NEPA documents are completed and certified for federalized projects.

Notice of Cost Increase

For projects with a total estimated cost over $25 million, the implementing agency must perform quarterly project cost evaluations. If a cost increase greater than 10 percent of the total estimated cost of the particular phase is identified, the implementing agency must notify and submit an updated Project Programming Request (PPR) form to the appropriate CMA and MTC. In the event that a project is divided into sub-elements, the implementing agency will include all project sub-elements (i.e. landscaping, soundwalls, adjacent local road improvements) in the quarterly cost evaluation.

Early notification of cost increases allows the CMA and MTC to assist in developing strategies to manage cost increases and plan for future county share programming.

Cost Escalation for Caltrans-Implemented Projects

CTC remains very critical of unexpected cost increases to projects funded by the STIP. In order to ensure that the amounts programmed in the STIP are accurate, MTC encourages the CMAs to consult with Caltrans and increase Caltrans project costs by an agreed-upon escalation rate if funds are proposed to be shifted to a later year. This will currently only apply to projects implemented by Caltrans.

Notice of Contract Award

Caltrans has developed a procedure (Local Programs Procedures LPP-01-06) requiring project sponsors to notify Caltrans immediately after the award of a contract. Furthermore, Caltrans will not make any reimbursements for expenditures until such information is provided. Project sponsors must also notify MTC and the appropriate CMA immediately after the award of a contract. To ensure proper monitoring of the Timely Use of Funds provisions of SB 45, project sponsors are required to provide MTC and the county CMA with a copy of the LPP-01-06 "Award Information for STIP Projects – Attachment A" form, when it is submitted to Caltrans. This will assist MTC and the CMA in maintaining the regional project monitoring database, and ensure accurate reporting on the status of projects in advance of potential funding lapses. In accordance with CTC and Caltrans policies, construction funds must be encumbered in a contract within six months of allocation

METROPOLITAN TRANSPORTATION COMMISSION
2018 Regional Transportation Improvement Program
Development Schedule (Subject to Change)
October 25, 2017

March 15, 2017	Caltrans presentation of draft STIP Fund Estimate Assumptions (CTC Meeting – Los Angeles)
May 17, 2017	CTC adoption of STIP Fund Estimate Assumptions (CTC Meeting – San Diego)
June 28, 2017	Caltrans presentation of the draft STIP Fund Estimate and draft STIP Guidelines (CTC Meeting – Sacramento)
June 19, 2017	Partnership Technical Advisory Committee (PTAC) / Programming and Delivery Working Group (PDWG) discussion and review of initial schedule for 2018 RTIP
June 27, 2017	Governor signed State Budget
July 17, 2017	PDWG discussion of proposed RTIP Policies and Procedures
July 20, 2017	STIP Fund Estimate and Guidelines Workshop (Sacramento)
August 16, 2017	CTC adopts STIP Fund Estimate and STIP Guidelines (CTC Meeting – Oakland)
October 4, 2017	Draft RTIP Policies and Procedures published online and emailed to stakeholders for public comment
October 11, 2017	MTC Programming and Allocations Committee (PAC) scheduled review and recommendation of final proposed RTIP Policies and Procedures
October 20, 2017	CMAs submit to MTC, RTIP projects summary listings and identification of projects requiring project-level performance measure analysis. Deadline to submit Complete Streets Checklist for new projects.
October 25, 2017	MTC Commission scheduled adoption of RTIP Policies and Procedures
November 8, 2017	Final Project Programming Request (PPR) forms due to MTC. Final RTIP project listing and performance measure analysis due to MTC. Final PSR (or PSR Equivalent), Resolution of Local Support, and Certification of Assurances due to MTC (**Final Complete Applications due**)
November 20, 2017	PTAC scheduled review of draft RTIP
December 6, 2017	Draft RTIP scheduled to be available for public review
December 13, 2017	PAC scheduled review of RTIP and referral to Commission for approval
December 15, 2017	2018 RTIP due to CTC (PAC approved project list will be submitted)
December 20, 2017	MTC Commission scheduled approval of 2018 RTIP (Full RTIP to be transmitted to CTC within one week of Commission approval)
January 25, 2018	CTC 2018 STIP Hearing – Southern California (TBD)
February 1, 2018	CTC 2018 STIP Hearing – Northern California (TBD)
February 28, 2018	CTC Staff Recommendations on 2018 STIP released
March 21, 2018	CTC adopts 2018 STIP (CTC Meeting – Orange County)

Shaded Area – Actions by Caltrans or CTC

MTC Resolution No. 4308
Attachment A-2

Numbers based on Final 2018 STIP FE (CTC Approved 8/16/17)

2018 RTIP Fund Estimate County Targets

10/25/2017

Metropolitan Transportation Commission

All numbers in thousands

Table 1: County Guaranteed Minimum (Base)

	2018 STIP FY 2019-20 Base Share
Alameda	**8,789**
Contra Costa	**15,815**
Marin	**0**
Napa	**2,847**
San Francisco	**0**
San Mateo	**11,938**
Santa Clara	**20,982**
Solano	**7,167**
Sonoma	**0**
County Totals	**67,538**

Table 2: County Share Targets

	a	b	c	a+b+c=d	e	d+e=f
	Through FY 2022-23 New Distrib.	**2016 STIP Carryover Balance**	**Regional Set-aside***	**2018 STIP Target Capacity**	**2018 STIP APDE Formula Dist.**	**2018 STIP Target + APDE**
Alameda	**40,024**	8,789	(5,063)	**43,750**	8,950	**52,700**
Contra Costa	**27,372**	44,039	(31,090)	**40,321**	6,121	**46,442**
Marin	**7,484**	(32,447)	(571)	**0**	1,674	**0**
Napa	**4,927**	6,514	(376)	**11,065**	1,102	**12,167**
San Francisco	**20,304**	(3,989)	(1,548)	**14,767**	4,540	**19,307**
San Mateo	**20,661**	30,068	(1,598)	**49,131**	4,620	**53,751**
Santa Clara	**47,354**	20,982	(3,632)	**64,704**	10,589	**75,293**
Solano	**12,404**	11,198	(945)	**22,657**	2,774	**25,431**
Sonoma	**15,197**	(16,876)	(1,177)	**0**	3,408	**552**
County Totals	**195,727**	**68,278**	**(46,000)**	**246,395**	**43,778**	**285,643**

Note: Counties with negative balance have a "$0" new share.

* Regional set-aside includes $31 million from ARRA/Caldecott payback, and $15 million from SFOBB Bike/Ped Access projects (both deleted in 2016 STIP)

Table 3: Planning, Programming, and Monitoring Amounts
FY 2020-21, FY 2021-22, and FY 2022-23

	g	h	g-h=i	j	i-j=k	f-i=m
	PPM Limit FY 2020-21 FY 2021-22 FY 2022-23	**Currently Programmed for FY 2020-21**	**PPM Available for Programming MTC+CMA**	**MTC Share for FY 2020-21 FY 2021-22 FY 2022-23****	**CMA Share for FY 2020-21 FY 2021-22 FY 2022-23**	**2018 STIP CMA Target Capacity less PPM*****
Alameda	**2,001**	0	**2,001**	466	**1,535**	**41,749**
Contra Costa	**1,369**	0	**1,369**	302	**1,067**	**38,952**
Marin	**374**	0	**374**	87	**287**	**0**
Napa	**246**	0	**246**	53	**193**	**10,819**
San Francisco	**1,015**	0	**1,015**	237	**778**	**13,752**
San Mateo	**1,033**	0	**1,033**	246	**787**	**48,098**
Santa Clara	**2,368**	0	**2,368**	544	**1,824**	**62,336**
Solano	**620**	0	**620**	143	**477**	**22,037**
Sonoma	**762**	0	**762**	171	**591**	**0**
County Totals	**9,788**	**0**	**9,788**	**2,249**	**7,539**	**237,743**

** MTC's PPM share includes escalation rate of 3.5% per year

*** Assumes CMA programs up to PPM limit.

2018 Regional Transportation Improvement Program
Policies, Procedures and Project Selection Criteria
Appendix A-3: 2018 RTIP Project Screening Criteria

Eligible Projects

A. Eligible Projects. SB 45 (Chapter 622, Statutes 1997) defined the range of projects that are eligible for consideration in the RTIP. Eligible projects include, state highway improvements, local road improvements and rehabilitation, public transit, intercity rail, grade separation, pedestrian and bicycle facilities, transportation system management, transportation demand management, soundwall projects, intermodal facilities, and safety. Due to the current fund make up of the STIP, sponsors should expect that all projects programmed in the STIP include a mix of state and federal funds.

Planning Prerequisites

B. RTP Consistency. Projects included in the RTIP must be consistent with the adopted Regional Transportation Plan (RTP), which state law requires to be consistent with federal planning and programming requirements. Each project to be included in the RTIP must identify its relationship with meeting the goals and objectives of the RTP, and where applicable, the RTP ID number.

C. CMP Consistency. Local projects must also be included in a County Congestion Management Plan (CMP), or in an adopted Capital Improvement Program (CIP) for counties that have opted out of the CMP requirement, prior to inclusion in the RTIP.

D. PSR or PSR Equivalent is Required. Projects in the STIP must have a complete Project Study Report (PSR) or, for a project that is not on a state highway, a project study report equivalent or major investment study. The intent of this requirement is to ensure that the project scope, cost and schedule have been adequately defined and justified. Projects with a circulating draft or final environmental document do not need a PSR. This requirement is particularly important in light of SB 45 timely use of funds requirements, discussed below.

The required format of a PSR or PSR equivalent varies by project type. Additional guidance on how to prepare these documents is available on the internet at the addresses indicated within Part 3 (PSR, or equivalent) of Appendix A-4: 2018 RTIP Project Application, which includes a table categorizing PSR and PSR equivalent requirements by project type.

Project Costs and Phases

E. Escalated Costs. All projects will count against share balances on the basis of their fully escalated (inflated) costs. All RTIP project costs must be escalated to the year of expenditure.

As required by law, inflation estimates for Caltrans operations (capital outlay support) costs are based on the annual escalation rate established by the Department of Finance. Local project sponsors may use the state escalation rates or their own rates in determining the escalated project cost in the year programmed.

F. Project Phases. Projects must be separated into the following project components:

1. Completion of all studies, permits and environmental studies (ENV)
2. Preparation of all Plans, Specifications, and Estimates (PS&E)
3. Acquisition of right-of-way (ROW)
4. Construction and construction management and engineering, including surveys and inspections." (CON)
   Note: Right-of-way and construction components on Caltrans projects must be further separated into capital costs and Caltrans support costs (ROW-CT and CON-CT).

The project sponsor/CMA must display the project in these four components (six for Caltrans projects) in the final submittal. STIP funding amounts programmed for any component shall be rounded to the nearest $1,000. Additionally, unless substantially justified, no project may program more than one project phase in a single fiscal year. Caltrans-sponsored projects are exempt from this prohibition. Additionally, right of way (ROW) funds may be programmed in the same year as final design (PS&E) if the environmental document is approved. ROW funds may be programmed in the same year as construction (CON) only if the project does not have significant right of way acquisition or construction costs that require more than a simple Categorical Exemption or basic permitting approvals (see section L). The CTC will not allocate PS&E, ROW, or CON funding until CEQA and NEPA (if federalized) documents are complete and submitted to CTC.

All requests for funding in the RTIP for projects on the state highway system and implemented by an agency other than the Department must include any oversight fees within each project component cost, as applicable and as identified in the cooperative agreement. This is to ensure sufficient funding is available for the project component.

G. Minimum Project Size. New projects or the sum of all project components per project cannot be programmed for less than $500,000 for counties with a population over 1 million (from 2010 U.S. Census data: Alameda, Contra Costa, and Santa Clara Counties), and $250,000 for counties with a population under 1 million (Marin, Napa, San Francisco, San Mateo, Solano, and Sonoma Counties), with the following exceptions:

(a) Funds used to match federal funds;
(b) Planning, Programming and Monitoring (PPM);
(c) Projects for landscaping and mitigation of State highway projects, including soundwalls;
(d) Caltrans project support components not allocated by the Commission; and
(e) Right-of-way capital outlay for Caltrans, which is not allocated by the Commission on a project basis.

Other exceptions may be made on a case-by-case basis.

H. Fiscal Years of Programming. The 2018 STIP covers the five-year period from FY 2018-19 through 2022-23. If a project will not be ready for allocation in a certain year, project sponsors should delay funds to a later year of the five-year STIP period.

Readiness Standards

I. Project Phases Must Be Ready in the Year Proposed. Funds designated for each project component will only be available for allocation until the end of the fiscal year in which the funds are programmed in the STIP. Once allocated, the sponsor will have two additional years beyond the end of the programmed fiscal year to expend pre-construction STIP funds. For construction, the sponsor will have six months to award a contract and three years to expend funds after project award. Project sponsors must invoice at least once in a six-month period following the allocation of funds. It is therefore very important that projects be ready to proceed in the year programmed.

J. Completion of Environmental Process. Government Code Section 14529(c) requires that funding for right-of-way acquisition and construction for a project may be included in the STIP only if the CTC makes a finding that the sponsoring agency will complete the environmental process and can proceed with right-of-way acquisition or construction within the five year STIP period. Furthermore, in compliance with Section 21150 of the Public Resources Code, the CTC may not allocate funds to local agencies for design, right-of-way, or construction prior to documentation of environmental clearance under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) for federally-funded projects. Therefore, project sponsors must demonstrate to MTC that these requirements can be reasonably expected to be met prior to programming final design, right-of-way, or construction funds in the RTIP. Final CEQA documents (aside from Categorical Exemptions, or CEs) must be submitted to CTC prior to allocation. Additional information is available at: http://www.catc.ca.gov/programs/environ.htm.

K. Programming Project Components in Sequential STIP Cycles. Project components may be programmed sequentially. That is, a project may be programmed for environmental work only, without being programmed for plans, specifications, and estimates (design). A project may be programmed for design without being programmed for right-of-way or construction. A project may be programmed for right-of-way without being programmed for construction. The CTC recognizes a particular benefit in programming projects for environmental work only, since projects costs and particularly project scheduling often cannot be determined with meaningful accuracy until environmental studies have been completed. As the cost, scope and schedule of the project is refined, the next phases of the project may be programmed with an amendment or in a subsequent STIP.

When proposing to program only preconstruction components for a project, the implementing agency must demonstrate the means by which it intends to fund the construction of a useable segment, consistent with the regional transportation plan or the Caltrans interregional transportation strategic plan. The anticipated total project cost and source of any uncommitted future funding must be identified.

L. Sequential Phasing. For most projects, the different project phases should be programmed sequentially in the STIP, i.e. environmental before design before right of way before construction. Projects with significant right of way acquisition or construction costs that require more than a simple Categorical Exemption or basic permitting approvals, must not be programmed with the right of way and construction components in the same year as the environmental. Project sponsors must provide sufficient time between the scheduled allocation of environmental funds and the start of

design, right of way or construction. As prescribed in Section F, projects may not have more than one phase programmed per fiscal year, with the exceptions of Caltrans-sponsored preconstruction phases, and right of way (ROW) funds programmed with final design (PS&E) or construction (CON) where there are no significant ROW acquisitions necessary.

M. The Project Must Have a Complete Funding Commitment Plan. All local projects must be accompanied by an authorizing resolution stating the sponsor's commitment to complete the project as scoped with the funds requested. A model resolution including the information required is outlined in Appendix A-4 - Part 1 of this guidance.

The CTC may program a project component funded from a combination of committed and uncommitted funds. Uncommitted funds may only be nominated from the following competitive programs: Active Transportation Program, Local Partnership Program, Solutions for Congested Corridors Program, Trade Corridor Enhancement Program, or Transit and Intercity Rail Capital Program. All local projects requesting to be programmed with uncommitted funds must be accompanied with a plan for securing a funding commitment, explain the risk of not securing that commitment, and its plan for securing an alternate source of funding should the commitment not be obtained. If a project with uncommitted funds is programmed, all funding commitments must be secured prior to July 1 of the year in which the project is programmed. Projects programmed by the Commission in the STIP will not be given priority for funding in other programs under the Commission's purview.

The CTC will regard non-STIP funds as committed when the agency with discretionary authority over the funds has made its commitment to the project by ordinance or resolution. For federal formula funds, including STP, CMAQ, and Federal formula transit funds, the commitment may be by Federal TIP adoption. For federal discretionary funds, the commitment may be by federal approval of a full funding grant agreement or by grant approval.

All regional agencies with rail transit projects shall submit full funding plans describing each overall project and/or useable project segment. Each plan shall list Federal, State, and local funding categories by fiscal year over the time-frame that funding is sought, including funding for initial operating costs. Moreover, should the project schedule exceed the funding horizon, then the amount needed beyond what is currently requested shall be indicated. This information may be incorporated in the project application nomination sheets.

N. Field Review for Federally Funded Local Projects. One way to avoid unnecessary STIP amendment and extension requests is to conduct a field review as early as possible, so potential issues may be identified with sufficient time for resolution.

For all projects in the 2018 RTIP (anticipated to be a mix of federal and state funding), the project sponsor agrees to contact Caltrans and schedule and make a good faith effort to complete a project field review within 6-months of the project being included in the Transportation Improvement Program (TIP). For the 2018 STIP, Caltrans field reviews should be completed by September 1, 2018 for federal aid projects programmed in 2018-19 and 2019-20. The requirement does not apply

to planning activities, state-only funded projects, or STIP funds to be transferred to the Federal Transit Administration (FTA).

Other Requirements

O. Availability for Audits. Sponsors must agree to be available for an audit if requested. Government Code Section 14529.1 "The commission [CTC] shall request that the entity receiving funds accept an audit of funds allocated to it by the commission, if an audit is deemed necessary."

P. Interregional Projects May Be Proposed Under Some Restrictive Circumstances. The project must be a usable segment and be more cost-effective than a Caltrans alternative project. Government Code Section 14527 (c) "A project recommended for funding by the RTPA in the Interregional Improvement Program shall constitute a usable segment, and shall not be a condition for inclusion of other projects in the RTIP." Government Code Section 14529 (k) "... the commission [CTC] must make a finding, based on an objective analysis, that the recommended project is more cost-effective than a project submitted by the department…."

Q. Premature Commitment of Funds. The project sponsor may not be reimbursed for expenditures made prior to the allocation of funds by the CTC (or by Caltrans under delegation authority), unless the provisions of Senate Bill 184 are met in accordance with the CTC Guidelines for Implementation of SB 184. Under no circumstances may funds be reimbursed for expenditures made prior to the funds being programmed in the STIP or prior to the fiscal year in which the project phase is programmed. In addition, the sponsor must make a written request to Caltrans prior to incurring costs, in accordance with Caltrans Locals Assistance Procedures for SB 184 implementation.

R. State-Only Funding. The 2018 RTIP is expected to be funded with a mix of federal and state funds. Project sponsors must federalize their projects by completing NEPA documentation and complying with federal project delivery rules. Project sponsors are expected to meet all requirements of Article XIX in selecting projects receiving state-only funding. This includes sponsors or the CMA providing documentation verifying the county passed a measure allowing for the use of state-only State Highway Account funds on fixed guideway projects, should RTIP funds be proposed for use on non-federalized fixed guideway transit projects.

S. Federal Transportation Improvement Program. All projects programmed in the STIP must also be programmed in the federal Transportation Improvement Program (TIP), regardless of fund source. Project sponsors are encouraged to submit TIP amendment requests immediately following inclusion of the project into the STIP by the CTC. The project listing in the TIP must include total project cost by phase regardless of the phase actually funded by the CTC. STIP projects using federal funds will not receive federal authorization to proceed without the project being properly listed in the TIP.

T. Agency Single Point of Contact. Project sponsors shall assign a single point of contact within the agency to address programming and project delivery issues that may arise during the project life cycle. The name, title, and contact information of this person shall be furnished to the CMA and MTC at the time of project application submittal. This shall also serve as the agency contact for all FHWA-funded projects.

2018 Regional Transportation Improvement Program (RTIP)
Appendix A-4: 2018 RTIP Project Application

Project sponsors must submit a completed project application for each project proposed for funding in the 2018 RTIP. The application consists of the following five parts and are available on the Internet (as applicable) at: http://www.mtc.ca.gov/funding/

1. Resolution of local support
2. Project Study Report (PSR), or equivalent
3. RTIP Project Programming Request (PPR) form (with maps) (must be submitted electronically)
4. Performance Measures Worksheet (if applicable)
5. Complete Streets Checklist (if applicable: check with CMA or on MTC's website, listed above)

Part 1: Sample Resolution of Local Support

Note: Use the latest version of the Resolution of Local Support at:
https://mtc.ca.gov/our-work/fund-invest/federal-funding/obag-2

Resolution No. _____

Authorizing the filing of an application for funding assigned to MTC and committing any necessary matching funds and stating assurance to complete the project

WHEREAS, (INSERT APPLICANT NAME HERE) (herein referred to as APPLICANT) is submitting an application to the Metropolitan Transportation Commission (MTC) for (INSERT FUNDING $ AMOUNT HERE) in funding assigned to MTC for programming discretion, which includes federal funding administered by the Federal Highway Administration (FHWA) and federal or state funding administered by the California Transportation Commission (CTC) such as Surface Transportation Block Grant Program (STP) funding, Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding, Transportation Alternatives (TA) set-aside/Active Transportation Program (ATP) funding, and Regional Transportation Improvement Program (RTIP) funding (herein collectively referred to as REGIONAL DISCRETIONARY FUNDING) for the (INSERT PROJECT TITLE(S) HERE) (herein referred to as PROJECT) for the (INSERT MTC PROGRAM(S) HERE) (herein referred to as PROGRAM); and

WHEREAS, the United States Congress from time to time enacts and amends legislation to provide funding for various transportation needs and programs, (collectively, the FEDERAL TRANSPORTATION ACT) including, but not limited to the Surface Transportation Block Grant Program (STP) (23 U.S.C. § 133), the Congestion Mitigation and Air Quality Improvement Program (CMAQ) (23 U.S.C. § 149) and the Transportation Alternatives (TA) set-aside (23 U.S.C. § 133); and

WHEREAS, state statutes, including California Streets and Highways Code §182.6, §182.7, and §2381(a)(1), and California Government Code §14527, provide various funding programs for the programming discretion of the Metropolitan Planning Organization (MPO) and the Regional Transportation Planning Agency (RTPA); and

WHEREAS, pursuant to the FEDERAL TRANSPORTATION ACT, and any regulations promulgated thereunder, eligible project sponsors wishing to receive federal or state funds for a regionally-significant project shall submit an application first with the appropriate MPO, or RTPA, as applicable, for review and inclusion in the federal Transportation Improvement Program (TIP); and

WHEREAS, MTC is the MPO and RTPA for the nine counties of the San Francisco Bay region; and

WHEREAS, MTC has adopted a Regional Project Funding Delivery Policy (MTC Resolution No. 3606, revised) that sets out procedures governing the application and use of REGIONAL DISCRETIONARY FUNDING; and

WHEREAS, APPLICANT is an eligible sponsor for REGIONAL DISCRETIONARY FUNDING; and

WHEREAS, as part of the application for REGIONAL DISCRETIONARY FUNDING, MTC requires a resolution adopted by the responsible implementing agency stating the following:

- the commitment of any required matching funds; and
- that the sponsor understands that the REGIONAL DISCRETIONARY FUNDING is fixed at the programmed amount, and therefore any cost increase cannot be expected to be funded with additional REGIONAL DISCRETIONARY FUNDING; and
- that the PROJECT will comply with the procedures, delivery milestones and funding deadlines specified in the Regional Project Funding Delivery Policy (MTC Resolution No. 3606, revised); and
- the assurance of the sponsor to complete the PROJECT as described in the application, subject to environmental clearance, and if approved, as included in MTC's federal Transportation Improvement Program (TIP); and
- that the PROJECT will have adequate staffing resources to deliver and complete the PROJECT within the schedule submitted with the project application; and
- that the PROJECT will comply with all project-specific requirements as set forth in the PROGRAM; and
- that APPLICANT has assigned, and will maintain a single point of contact for all FHWA- and CTC-funded transportation projects to coordinate within the agency and with the respective Congestion Management Agency (CMA), MTC, Caltrans, FHWA, and CTC on all communications, inquires or issues that may arise during the federal programming and delivery process for all FHWA- and CTC-funded transportation and transit projects implemented by APPLICANT; and
- in the case of a transit project, the PROJECT will comply with MTC Resolution No. 3866, revised, which sets forth the requirements of MTC's Transit Coordination Implementation Plan to more efficiently deliver transit projects in the region; and
- in the case of a highway project, the PROJECT will comply with MTC Resolution No. 4104, which sets forth MTC's Traffic Operations System (TOS) Policy to install and activate TOS elements on new major freeway projects; and
- in the case of an RTIP project, state law requires PROJECT be included in a local congestion management plan, or be consistent with the capital improvement program adopted pursuant to MTC's funding agreement with the countywide transportation agency; and

WHEREAS, that APPLICANT is authorized to submit an application for REGIONAL DISCRETIONARY FUNDING for the PROJECT; and

WHEREAS, there is no legal impediment to APPLICANT making applications for the funds; and

WHEREAS, there is no pending or threatened litigation that might in any way adversely affect the proposed PROJECT, or the ability of APPLICANT to deliver such PROJECT; and

WHEREAS, APPLICANT authorizes its Executive Director, General Manager, or designee to execute and file an application with MTC for REGIONAL DISCRETIONARY FUNDING for the PROJECT as referenced in this resolution; and

WHEREAS, MTC requires that a copy of this resolution be transmitted to the MTC in conjunction with the filing of the application.

NOW, THEREFORE, BE IT RESOLVED that the APPLICANT is authorized to execute and file an application for funding for the PROJECT for REGIONAL DISCRETIONARY FUNDING under the FEDERAL TRANSPORTATION ACT or continued funding; and be it further

RESOLVED that APPLICANT will provide any required matching funds; and be it further

RESOLVED that APPLICANT understands that the REGIONAL DISCRETIONARY FUNDING for

the project is fixed at the MTC approved programmed amount, and that any cost increases must be funded by the APPLICANT from other funds, and that APPLICANT does not expect any cost increases to be funded with additional REGIONAL DISCRETIONARY FUNDING; and be it further

RESOLVED that APPLICANT understands the funding deadlines associated with these funds and will comply with the provisions and requirements of the Regional Project Funding Delivery Policy (MTC Resolution No. 3606, revised) and APPLICANT has, and will retain the expertise, knowledge and resources necessary to deliver federally-funded transportation and transit projects, and has assigned, and will maintain a single point of contact for all FHWA- and CTC-funded transportation projects to coordinate within the agency and with the respective Congestion Management Agency (CMA), MTC, Caltrans, FHWA, and CTC on all communications, inquires or issues that may arise during the federal programming and delivery process for all FHWA- and CTC-funded transportation and transit projects implemented by APPLICANT; and be it further

RESOLVED that PROJECT will be implemented as described in the complete application and in this resolution, subject to environmental clearance, and, if approved, for the amount approved by MTC and programmed in the federal TIP; and be it further

RESOLVED that APPLICANT has reviewed the PROJECT and has adequate staffing resources to deliver and complete the PROJECT within the schedule submitted with the project application; and be it further

RESOLVED that PROJECT will comply with the requirements as set forth in MTC programming guidelines and project selection procedures for the PROGRAM; and be it further

RESOLVED that, in the case of a transit project, APPLICANT agrees to comply with the requirements of MTC's Transit Coordination Implementation Plan as set forth in MTC Resolution No. 3866, revised; and be it further

RESOLVED that, in the case of a highway project, APPLICANT agrees to comply with the requirements of MTC's Traffic Operations System (TOS) Policy as set forth in MTC Resolution No. 4104; and be it further

RESOLVED that, in the case of an RTIP project, PROJECT is included in a local congestion management plan, or is consistent with the capital improvement program adopted pursuant to MTC's funding agreement with the countywide transportation agency; and be it further

RESOLVED that APPLICANT is an eligible sponsor of REGIONAL DISCRETIONARY FUNDING funded projects; and be it further

RESOLVED that APPLICANT is authorized to submit an application for REGIONAL DISCRETIONARY FUNDING for the PROJECT; and be it further

RESOLVED that there is no legal impediment to APPLICANT making applications for the funds; and be it further

RESOLVED that there is no pending or threatened litigation that might in any way adversely affect the proposed PROJECT, or the ability of APPLICANT to deliver such PROJECT; and be it further

RESOLVED that APPLICANT authorizes its Executive Director, General Manager, City Manager, or designee to execute and file an application with MTC for REGIONAL DISCRETIONARY FUNDING for the PROJECT as referenced in this resolution; and be it further

RESOLVED that a copy of this resolution will be transmitted to the MTC in conjunction with the filing of the application; and be it further

RESOLVED that the MTC is requested to support the application for the PROJECT described in the resolution, and if approved, to include the PROJECT in MTC's federal TIP upon submittal by the project sponsor for TIP programming.

RTIP Project Application

Part 2: Project Study Report (PSR), or equivalent

The required format of a PSR or PSR equivalent varies by project type. The following table categorizes PSR and PSR equivalent requirements by project type. Additional guidance on how to prepare these documents is available on the Internet at the addresses indicated below, or from MTC.

Project Study Report (PSR) Requirements
PSR and Equivalents by Project Type

Project Type	Type of Document Required *	Where to get more information
State Highway	Full PSR or PD/ENV Only	http://www.dot.ca.gov/design/manuals/pdpm.html
Local Roadway a. rehabilitation	PSR for local rehabilitation	http://www.dot.ca.gov/design/manuals/pdpm.html
b. capacity increasing or other project	PSR equivalent – project specific study with detailed scope and cost estimate	In most cases completing the Preliminary Environmental Study and Field Review forms in the Local Assistance Procedures Manual should be sufficient. These forms can be found at: Preliminary Environmental-- http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm then look in chapter 6 pg 6-31. Field Review -- http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm then look in chapter 7 pg 7-13.
Transit	State of California Uniform Transit Application	http://www.dot.ca.gov/drmt/docs/spstip/UTA_Application_rev111308.pdf
Other	PSR equivalent with detailed scope and cost estimate	To be determined on a case by case basis

* In some instances a Major Investment Study (MIS) prepared under federal guidance may serve as a PSR equivalent where information provided is adequate for programming purposes.

RTIP Project Application

Part 3: Project Programming Request (PPR) Form

Applicants are required to submit a Project Programming Request (PPR) form in order to be considered for funding from the 2018 RTIP.

The PPR for new projects can be downloaded from the following location:
http://www.dot.ca.gov/hq/transprog/allocation/ppr_new_projects_9_13_17.xls

The PPRs for existing projects can be downloaded from the following location:
http://www.dot.ca.gov/hq/transprog/newctips.html

Part 4: Performance Measures Worksheet

Applicants submitting nominations for projects with total project costs exceeding $50 million, or have over $15 million in STIP funds programmed, are required to submit a Performance Measure Worksheet.

The Worksheet template is available at the following location:
http://www.catc.ca.gov/programs/stip.htm

Select the "2018 STIP Guidelines" document. The template begins on page 43 of the guidelines, under "Appendix B: Performance Indicators and Measures".

Part 5: Complete Streets Checklist

Applicants are required to include the Complete Streets (Routine Accommodations) Checklist with the application submittal to MTC for projects that will have an impact on bicycles or pedestrians. The Checklist is available from the Congestion Management Agencies and at the MTC website at http://mtc.ca.gov/our-work/plans-projects/bicycle-pedestrian-planning/complete-streets.

Date: December 20, 2017
Attachment B
MTC Resolution No. 4308

MTC 2018 Regional Transportation Improvement Program

2018 RTIP

December 20, 2017
(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year 18-19	19-20	20-21	21-22	22-23	Outside RTIP
Alameda County Shares										
Alameda	AC Transit	2009Z	AC Transit Bus Rapid Transit Project	**13,125**	13,125	0	0	0	0	0
Alameda	BART	2010C2	19th Street BART Station Modernization	**3,726**	3,726	0	0	0	0	0
Alameda	MTC	2100	Planning, programming, and monitoring	**606**	140	0	150	155	161	0
Alameda	ACTC	2179	Planning, programming, and monitoring	**2,100**	565	0	1,535	0	0	0
Alameda	ACTC	new	I-80 Gilman I/C Reconstruction and Access Imps.	**25,784**	25,784	0	0	0	0	0
Alameda	ACTC	new	SR 84/I-680 Widening and I/C Imps.	**11,114**	0	0	11,114	0	0	0
Alameda	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	5,063
			Alameda County Total	**56,455**	43,340	-	12,799	155	161	**5,063**
Contra Costa County Shares										
Contra Costa	CCTA	222E	I-680 SB HOV Gap Closure (N. Main-Livorna)	**15,557**	15,557	0	0	0	0	0
Contra Costa	CCTA	242K	I-80/San Pablo Dam Rd Interchange (Ph. 2)	**9,200**	0	9,200	0	0	0	0
Contra Costa	CCTA	298E	I-680/SR4 Interchange Improvements – Phase 3	**18,800**	18,800	0	0	0	0	0
Contra Costa	BART	2010B	Walnut Creek BART TOD Intermodal Project	**5,300**	0	5,300	0	0	0	0
Contra Costa	BART	2010C1	Concord BART Station Modernization	**13,000**	3,500	0	9,500	0	0	0
Contra Costa	CCTA	2011O	Planning, programming, and monitoring	**1,521**	454	0	355	356	356	0
Contra Costa	MTC	2118	Planning, programming, and monitoring	**393**	91	0	97	101	104	0
Contra Costa	CCTA	2025H	I-80/Central Avenue - Local Road Improvement	**7,773**	0	0	5,900	1,873	0	0
Contra Costa	CCTA	2025J	Kirker Pass Rd NB Truck Climbing Lane	**2,650**	2,650	0	0	0	0	0
Contra Costa	CCTA	0299A	SR4 Operational Improvements	**1,379**	0	0	0	1,379	0	0
Contra Costa	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	31,090
			Contra Costa Total	**75,573**	41,052	14,500	15,852	3,709	460	**31,090**
Marin County Shares										
Marin	MTC	2127	Planning, programming, and monitoring	**113**	26	0	28	29	30	0
Marin	TAM	2127C	Planning, programming, and monitoring	**287**	0	0	287	0	0	0
Marin	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	571
			Marin County Total	**400**	26	-	315	29	30	**571**

MTC 2018 Regional Transportation Improvement Program

2018 RTIP

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year 18-19	19-20	20-21	21-22	22-23	Outside RTIP
Napa County Shares										
Napa	NVTA	376	Soscol Junction	**6,521**	3,000	600	0	2,921	0	0
Napa	NVTA	1003E	Planning, programming, and monitoring	**193**	0	0	65	64	64	0
Napa	MTC	2130	Planning, programming, and monitoring	**69**	16	0	17	18	18	0
Napa	American Cyn	2130D	Devlin Road and Vine Trail Extension	**4,151**	4,151	0	0	0	0	0
Napa	Calistoga	2130M	Petrified Forest Rd and SR-128, Intersection Improvements	**475**	0	475	0	0	0	0
Napa	Yountville	2130N	Hopper Creek Pedestrian Path (Oak Cir - Mission)	**500**	0	500	0	0	0	0
Napa	City of Napa	0380N	Silverado Five- Way Intersection Improvements	**1,153**	0	0	0	1,153	0	0
Napa	County of Napa	2130R	Silverado Trail Repaving Phase L	**98**	0	98	0	0	0	0
Napa	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	376
			Napa County Total	**13,160**	7,167	1,673	82	4,156	82	**376**
San Francisco County Shares										
San Francisco	SFCTA	2007	Planning, programming, and monitoring	**778**	0	0	260	259	259	0
San Francisco	MTC	2131	Planning, programming, and monitoring	**308**	71	0	76	79	82	0
San Francisco	SFMTA	new	2020 Restoration of SFMTA Light Rail Lines	**5,500**	0	5,500	0	0	0	0
San Francisco	SFMTA	new	2021 Restoration of SFMTA Light Rail Lines	**8,252**	0	0	8,252	0	0	0
San Francisco	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	1,548
			San Francisco County Total	**14,838**	71	5,500	8,588	338	341	**1,548**
San Mateo County Shares										
San Mateo	SM C/CAG	668D	SR 92/US 101 Interchange Imps. - Phase 2	**5,628**	0	2,411	3,217	0	0	0
San Mateo	Caltrans	690A	US-101 Willow Rd I/C Reconst. (AB3090 Reimbursement)	**8,000**	0	4,000	4,000	0	0	0
San Mateo	MTC	2140	Planning, programming, and monitoring	**320**	74	0	79	82	85	0
San Mateo	SM C/CAG	2140A	Planning, programming, and monitoring	**1,125**	338	0	263	262	262	0
San Mateo	Caltrans	2140E	Countywide ITS Imps. - San Mateo County Smart Corridor	**4,298**	240	4,058	0	0	0	0
San Mateo	SM C/CAG	new	US 101 Managed Lane Project	**33,498**	16,000	17,498	0	0	0	0
San Mateo	Redwood City	new	US 101/Woodside Road Interchange Imp. Project	**8,000**	8,000	0	0	0	0	0
San Mateo	S. San Francisc	new	US 101 Produce Avenue Interchange - Imps.	**5,000**	0	0	5,000	0	0	0
San Mateo	SM C/CAG	new	ITS Imps. in Daly City, Brisbane, and Colma	**8,500**	600	0	0	1,000	6,900	0
San Mateo	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	1,598
			San Mateo County Total	**74,369**	25,252	27,967	12,559	1,344	7,247	**1,598**

MTC 2018 Regional Transportation Improvement Program

2018 RTIP

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year 18-19	19-20	20-21	21-22	22-23	Outside RTIP
Santa Clara County Shares										
Santa Clara	VTA	503J	I-280 Soundwalls at Bird Ave. in San Jose	**7,000**	0	833	929	456	4,782	0
Santa Clara	VTA	521C	I-680 Soundwall from Capitol to Mueller	**3,630**	355	3,275	0	0	0	0
Santa Clara	MTC	2144	Planning, programming, and monitoring	**707**	163	0	175	181	188	0
Santa Clara	BART	2147E	BART Phase 2: Extension to Downtown San Jose/Santa Clara	**29,702**	0	0	0	29,702	0	0
Santa Clara	SCVTA	2255	Planning, programming, and monitoring	**2,607**	783	0	912	912	0	0
Santa Clara	San Jose	new	San Jose West San Carlos Urban Village Streetscape Imps.	**4,350**	0	0	0	4,350	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 3	**14,268**	14,268	0	0	0	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 4	**11,500**	2,300	9,200	0	0	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 5	**10,188**	0	10,188	0	0	0	0
Santa Clara	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	3,632
			Santa Clara County Total	**83,952**	17,869	23,496	2,016	35,601	4,970	**3,632**
Solano County Shares										
Solano	MTC	2152	Planning, programming, and monitoring	**186**	43	0	46	48	49	0
Solano	STA	2263	Planning, programming, and monitoring	**681**	204	0	159	159	159	0
Solano	Solano TA	5301L	I-80/I-680/SR12 I/C Package 2A (EB SR12 to EB I-80 Connector)	**9,000**	9,000	0	0	0	0	0
Solano	Vacaville	5301V	Jepson Pkwy (Leisure Town from Commerce to Orange)	**9,296**	0	0	9,296	0	0	0
Solano	Solano TA	new	SR 37 Project/Mare Island Interchange Project	**5,000**	5,000	0	0	0	0	0
Napa	County of Napa	2130R	Silverado Trail Repaving Phase L	**98**	0	98	0	0	0	0
Solano	Solano TA	new	SR 12/Church Rd	**1,939**	0	0	1,939	0	0	0
Solano	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	945
			Solano County Total	**26,200**	14,247	98	11,440	207	208	**945**
Sonoma County Shares										
Sonoma	SCTA	770E	Planning, programming, and monitoring	**591**	0	0	197	197	197	0
Sonoma	MTC	2156	Planning, programming, and monitoring	**223**	52	0	55	57	59	0
Sonoma	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	1,177
			Sonoma County Total	**814**	52	-	252	254	256	**1,177**
			2018 RTIP Total - Bay Area	**345,761**	**149,076**	**73,234**	**63,903**	**45,793**	**13,755**	**46,000**

Note: Detail on project programming by year and phase will be submitted to CTC

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MTC 2018 Regional Transportation Improvement Program

Advanced Project Development Element

2018 RTIP

December 20, 2017
(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year						Outside RTIP
					Prior	18-19	19-20	20-21	21-22	22-23	
Alameda County Shares											
				0	0	0	0	0	0	0	0
			Alameda County Total	**-**	-	-	-	-	-	-	**-**
Contra Costa County Shares											
Contra Costa	CCTA	0299A	SR4 Operational Improvements (APDE)	**6,121**	0	0	0	0	6,121	0	0
			Contra Costa Total	**6,121**	-	-	-	-	6,121	-	**-**
Marin County Shares											
				0	0	0	0	0	0	0	0
			Marin County Total	**-**	-	-	-	-	-	-	**-**
Napa County Shares											
				0	0	0	0	0	0	0	0
			Napa County Total	**-**	-	-	-	-	-	-	**-**
San Francisco County Shares											
				0	0	0	0	0	0	0	0
			San Francisco County Total	**-**	-	-	-	-	-	-	**-**
San Mateo County Shares											
				0	0	0	0	0	0	0	0
			San Mateo County Total	**-**	-	-	-	-	-	-	**-**
Santa Clara County Shares											
Santa Clara	VTA		US 101 Express Lanes - Phase 5 (APDE)	**10,589**	0	10,589	0	0	0	0	0
			Santa Clara County Total	**10,589**	-	10,589	-	-	-	-	**-**
Solano County Shares											
				0	0	0	0	0	0	0	0
			Solano County Total	**-**	-	-	-	-	-	-	**-**
Sonoma County Shares											
				0	0	0	0	0	0	0	0
			Sonoma County Total	**-**	-	-	-	-	-	-	**-**
2018 RTIP Total - Bay Area				**16,710**	**0**	**10,589**	**0**	**0**	**6,121**	**0**	**0**

Note: Detail on project programming by year and phase will be submitted to CTC

2018
Regional Transportation Improvement Program

STIP Amendments / Extensions
Rules and Procedures

October 25, 2017

MTC Resolution No. 4308
Attachment C

Metropolitan Transportation Commission
Programming and Allocations Section
http://mtc.ca.gov/our-work/fund-invest

RTIP
Regional Transportation Improvement Program

STIP Amendments / Extensions
Rules and Procedures
Table of Contents

Regional Transportation Improvement Program (RTIP)
STIP Amendments / Extensions Rules and Procedures

What is the STIP?
The State Transportation Improvement Program (STIP) is the State's spending program for state and federal funding. The STIP is comprised of the Regional Transportation Improvement Program (RTIP) and the Interregional Transportation Improvement Program (ITIP). The program is updated every two years and covers a five-year period. STIP funded projects, like all other state and federally funded projects, must be listed in the TIP in order for the sponsor to access the funding.

Seventy-five percent (75%) of the funding in the STIP flows to regions by formula through their RTIPs. Regions throughout the state are charged with developing an expenditure plan for the funds. Eligible project types include improvements to state highways, local roads, public transit, intercity rail, pedestrian and bicycle facilities, grade separations, transportation system management, transportation demand management, soundwall projects, intermodal facilities, and safety.

The remaining 25% of the funding flows to the ITIP, which is a statewide program managed by Caltrans. This funding is directed to projects that improve interregional transportation. Eligible project types include intercity passenger rail, mass transit guideways, grade separation, and state highways.

When are Amendments and Extensions Allowed?

STIP Amendments
An amendment may change the cost, scope or schedule of a STIP project and its components. For instance, if the final cost estimate for a project is higher (or lower) than the amount programmed, a STIP amendment may be requested to increase or (decrease) the amount programmed. Or, as a project progresses through project development, it may be time to add the next component or phase. Likewise, if the project schedule is delayed significantly, an amendment may be warranted to request a change in program year of the funding in order to prevent a funding lapse. STIP amendments may also be requested to delete project funding or to add a new project into the STIP.

Important Tip*:* Once a state fiscal year (July 1 – June 30) has begun, the CTC will not allow STIP amendments to delete or change the funding programmed in that fiscal year. Instead, the project sponsor may request a one-time extension as described below.

One-time Extension Requests
SB 45 established deadlines for allocation, contract award, expenditure and reimbursement of funds for all projects programmed in the STIP. The CTC may, upon request, grant a one-time extension to each of these deadlines for up to 20 months. However, the CTC will only grant an extension if it finds that an unforeseen and extraordinary circumstance beyond the control

of the responsible agency has occurred that justifies the extension. Furthermore, the extension will not exceed the period of delay directly attributable to the extraordinary circumstance. Generally, the CTC does not grant extensions longer than 12 months. Additionally, project sponsors must be present at the CTC meeting where action is taken on any extension request, to answer questions the CTC staff or commissioners may have.

Roles and Responsibilities

The STIP Amendment and Extensions process requires review and approval by various agencies to ensure the action requested is appropriate, and consistent with state statutes, CTC guidance, Caltrans procedures and regional policies. Projects must be included in a county Congestion Management Program (CMP) or county Capital Improvement Program (CIP), and must be consistent with the Regional Transportation Plan (RTP) to be programmed in the RTIP. Therefore, any additions or changes that may impact the priorities established within these documents must be reviewed and approved by the appropriate agency. Furthermore, improperly programmed funds or missed deadlines could result in funding being permanently lost to the region.

Project sponsors are responsible for reviewing and understanding the procedures, guidance and regulations affecting projects programmed in the STIP. Project sponsors must also assign a Single Point of Contact – an individual responsible for submitting documentation for STIP amendments and extensions that must have read and understood these policies and procedures, particularly the CTC STIP Guidelines available on the internet at http://www.dot.ca.gov/hq/transprog/ocip.htm and the MTC RTIP Policies and Application Procedures posted on the internet at: http://mtc.ca.gov/our-work/fund-invest/investment-strategies-commitments/transit-21st-century/funding-sales-tax-and. Project sponsors are ultimately responsible for ensuring the required documentation is provided to Caltrans by the deadlines established by MTC's Regional Project Delivery Policy (MTC Resolution No. 3606) and Caltrans for all allocations, extensions, and additional supplemental funds requests.

The Congestion Management Agencies/Transportation Authorities are responsible for ensuring the packages submitted by the project sponsors are complete, and the proposed changes are consistent with the Regional Transportation Plan (RTP), and Congestion Management Plans (CMPs) or Capital Improvement Program (CIP). The CMAs/TAs check to ensure the proposed changes meet MTC, CTC and other state or federal guidance and regulations. As mentioned in the Guiding Principles of the 2018 RTIP Policies and Procedures, the CMA must consider equitable distribution of projects in accordance with Title VI. Following CMA/TA concurrence of the request, the complete package is forwarded to MTC.

The Metropolitan Transportation Commission (MTC), as the Regional Transportation Planning Agency (RTPA) for the nine counties of the San Francisco Bay Area, provides concurrence for the STIP requests and formally submits all STIP Amendments to Caltrans for approval by the CTC. MTC also verifies compliance with established state and regional policies. Although MTC provides concurrence on extensions, additional supplemental funds requests and some allocation requests, it is the responsibility of the project sponsor, not MTC,

to ensure the required documentation is submitted to Caltrans by the established deadlines for these action requests.

The California Department of Transportation (Caltrans) processes the requests and makes recommendations to the California Transportation Commission (CTC) in accordance with Department procedures and CTC policies and guidelines.

The California Transportation Commission (CTC) approves or rejects the requests based on state statutes and its own established guidance and procedures.

Requesting STIP Amendments and Extensions

As described below, the procedures for processing STIP amendments and extensions vary depending on whether the project is sponsored by Caltrans or a local agency, and whether it has already received STIP funding. Extension Requests and STIP Amendments to delay projects programmed in the following fiscal year must be submitted to MTC and Caltrans by January 31 for CTC action no later than April.

Step 1: Project Sponsor Requests STIP Amendment or Extension

For currently programmed Caltrans projects:

- Caltrans and the appropriate CMA identify and discuss the issue(s) that may require an amendment or extension and notify MTC Programming and Allocations (P&A) Section staff that a change to the current STIP may be necessary and is being considered.
- Caltrans and CMA agree on proposed change(s).
- Where necessary, CMA staff requests policy board approval of proposed change.
- Once approved by the CMA, CMA notifies Caltrans in writing of the county's concurrence, with a copy sent to MTC P&A.
- Caltrans requests MTC concurrence for the STIP Amendment/Extension by transmitting the following to MTC P&A:
  - Letter requesting the STIP Amendment or Extension with explanation and justification of the need for the action with the following attachments:

For a STIP Amendment:

- Copy of CMA's letter of concurrence
- Revised Project Programming Request (PPR) Form – http://mtc.ca.gov/our-work/fund-invest
- Submittal of TIP Revision Request through FMS – http://fms.mtc.ca.gov
- A construction 'STIP History' for each amendment that would delay the year of construction. The 'STIP History' outlines the project's construction history as programmed in the STIP with particular attention to any previous delays and reason for the previous and current delay. It must note the original inclusion of the project construction component in the STIP and each prior

project construction STIP amendment delay including for each, the amendment date, the dollar amount programmed for construction, and the scheduled year of construction delay. It must also include a statement on the financial impact of the construction delay on the project, and an estimated funding source for the additional funds necessary to complete the project under the delayed schedule. (A STIP History is only required for amendments to delay the year of construction.)

For an Extension:

- Copy of CMA's letter of concurrence
- A construction 'STIP History' for each extension that would delay construction as described above for a STIP Amendment.

For currently programmed local projects:

- Sponsor and the appropriate CMA identify and discuss the issue(s) that may require an amendment or extension and notify Caltrans and MTC Programming and Allocations Section staff that a change to the current STIP may be necessary and is being considered.
- Sponsor and CMA agree on proposed change(s).
- Sponsor requests CMA concurrence for the STIP Amendment/Extension by submitting the following to the CMA by January 31:
  - Letter requesting the STIP Amendment or Extension with explanation and justification of the need for the action with the following attachments:

For a STIP Amendment:

- Revised Project Programming Request (PPR) Form - http://mtc.ca.gov/our-work/fund-invest
- Submittal of TIP Revision Request through FMS – http://fms.mtc.ca.gov
- A construction 'STIP History' for each amendment that would delay the year of construction. The 'STIP History' outlines the project's construction history as programmed in the STIP with particular attention to any previous delays and reason for previous and current delay. It must note the original inclusion of the project construction component in the STIP and each prior project construction STIP amendment delay including for each, the amendment date, the dollar amount programmed for construction, and the scheduled year of construction delay. It must also include a statement on the financial impact of the construction delay on the project, and an estimated funding source for the additional funds necessary to complete the project under the delayed schedule. (A STIP History is only required for amendments to delay the year of construction.)
- Any other documentation required by the CMA or Caltrans

For an Extension:

- Copy of completed Request for Time Extension form (Exhibit 23-B, located on the internet at: http://www.dot.ca.gov/hq/LocalPrograms/lam/forms/lapg-forms/g23forms.docx).
- A construction 'STIP History' for each extension that would delay construction, as described above for a STIP Amendment.
- A listing showing the status of all SB 45 and regional project delivery policy (MTC Resolution 3606) deadlines for all of the project sponsors' allocated STIP projects, and all active projects funded through the Federal Highway Administration (FHWA), including but not limited to Surface Transportation Program (STP), Congestion Mitigation Air Quality Improvement (CMAQ), and Active Transportation Program (ATP) projects. This is to ensure project sponsors are aware of the other deadlines facing other projects, and so that sponsors will work to meet those deadlines. A template is available online at: http://mtc.ca.gov/sites/default/files/Template_FHWA_Funded_Projects_Status.xlsx.
- Any other documentation required by the CMA or Caltrans

- Where necessary, CMA staff requests policy board approval of proposed request.
- Sponsor submits Caltrans' "Request for Time Extension" form and any other required documentation to Caltrans.
- CMA requests MTC concurrence for the STIP Amendment/Extension by transmitting a letter to MTC P&A requesting the STIP Amendment or Extension with explanation and justification of the need for the action along with the documentation submitted by the project sponsor. A copy of the request is also sent to Caltrans.
- Sponsor must be present at the CTC meeting where action is being taken on the extension request to justify the reasons for the extension. Failure to be present may result in the CTC denying the extension request, and risk losing the programmed funds permanently due to missed deadlines. In limited instances, a project sponsor may request that their CMA be available in place of the project sponsor. The CMA and MTC must concur with this request via email.

Important Tip*:* For STIP Extensions, the CTC will only grant an extension if it finds that an unforeseen and extraordinary circumstance beyond the control of the responsible agency has occurred that justifies the extension. Furthermore, the extension will not exceed the period of delay directly attributable to the extraordinary circumstance, up to a maximum of 20 months (although the Commission generally does not grant any extension longer than 12 months). It is therefore absolutely necessary that the letter and supporting documentation clearly explains and justifies the extension request. Failure to provide adequate justification and not being present at the CTC meeting will most likely result in an extension not being approved.

For all new projects:

- Sponsor and the appropriate CMA identify and discuss the issue(s) that may require a new project to be added to the STIP and notify Caltrans and MTC Programming and Allocations (P&A) Section staff an amendment to the current STIP may be necessary and is being considered.
- Sponsor and CMA agree on proposed addition.
- Sponsor requests CMA concurrence for the STIP Amendment by submitting the following to the CMA:
  - Letter requesting the STIP Amendment with explanation and justification of the need for the project to be added to the STIP.
  - Submittal of TIP Revision Request through FMS – http://fms.mtc.ca.gov
  - RTIP Application form including: - http://www.mtc.ca.gov/our-work/fund-invest/
    - Resolution of local support
    - Project Programming Request (PPR) forms (with maps)
    - Transportation Improvement Program (TIP) amendment
    - Project Study Report (PSR), or equivalent.
    - Complete Streets Checklist and Performance Measures form, as applicable
    - Copy of State-Only Funding Request Exception Form (Only if requesting state-only funding and project is not on pre-approved state-only eligible funding list. Original request is to be submitted directly to Caltrans HQ Budgets for processing and approval prior to MTC submittal of the request to Caltrans/CTC).
- CMA staff obtains policy board approval of proposed addition.
- CMA requests MTC concurrence for the new project by transmitting a letter to MTC P&A requesting the STIP Amendment with an explanation and justification of the need for the project along with a copy of the CMA Resolution approving the project, and the documentation listed above provided by the project sponsor.

Step 2: MTC Review and Concurrence

- Once a complete request has been received, MTC P&A staff will place the request on the MTC Programming and Allocations Committee (PAC) meeting agenda for concurrence of major changes, or prepare a letter of concurrence for the Executive Director's signature for minor changes.
- Following approval by PAC and/or the Executive Director, MTC send a Letter of Concurrence to Caltrans District 4 with a copy to the appropriate CMA. (District 4 will ensure that the request is copied to the appropriate contacts at Caltrans Headquarters and CTC.) MTC may concur with minor extensions administratively at the staff level, and with minor changes on Caltrans-sponsored projects administratively via email.

Major versus minor changes

- All major changes, including any requests to program a new project, will be presented to MTC's Programming and Allocations Committee (PAC) to determine MTC's concurrence. Major changes include:
  - request to program a new project (or delete a project)
  - schedule delay that affects air quality conformity analysis
  - project advance with reimbursement or replacement project per AB 3090
  - request to use Grant Anticipation Revenue Vehicle (GARVEE) financing
- For minor changes, MTC staff may write a letter of concurrence for the Executive Director's signature. Minor changes include:
  - Extension requests for allocation, award, expenditure and reimbursement/project completion deadlines (minor extensions may be concurred administratively by MTC staff)
  - schedule changes, except where change implies major cost or delivery ramifications
  - changes in implementing agency or project sponsor
  - changes to project budget that are less than 20% of the total project cost or less than $1 million.
  - redirection of funds from one project component to another (e.g. from project engineering into environmental)
  - changes considered routine and not impacting project delivery

* Amendments or extensions based on new federal or state requirements may need to go to MTC's PAC

Additional/Supplemental Funds

On occasion it may be necessary to provide additional 'Supplemental' funding to a project as a result of cost increases or revised cost estimates. There are several different processes to follow depending on where the project is within its delivery schedule. The various methods to add STIP funding to a project are as follow:

Biennial STIP Cycle: If additional funding is identified years before the actual allocation, the project sponsor may request the funding through the biennial STIP adoption process. This process is outlined in MTC's RTIP Policies and Application Procedures, and is the preferred method of requesting additional/supplemental funds.

STIP Amendment: If additional funding is identified prior to the allocation of funds, but is required prior to the next biennial STIP adoption, a STIP amendment adding the funds to the project may be requested as outlined in the STIP Amendment procedures above. However, in most cases the additional funds could be added at the time of allocation, thus foregoing the STIP amendment process.

Additional Funds at Time of Allocation: Often the simplest way to add supplemental funds is at the time of allocation. The process is the same as the procedures outlined above for a time extension, except that instead of a "Request for Time Extension" form, a "Request for STIP Funding Allocation" form is used (Exhibit 23-O, located on the internet at: http://www.dot.ca.gov/hq/LocalPrograms/lam/forms/lapg-forms/g23forms.docx). In all supplemental funding requests, the additional funding must be approved by the CTC.

Additional Funds After Allocation: It may be necessary to seek additional funds after an allocation, either to award the project or due to unforeseen cost increases while the project is under construction. In either case, an analysis should be performed to determine whether re-engineering (sometimes called "value engineering") could achieve cost reductions to accommodate the increase. If additional funds are still necessary, a funding source outside the STIP should be pursued prior to seeking additional STIP funding. If it is determined that additional STIP funds are needed, then the project sponsor should proceed as with the procedures outlined for "Additional Funds at Time of Allocation". It should be noted that once the funds are allocated, the project sponsor does not have the option to add the funds through a STIP amendment since the CTC does not allow amendments to change the programming for a given component after the funds have been allocated.

Allocation of Funds

Project sponsors request an allocation of funds directly to Caltrans, with Caltrans placing the request on the CTC Agenda for approval. The completed request package is due to Caltrans 60 days prior to the CTC meeting where the funds are anticipated to be allocated. MTC requires sponsors to obtain MTC concurrence on allocation requests in addition to the circumstances noted below:

Local Road Rehabilitation Projects: Allocation of funds for local road rehabilitation projects requires certification from MTC. Project sponsors should submit the "Pavement Management System Certification" form with the "Local Road Rehabilitation Project Certification" form attached (Exhibits 23-L and 23-K, both found on the internet at: http://www.dot.ca.gov/hq/LocalPrograms/lam/forms/lapg-forms/g23forms.docx) directly to MTC for signature. MTC will then transmit the signed form to Caltrans District 4 – Local Assistance. All other allocation request documentation should be sent directly to Caltrans District 4 – Local Assistance.

Allocation of State-Only Funds: MTC concurs with all State-Only funds allocations that are listed in the STIP as State-Only. Projects without State-Only funding pre-approved by CTC must request a State-Only Funding Exception form (Exhibit 23-F, found on the internet at: http://www.dot.ca.gov/hq/LocalPrograms/lam/forms/lapg-forms/g23forms.docx). MTC must concur with the exception request, and the form is submitted to Caltrans.

Funds Allocated Differently than Programmed: In some instances it may be necessary to allocate funds differently from what is programmed in the STIP. These situations

generally still require MTC concurrence. Fortunately a STIP amendment may not be required, and the funding may be revised at the time of the allocation, thus avoiding the long STIP amendment process. However, A TIP amendment is still required, especially if federal funds are involved. Changes that are allowed at the time of allocation are noted below; however, project sponsors should consult with Caltrans District 4 Local Assistance, the CMA and/or MTC to determine whether a change at the time of allocation is permissible before preparing the allocation request.

- Change in implementing agency
- Cost savings (allocation less than program amount)
- Redirection of funds among project components or phases within the project as long as total STIP funding has not increased or previously been allocated.
- Advancement of funding from future years (transit projects with funds to be transferred to FTA require a TIP amendment to advance funds)
- Change in funding type (a change to state-only funding requires approval from Caltrans with their "State-Only Funding Request Exception" form if the project type is not on the pre-approved state-only eligible funding list – see "Allocation of State-Only Funds" above).

STP/CMAQ Match Reserve: Project sponsors must work with the applicable CMA/TA to obtain programming approval for STP/CMAQ match made available in the STIP. The CMA develops a countywide list for the use of the reserved funds and submits the list to MTC, who in turns provides Caltrans with the region-wide Match Program. Any deviation from this program, whether in the funding amount, project sponsor, or funding year, requires the CMA to resubmit an updated plan for the county to MTC. Caltrans cannot allocate the matching funds if they are inconsistent with the approved STIP - STP/CMAQ Match Program.

Funds allocated as programmed in the STIP: The allocation of funds as they are programmed in the STIP and TIP should receive MTC concurrence. Project sponsors work with Caltrans District 4 local assistance and MTC programming staff in obtaining the allocation. STIP projects using federal funds will not receive federal authorizations to proceed without the project being properly listed in the TIP. Federal authorization to proceed (E-76) requests must be submitted to Caltrans concurrently with the STIP allocation package to avoid delays to authorization.

Important Tip*:* Although some minor changes in the allocation of funds may not require a full STIP amendment, most changes still require MTC concurrence, and possibly a TIP amendment and a vote of the CTC. Project sponsors are encouraged to consult with the CMA, and Caltrans District 4 prior to preparing any allocation request, to ensure sufficient time is allowed for processing the allocation request, particularly toward the end of the year when the Timely Use of Funds provisions of SB 45 are of critical concern.

Timeline for STIP Amendment/Extension Approval

Completed documentation requesting MTC concurrence must be received by MTC staff no later than the first day of the month prior to the month in which the request will be heard by the Programming and Allocations Committee (PAC). (For example, requests received by January 1 will be reviewed at the February PAC meeting). Subsequently, requests with completed documentation and MTC concurrence must be submitted to the Caltrans District Office 60 to 90 days prior to the CTC meeting where the item will be considered. Therefore, requests for concurrence need to be submitted to MTC generally 150 days prior to CTC action for STIP Amendments and 120 days prior to CTC action for extensions.

For example, a STIP amendment request to add a new STIP project (considered a major amendment) is due to MTC by January 1, so it may be approved at the February PAC Meeting, and then submitted to Caltrans in time for the 60-day due date of March 2, so it may be noticed at the May 2 CTC meeting for action at the June 6 CTC meeting.

Important Tip*:* The CTC will not amend the STIP to delete or change the funding for any project component after the beginning of the fiscal year in which the funding is programmed. Therefore, all amendments to delay a project component must be approved by the CTC by the June meeting in the year prior to the programmed year of funding. To meet this deadline, amendments to delay delivery must be submitted to MTC no later than January 1 of the fiscal year prior to the fiscal year of the funding subject to delay.

Timely Delivery of Programmed Funds

Projects programmed in the STIP must adhere to the delivery polices established in MTC Resolution 3606. Unless coordination with other funding sources and programs require a later date, requests for STIP extensions, amendments to delay existing STIP projects and STIP allocations are due to Caltrans Local Assistance no later than January 31 of the fiscal year the funds are programmed in the STIP. This is to ensure STIP projects do not miss the June 30 end-of year delivery deadlines imposed by the CTC.

A due date schedule is prepared each year for the submittal of STIP requests. This schedule is posted on the internet at: http://www.dot.ca.gov/hq/transprog/ctcliaison.htm In addition, MTC Resolution 3606 imposes regional deadlines in advance of state and federal timely use of funds deadlines, to ensure funds are not lost to the region.

STIP Amendment Form/TIP Amendment Form

The forms necessary to initiate the STIP Amendment process may be downloaded from the MTC website at: http://www.mtc.ca.gov/our-work/fund-invest. TIP Amendments should be processed through the Fund Management System, also available at the website mentioned above.

Contacts for STIP Amendments/Extensions:

Name	Area	Phone	Email
Karl Anderson	STIP/TIP Amendments	415.778.6645	kanderson@bayareametro.gov
Kenneth Kao	STIP	415.778.6768	kkao@bayareametro.gov
Ross McKeown	STIP	415.778.5242	rmckeown@bayareametro.gov
Adam Crenshaw	TIP Amendments	415.778.6794	acrenshaw@bayareametro.gov

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

SECTION 17. DOCUMENTATION OF COORDINATION WITH CALTRANS DISTRICT

(OPTIONAL – NOT INCLUDED)

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

SECTION 18. DETAILED PROJECT PROGRAMMING SUMMARY TABLES

2018 Regional Transportation Improvement Program (RTIP)
MTC Region - Program Summary
December 20, 2017

(amounts in thousands)

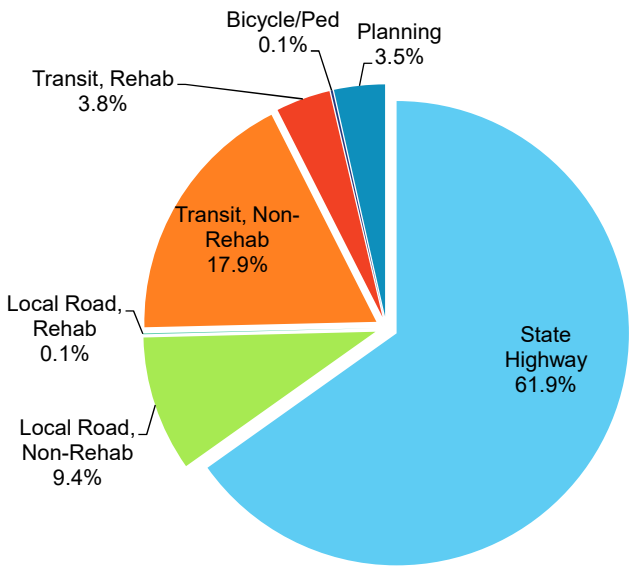
County	Current 2018 RTIP County Share				County	Current 2018 RTIP APDE County Share				County	Total 2018 RTIP and APDE County Share			
	Funding Target	Programmed		Balance Remaining		APDE Funding Target	Programmed		Balance Remaining		Funding Target	Programmed		Balance Remaining
		Amount	Percent				Amount	Percent				Amount	Percent	
Alameda	$61,518	$56,455	91.8%	$5,063	Alameda	$8,950	$0	0.0%	$8,950	Alameda	$70,468	$56,455	80.1%	$14,013
Contra Costa	$106,663	$75,573	70.9%	$31,090	Contra Costa	$6,121	$6,121	100.0%	$0	Contra Costa	$112,784	$81,694	72.4%	$31,090
Marin	$971	$400	0.0%	$571	Marin	$0	$0	0.0%	$0	Marin	$2,645	$400	0.0%	$2,245
Napa	$13,536	$13,160	97.2%	$376	Napa	$1,102	$0	0.0%	$1,102	Napa	$14,638	$13,160	89.9%	$1,478
San Francisco	$16,386	$14,838	90.6%	$1,548	San Francisco	$4,540	$0	0.0%	$4,540	San Francisco	$20,926	$14,838	70.9%	$6,088
San Mateo	$75,967	$74,369	97.9%	$1,598	San Mateo	$4,620	$0	0.0%	$4,620	San Mateo	$80,587	$74,369	92.3%	$6,218
Santa Clara	$87,584	$83,952	95.9%	$3,632	Santa Clara	$10,589	$10,589	100.0%	$0	Santa Clara	$98,173	$94,541	96.3%	$3,632
Solano	$27,145	$26,200	96.5%	$945	Solano	$2,774	$0	0.0%	$2,774	Solano	$29,919	$26,200	87.6%	$3,719
Sonoma	$1,991	$814	0.0%	$1,177	Sonoma	$1,770	$0	0.0%	$1,770	Sonoma	$5,399	$814	0.0%	$4,585
MTC Total	$391,761	$345,761	88.3%	$46,000	MTC Total	$40,466	$16,710	41.3%	$23,756	MTC Total	$435,539	$362,471	83.2%	$73,068

2018 RTIP Categories

County	State Highway	Local Road Non-Rehab	Local Road Rehab	Transit Non-Rehab	Transit Rehab	Bicycle/Ped	Planning	Total
Amount Programmed - Project Category								
Alameda	$36,898	$0	$0	$16,851	$0	$0	$2,706	$56,455
Contra Costa	$51,057	$10,423	$0	$18,300	$0	$0	$1,914	$81,694
Marin	$0	$0	$0	$0	$0	$0	$400	$400
Napa	$6,521	$5,779	$98	$0	$0	$500	$262	$13,160
San Francisco	$0	$0	$0	$0	$13,752	$0	$1,086	$14,838
San Mateo	$68,626	$4,298	$0	$0	$0	$0	$1,445	$74,369
Santa Clara	$57,175	$4,350	$0	$29,702	$0	$0	$3,314	$94,541
Solano	$15,939	$9,296	$98	$0	$0	$0	$867	$26,200
Sonoma	$0	$0	$0	$0	$0	$0	$814	$814
MTC Total	$236,216	$34,146	$196	$64,853	$13,752	$500	$12,808	$362,471

County	Number of Projects	Prior	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Year of Programming								
Alameda	7	$0	$43,340	$0	$12,799	$155	$161	$56,455
Contra Costa	11	$0	$41,052	$14,500	$15,852	$9,830	$460	$81,694
Marin	3	$0	$26	$0	$315	$29	$30	$400
Napa	10	$0	$7,167	$1,673	$82	$4,156	$82	$13,160
San Francisco	5	$0	$71	$5,500	$8,588	$338	$341	$14,838
San Mateo	10	$0	$25,252	$27,967	$12,559	$1,344	$7,247	$74,369
Santa Clara	10	$0	$28,458	$23,496	$2,016	$35,601	$4,970	$94,541
Solano	8	$0	$14,247	$98	$11,440	$207	$208	$26,200
Sonoma	3	$0	$52	$0	$252	$254	$256	$814
Total	67	$0	$159,665	$73,234	$63,903	$51,914	$13,755	$362,471

2018 RTIP: Project Category Summary



MTC 2018 STIP: CTC Submittal

2018 RTIP, as amended

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	Comments	2018 RTIP Total	Prior	2018 RTIP Funding by Fiscal Year 18-19	19-20	20-21	21-22	22-23	Outside RTIP	2018 RTIP Funding by Component R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP - New or Amended Funding in STIP																		
Alameda	ACTC	81J	SR-84 East-West Connector in Fremont	Delete $12M	**-12,000**	0	0	0	-12,000	0	0	0	0	-12,000	0	0	0	0
Alameda	AC Transit	2009Z	AC Transit Bus Rapid Transit Project	For cost increases via supplemental	**13,125**	0	13,125	0	0	0	0	0	0	13,125	0	0	0	0
Alameda	BART	2010C2	19th Street BART Station Modernization		**3,726**	0	3,726	0	0	0	0	0	0	3,726	0	0	0	0
Alameda	MTC	2100	Planning, programming, and monitoring		**466**	0	0	0	150	155	161	0	0	466	0	0	0	0
Alameda	ACTC	2179	Planning, programming, and monitoring		**1,535**	0	0	0	1,535	0	0	0	0	1,535	0	0	0	0
Alameda	ACTC	new	I-80 Gilman I/C Reconstruction and Access Imps.	New, Includes $12M from East West Connector	**25,784**	0	25,784	0	0	0	0	0	0	21,384	0	0	0	4,400
Alameda	ACTC	new	SR 84/I-680 Widening and I/C Imps.	New	**11,114**	0	0	0	11,114	0	0	0	0	0	0	0	0	11,114
Alameda	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	5,063	0	0	0	0	0	0
			Target = $43,750		**43,750**	-	42,635	-	799	155	161	**5,063**	0	28,236	0	0	0	15,514
Contra Costa	CCTA	222E	I-680 SB HOV Gap Closure (N. Main-Livorna)	Advance 1 year	**-15,557**	0	0	-15,557	0	0	0	0	0	-15,557	0	0	0	0
Contra Costa	CCTA	222E	I-680 SB HOV Gap Closure (N. Main-Livorna)		**15,557**	0	15,557	0	0	0	0	0	0	15,557	0	0	0	0
Contra Costa	CCTA	298E	I-680/SR4 Interchange Improvements – Phase 3		**18,800**	0	18,800	0	0	0	0	0	0	18,800	0	0	0	0
Contra Costa	BART	2010C	Concord BART Station Modernization		**13,000**	0	3,500	0	9,500	0	0	0	0	9,500	0	3,500	0	0
Contra Costa	CCTA	2011O	Planning, programming, and monitoring		**1,067**	0	0	0	355	356	356	0	0	1,067	0	0	0	0
Contra Costa	MTC	2118	Planning, programming, and monitoring		**302**	0	0	0	97	101	104	0	0	302	0	0	0	0
Contra Costa	CCTA	2025H	I-80/Central Avenue - Phase 2 (Local Road Realignment)	Redistribute funds	**-2,000**	0	0	0	-2,000	0	0	0	-2,000	0	0	0	0	0
Contra Costa	CCTA	2025H	I-80/Central Avenue - Phase 2 (Local Road Realignment)	Add $5M	**7,773**	0	0	0	5,900	1,873	0	0	5,900	1,873	0	0	0	0
Contra Costa	CCTA	0299A	SR4 Operational Improvements	New, Split APDE	**1,379**	0	0	0	0	1,379	0	0	0	0	0	1,379	0	0
Contra Costa	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	31,090	0	0	0	0	0	0
			Target = $40,321		**40,321**	-	37,857	(15,557)	13,852	3,709	460	**31,090**	3,900	31,542	0	4,879	0	0
Marin	MTC	2127	Planning, programming, and monitoring		**87**	0	0	0	28	29	30	0	0	87	0	0	0	0
Marin	TAM	2127C	Planning, programming, and monitoring		**287**	0	0	0	287	0	0	0	0	287	0	0	0	0
Marin	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	571	0	0	0	0	0	0
			Target = $0		**374**	-	-	-	315	29	30	**571**	0	374	0	0	0	0
Napa	NVTA	376	SR 12/29/221 Intersection Imps. (Soscol Junction)		**6,521**	0	3,000	600	0	2,921	0	0	300	2,921	0	3,000	300	0
Napa	NVTA	1003E	Planning, programming, and monitoring		**193**	0	0	0	65	64	64	0	0	193	0	0	0	0
Napa	MTC	2130	Planning, programming, and monitoring		**53**	0	0	0	17	18	18	0	0	53	0	0	0	0
Napa	American Cyn	2130E	Eucalyptus Dr Extension	Delete $1.2M from FY 20/21	**-1,154**	0	0	0	-1,154	0	0	0	0	-1,154	0	0	0	0
Napa	American Cyn	2130D	Devlin Road and Vine Trail Extension		**4,151**	0	4,151	0	0	0	0	0	0	4,151	0	0	0	0
Napa	Calistoga	2130M	Petrified Forest Rd and SR-128, Intersection Improvements	Redistribute funds	**-475**	-50	0	-425	0	0	0	0	-50	-425	0	0	0	0
Napa	Calistoga	2130M	Petrified Forest Rd and SR-128, Intersection Improvements		**475**	0	0	475	0	0	0	0	0	475	0	0	0	0
Napa	Yountville	2130N	Hopper Creek Pedestrian Path (Oak Cir - Mission)	Redistribute funds	**-500**	0	-100	-400	0	0	0	0	0	-400	0	-100	0	0
Napa	Yountville	2130N	Hopper Creek Pedestrian Path (Oak Cir - Mission)		**500**	0	0	500	0	0	0	0	0	500	0	0	0	0
Napa	City of Napa	0380N	Silverado Five- Way Intersection Improvements	New	**1,153**	0	0	0	0	1,153	0	0	1,153	0	0	0	0	0
Napa	County of Napa	2130R	Silverado Trail Repaving Phase L	New	**98**	0	0	98	0	0	0	0	0	98	0	0	0	0
Napa	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	376	0	0	0	0	0	0
			Target = $11,065		**11,015**	(50)	7,051	848	(1,072)	4,156	82	**376**	1,403	6,412	0	2,900	300	0
San Francisco	SFCTA	2007	Planning, programming, and monitoring		**778**	0	0	0	260	259	259	0	0	778	0	0	0	0
San Francisco	MTC	2131	Planning, programming, and monitoring		**237**	0	0	0	76	79	82	0	0	237	0	0	0	0
San Francisco	SFMTA	new	2020 Restoration of SFMTA Light Rail Lines	New	**5,500**	0	0	5,500	0	0	0	0	0	5,500	0	0	0	0
San Francisco	SFMTA	new	2021 Restoration of SFMTA Light Rail Lines	New	**8,252**	0	0	0	8,252	0	0	0	0	8,252	0	0	0	0
San Francisco	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	1,548	0	0	0	0	0	0
			Target = $14,767		**14,767**	-	-	5,500	8,588	338	341	**1,548**	0	14,767	0	0	0	0
San Mateo	Caltrans	632C	SR-1 Calera Parkway - Pacifica, Phase 1	Delete $7M	**-6,900**	0	-6,900	0	0	0	0	0	-6,900	0	0	0	0	0
San Mateo	MTC	2140	Planning, programming, and monitoring		**246**	0	0	0	79	82	85	0	0	246	0	0	0	0
San Mateo	SM C/CAG	2140A	Planning, programming, and monitoring		**787**	0	0	0	263	262	262	0	0	787	0	0	0	0
San Mateo	SM C/CAG	new	US 101 Managed Lane Project	New	**33,498**	0	16,000	17,498	0	0	0	0	16,000	17,498	0	0	0	0
San Mateo	Redwood City	new	US 101/Woodside Road Interchange Imp. Project	New	**8,000**	0	8,000	0	0	0	0	0	8,000	0	0	0	0	0
San Mateo	S. San Francisc	new	US 101 Produce Avenue Interchange - Imps.	New	**5,000**	0	0	0	5,000	0	0	0	0	0	0	5,000	0	0
San Mateo	SM C/CAG	new	ITS Imps. in Daly City, Brisbane, and Colma	New	**8,500**	0	600	0	0	1,000	6,900	0	0	6,900	600	1,000	0	0
San Mateo	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	1,598	0	0	0	0	0	0
			Target = $49,131		**49,131**	-	17,700	17,498	5,342	1,344	7,247	**1,598**	17,100	25,431	600	6,000	0	0

Date Printed: 12/22/2017

MTC 2018 STIP: CTC Submittal

2018 RTIP, as amended

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	Comments	2018 RTIP Total	2018 RTIP Funding by Fiscal Year						Outside RTIP	2018 RTIP Funding by Component					
						Prior	18-19	19-20	20-21	21-22	22-23		R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Santa Clara	VTA	0503J	I-280 Soundwalls at Bird Ave. in San Jose		**7,000**	0	0	833	929	456	4,782	0	456	4,782	833	929	0	0
Santa Clara	MTC	2144	Planning, programming, and monitoring		**544**	0	0	0	175	181	188	0	0	544	0	0	0	0
Santa Clara	BART	2147E	BART Phase 2: Extension to Downtown San Jose/Santa Clara		**-14,672**	0	0	0	0	-14,672	0	0	0	-14,672	0	0	0	0
Santa Clara	BART	2147E	BART Phase 2: Extension to Downtown San Jose/Santa Clara	Add $15M	**29,702**	0	0	0	0	29,702	0	0	0	29,702	0	0	0	0
Santa Clara	SCVTA	2255	Planning, programming, and monitoring		**1,824**	0	0	0	912	912	0	0	0	1,824	0	0	0	0
Santa Clara	San Jose	new	San Jose West San Carlos Urban Village Streetscape Imps.	New	**4,350**	0	0	0	0	4,350	0	0	0	4,350	0	0	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 3	New	**14,268**	0	14,268	0	0	0	0	0	368	13,900	0	0	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 4	New	**11,500**	0	2,300	9,200	0	0	0	0	600	8,600	0	2,300	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 5	New	**10,188**	0	0	10,188	0	0	0	0	0	0	0	10,188	0	0
Santa Clara	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	3,632	0	0	0	0	0	0
			Target = $64,704		**64,704**	-	16,568	20,221	2,016	20,929	4,970	**3,632**	1,424	49,030	833	13,417	0	0
Solano	MTC	2152	Planning, programming, and monitoring		**143**	0	0	0	46	48	49	0	0	143	0	0	0	0
Solano	STA	2263	Planning, programming, and monitoring		**477**	0	0	0	159	159	159	0	0	477	0	0	0	0
Solano	Solano TA	5301L	I-80/I-680/SR12 I/C Package 2A (EB SR12 to EB I-80 Connector)		**9,000**	0	9,000	0	0	0	0	0	0	0	0	9,000	0	0
Solano	Vacaville	5301V	Jepson Pkwy (Leisure Town from Commerce to Orange)	Redistribute funds	**-3,296**	0	-3,296	0	0	0	0	0	0	-3,296	0	0	0	0
Solano	Vacaville	5301V	Jepson Pkwy (Leisure Town from Commerce to Orange)	Add $6M, delay 2 years	**9,296**	0	0	0	9,296	0	0	0	0	9,296	0	0	0	0
Napa	County of Napa	2130R	Silverado Trail Repaving Phase L	New	**98**	0	0	98	0	0	0	0	0	98	0	0	0	0
Solano	Solano TA	new	SR 12/Church Rd	New	**1,939**	0	0	0	1,939	0	0	0	0	1,377	0	0	0	562
Solano	Solano TA	new	SR 37 Project/Mare Island Interchange Project	New	**5,000**	0	5,000	0	0	0	0	0	0	0	5,000	0	0	0
Solano	MTC	new	MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	945	0	0	0	0	0	0
			Target = $22,657		**22,657**	-	10,704	98	11,440	207	208	**945**	0	8,095	5,000	9,000	0	562
Sonoma	STA	770E	Planning, programming, and monitoring		**591**	0	0	0	197	197	197	0	0	591	0	0	0	0
Sonoma	MTC	2156	Planning, programming, and monitoring		**171**	0	0	0	55	57	59	0	0	171	0	0	0	0
Sonoma	MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	1,177	0	0	0	0	0	0
			Target = $0		**762**	-	-	-	252	254	256	**1,177**	0	762	0	0	0	0
MTC Region			**Regional Target = $246,395**		**247,481**	**(50)**	**132,515**	**28,608**	**41,532**	**31,121**	**13,755**	**46,000**	**23,827**	**164,649**	**6,433**	**36,196**	**300**	**16,076**

J:\PROJECT\Funding\RTIP\18 RTIP\[Draft_Full_2018_RTIP_2017-11.xlsx]CTC List

MTC 2018 STIP: APDE Share CTC Submittal

2018 RTIP, as amended
December 20, 2017
(all numbers in thousands)

County	Agency	PPNO	Project	Comments	2018 RTIP Total	2018 RTIP Funding by Fiscal Year Prior	18-19	19-20	20-21	21-22	22-23	Outside RTIP	2018 RTIP Funding by Component R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP - New or Amended Funding in STIP																		
Alameda	-		-		**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
			Target = $8,950		**-**	-	-	-	-	-	-	-	0	0	0	0	0	0
Contra Costa	CCTA	0299A	SR4 Operational Improvements (APDE)		**6,121**	0	0	0	0	6,121	0	0	0	0	0	6,121	0	0
			Target = $6,121		**6,121**	-	-	-	-	6,121	-	-	0	0	0	6,121	0	0
Marin	-		-		**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
			Target = $0		**-**	-	-	-	-	-	-	-	0	0	0	0	0	0
Napa	-		-		**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
			Target = $1,102		**-**	-	-	-	-	-	-	-	0	0	0	0	0	0
San Francisco	-		-		**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
			Target = $4,540		**-**	-	-	-	-	-	-	-	0	0	0	0	0	0
San Mateo	-		-		**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
			Target = $4,620		**-**	-	-	-	-	-	-	-	0	0	0	0	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 5 (APDE)		**10,589**	0	10,589	0	0	0	0	0	0	0	0	10,589	0	0
			Target = $10,589		**10,589**	-	10,589	-	-	-	-	-	0	0	0	10,589	0	0
Solano	-		-		**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
			Target = $2,774		**-**	-	-	-	-	-	-	-	0	0	0	0	0	0
Sonoma	-		-	-	**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
			Target = $1,770		**-**	-	-	-	-	-	-	-	0	0	0	0	0	0
MTC Region			**Regional Target = $40,466**		**16,710**	**-**	**10,589**	**-**	**-**	**6,121**	**-**	**-**	**0**	**0**	**0**	**16,710**	**0**	**0**

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Date Printed: 12/22/2017

MTC 2018 Regional Transportation Improvement Program

2018 RTIP

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year 18-19	19-20	20-21	21-22	22-23	Outside RTIP	2018 RTIP Funding by Component R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Alameda County Shares																
Alameda	AC Transit	2009Z	AC Transit Bus Rapid Transit Project	**13,125**	13,125	0	0	0	0	0	0	13,125	0	0	0	0
Alameda	BART	2010C2	19th Street BART Station Modernization	**3,726**	3,726	0	0	0	0	0	0	3,726	0	0	0	0
Alameda	MTC	2100	Planning, programming, and monitoring	**606**	140	0	150	155	161	0	0	606	0	0	0	0
Alameda	ACTC	2179	Planning, programming, and monitoring	**2,100**	565	0	1,535	0	0	0	0	2,100	0	0	0	0
Alameda	ACTC	new	I-80 Gilman I/C Reconstruction and Access Imps.	**25,784**	25,784	0	0	0	0	0	0	21,384	0	0	0	4,400
Alameda	ACTC	new	SR 84/I-680 Widening and I/C Imps.	**11,114**	0	0	11,114	0	0	0	0	0	0	0	0	11,114
Alameda	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	5,063	0	0	0	0	0	0
			Alameda County Total	**56,455**	43,340	-	12,799	155	161	**5,063**	0	40,941	0	0	0	15,514
Contra Costa County Shares																
Contra Costa	CCTA	222E	I-680 SB HOV Gap Closure (N. Main-Livorna)	**15,557**	15,557	0	0	0	0	0	0	15,557	0	0	0	0
Contra Costa	CCTA	242K	I-80/San Pablo Dam Rd Interchange (Ph. 2)	**9,200**	0	9,200	0	0	0	0	9,200	0	0	0	0	0
Contra Costa	CCTA	298E	I-680/SR4 Interchange Improvements – Phase 3	**18,800**	18,800	0	0	0	0	0	0	18,800	0	0	0	0
Contra Costa	BART	2010B	Walnut Creek BART TOD Intermodal Project	**5,300**	0	5,300	0	0	0	0	0	5,300	0	0	0	0
Contra Costa	BART	2010C1	Concord BART Station Modernization	**13,000**	3,500	0	9,500	0	0	0	0	9,500	0	3,500	0	0
Contra Costa	CCTA	2011O	Planning, programming, and monitoring	**1,521**	454	0	355	356	356	0	0	1,521	0	0	0	0
Contra Costa	MTC	2118	Planning, programming, and monitoring	**393**	91	0	97	101	104	0	0	393	0	0	0	0
Contra Costa	CCTA	2025H	I-80/Central Avenue - Local Road Improvement	**7,773**	0	0	5,900	1,873	0	0	5,900	1,873	0	0	0	0
Contra Costa	CCTA	2025J	Kirker Pass Rd NB Truck Climbing Lane	**2,650**	2,650	0	0	0	0	0	0	2,650	0	0	0	0
Contra Costa	CCTA	0299A	SR4 Operational Improvements	**1,379**	0	0	0	1,379	0	0	0	0	0	1,379	0	0
Contra Costa	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	31,090	0	0	0	0	0	0
			Contra Costa Total	**75,573**	41,052	14,500	15,852	3,709	460	**31,090**	15,100	55,594	0	4,879	0	0
Marin County Shares																
Marin	MTC	2127	Planning, programming, and monitoring	**113**	26	0	28	29	30	0	0	113	0	0	0	0
Marin	TAM	2127C	Planning, programming, and monitoring	**287**	0	0	287	0	0	0	0	287	0	0	0	0
Marin	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	571	0	0	0	0	0	0
			Marin County Total	**400**	26	-	315	29	30	**571**	0	400	0	0	0	0

MTC 2018 Regional Transportation Improvement Program

2018 RTIP

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year 18-19	19-20	20-21	21-22	22-23	Outside RTIP	2018 RTIP Funding by Component R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Napa County Shares																
Napa	NVTA	376	Soscol Junction	**6,521**	3,000	600	0	2,921	0	0	300	2,921	0	3,000	300	0
Napa	NVTA	1003E	Planning, programming, and monitoring	**193**	0	0	65	64	64	0	0	193	0	0	0	0
Napa	MTC	2130	Planning, programming, and monitoring	**69**	16	0	17	18	18	0	0	69	0	0	0	0
Napa	American Cyn	2130D	Devlin Road and Vine Trail Extension	**4,151**	4,151	0	0	0	0	0	0	4,151	0	0	0	0
Napa	Calistoga	2130M	Petrified Forest Rd and SR-128, Intersection Improvements	**475**	0	475	0	0	0	0	0	475	0	0	0	0
Napa	Yountville	2130N	Hopper Creek Pedestrian Path (Oak Cir - Mission)	**500**	0	500	0	0	0	0	0	500	0	0	0	0
Napa	City of Napa	0380N	Silverado Five- Way Intersection Improvements	**1,153**	0	0	0	1,153	0	0	1,153	0	0	0	0	0
Napa	County of Napa	2130R	Silverado Trail Repaving Phase L	**98**	0	98	0	0	0	0	0	98	0	0	0	0
Napa	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	376	0	0	0	0	0	0
			Napa County Total	**13,160**	7,167	1,673	82	4,156	82	**376**	1,453	8,407	0	3,000	300	0
San Francisco County Shares																
San Francisco	SFCTA	2007	Planning, programming, and monitoring	**778**	0	0	260	259	259	0	0	778	0	0	0	0
San Francisco	MTC	2131	Planning, programming, and monitoring	**308**	71	0	76	79	82	0	0	308	0	0	0	0
San Francisco	SFMTA	new	2020 Restoration of SFMTA Light Rail Lines	**5,500**	0	5,500	0	0	0	0	0	5,500	0	0	0	0
San Francisco	SFMTA	new	2021 Restoration of SFMTA Light Rail Lines	**8,252**	0	0	8,252	0	0	0	0	8,252	0	0	0	0
San Francisco	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	1,548	0	0	0	0	0	0
			San Francisco County Total	**14,838**	71	5,500	8,588	338	341	**1,548**	0	14,838	0	0	0	0
San Mateo County Shares																
San Mateo	SM C/CAG	668D	SR 92/US 101 Interchange Imps. - Phase 2	**5,628**	0	2,411	3,217	0	0	0	0	0	2,411	3,217	0	0
San Mateo	Caltrans	690A	US-101 Willow Rd I/C Reconst. (AB3090 Reimbursement)	**8,000**	0	4,000	4,000	0	0	0	0	8,000	0	0	0	0
San Mateo	MTC	2140	Planning, programming, and monitoring	**320**	74	0	79	82	85	0	0	320	0	0	0	0
San Mateo	SM C/CAG	2140A	Planning, programming, and monitoring	**1,125**	338	0	263	262	262	0	0	1,125	0	0	0	0
San Mateo	Caltrans	2140E	Countywide ITS Imps. - San Mateo County Smart Corridor	**4,298**	240	4,058	0	0	0	0	0	4,058	0	240	0	0
San Mateo	SM C/CAG	new	US 101 Managed Lane Project	**33,498**	16,000	17,498	0	0	0	0	16,000	17,498	0	0	0	0
San Mateo	Redwood City	new	US 101/Woodside Road Interchange Imp. Project	**8,000**	8,000	0	0	0	0	0	8,000	0	0	0	0	0
San Mateo	S. San Francisc	new	US 101 Produce Avenue Interchange - Imps.	**5,000**	0	0	5,000	0	0	0	0	0	0	5,000	0	0
San Mateo	SM C/CAG	new	ITS Imps. in Daly City, Brisbane, and Colma	**8,500**	600	0	0	1,000	6,900	0	0	6,900	600	1,000	0	0
San Mateo	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	1,598	0	0	0	0	0	0
			San Mateo County Total	**74,369**	25,252	27,967	12,559	1,344	7,247	**1,598**	24,000	37,901	3,011	9,457	0	0

MTC 2018 Regional Transportation Improvement Program

2018 RTIP

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year 18-19	19-20	20-21	21-22	22-23	Outside RTIP	2018 RTIP Funding by Component R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Santa Clara County Shares																
Santa Clara	VTA	503J	I-280 Soundwalls at Bird Ave. in San Jose	**7,000**	0	833	929	456	4,782	0	456	4,782	833	929	0	0
Santa Clara	VTA	521C	I-680 Soundwall from Capitol to Mueller	**3,630**	355	3,275	0	0	0	0	355	3,275	0	0	0	0
Santa Clara	MTC	2144	Planning, programming, and monitoring	**707**	163	0	175	181	188	0	0	707	0	0	0	0
Santa Clara	BART	2147E	BART Phase 2: Extension to Downtown San Jose/Santa Clara	**29,702**	0	0	0	29,702	0	0	0	29,702	0	0	0	0
Santa Clara	SCVTA	2255	Planning, programming, and monitoring	**2,607**	783	0	912	912	0	0	0	2,607	0	0	0	0
Santa Clara	San Jose	new	San Jose West San Carlos Urban Village Streetscape Imps.	**4,350**	0	0	0	4,350	0	0	0	4,350	0	0	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 3	**14,268**	14,268	0	0	0	0	0	368	13,900	0	0	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 4	**11,500**	2,300	9,200	0	0	0	0	600	8,600	0	2,300	0	0
Santa Clara	VTA	new	US 101 Express Lanes - Phase 5	**10,188**	0	10,188	0	0	0	0	0	0	0	10,188	0	0
Santa Clara	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	3,632	0	0	0	0	0	0
			Santa Clara County Total	**83,952**	17,869	23,496	2,016	35,601	4,970	**3,632**	1,779	67,923	833	13,417	0	0
Solano County Shares																
Solano	MTC	2152	Planning, programming, and monitoring	**186**	43	0	46	48	49	0	0	186	0	0	0	0
Solano	STA	2263	Planning, programming, and monitoring	**681**	204	0	159	159	159	0	0	681	0	0	0	0
Solano	Solano TA	5301L	I-80/I-680/SR12 I/C Package 2A (EB SR12 to EB I-80 Connector)	**9,000**	9,000	0	0	0	0	0	0	0	0	9,000	0	0
Solano	Vacaville	5301V	Jepson Pkwy (Leisure Town from Commerce to Orange)	**9,296**	0	0	9,296	0	0	0	0	9,296	0	0	0	0
Solano	Solano TA	new	SR 37 Project/Mare Island Interchange Project	**5,000**	5,000	0	0	0	0	0	0	0	5,000	0	0	0
Napa	County of Napa	2130R	Silverado Trail Repaving Phase L	**98**	0	98	0	0	0	0	0	98	0	0	0	0
Solano	Solano TA	new	SR 12/Church Rd	**1,939**	0	0	1,939	0	0	0	0	1,377	0	0	0	562
Solano	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	945	0	0	0	0	0	0
			Solano County Total	**26,200**	14,247	98	11,440	207	208	**945**	0	11,638	5,000	9,000	0	562
Sonoma County Shares																
Sonoma	SCTA	770E	Planning, programming, and monitoring	**591**	0	0	197	197	197	0	0	591	0	0	0	0
Sonoma	MTC	2156	Planning, programming, and monitoring	**223**	52	0	55	57	59	0	0	223	0	0	0	0
Sonoma	MTC		MTC Transportation Incentive Program	**0**	0	0	0	0	0	1,177	0	0	0	0	0	0
			Sonoma County Total	**814**	52	-	252	254	256	**1,177**	0	814	0	0	0	0
			2018 RTIP Total - Bay Area	**345,761**	**149,076**	**73,234**	**63,903**	**45,793**	**13,755**	**46,000**	**42,332**	**238,456**	**8,844**	**39,753**	**300**	**16,076**

Note: Detail on project programming by year and phase will be submitted to CTC

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MTC 2018 Regional Transportation Improvement Program

Advanced Project Development Element

2018 RTIP

December 20, 2017

(all numbers in thousands)

County	Agency	PPNO	Project	2018 RTIP Total	2018 RTIP Funding by Fiscal Year						Outside RTIP	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23		R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Alameda County Shares																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Alameda County Total	**-**	-	-	-	-	-	-	**-**	0	0	0	0	0	0
Contra Costa County Shares																	
Contra Costa	CCTA	0299A	SR4 Operational Improvements (APDE)	**6,121**	0	0	0	0	6,121	0	0	0	0	0	6,121	0	0
			Contra Costa Total	**6,121**	-	-	-	-	6,121	-	**-**	0	0	0	6,121	0	0
Marin County Shares																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Marin County Total	**-**	-	-	-	-	-	-	**-**	0	0	0	0	0	0
Napa County Shares																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Napa County Total	**-**	-	-	-	-	-	-	**-**	0	0	0	0	0	0
San Francisco County Shares																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
			San Francisco County Total	**-**	-	-	-	-	-	-	**-**	0	0	0	0	0	0
San Mateo County Shares																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
			San Mateo County Total	**-**	-	-	-	-	-	-	**-**	0	0	0	0	0	0
Santa Clara County Shares																	
Santa Clara	VTA		US 101 Express Lanes - Phase 5 (APDE)	**10,589**	0	10,589	0	0	0	0	0	0	0	0	10,589	0	0
			Santa Clara County Total	**10,589**	-	10,589	-	-	-	-	**-**	0	0	0	10,589	0	0
Solano County Shares											-						
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Solano County Total	**-**	-	-	-	-	-	-	**-**	0	0	0	0	0	0
Sonoma County Shares																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Sonoma County Total	**-**	-	-	-	-	-	-	**-**	0	0	0	0	0	0
			2018 RTIP Total - Bay Area	**16,710**	**0**	**10,589**	**0**	**0**	**6,121**	**0**	**0**	**0**	**0**	**0**	**16,710**	**0**	**0**

Note: Detail on project programming by year and phase will be submitted to CTC

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Alameda

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year					Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP Programming																	
AC Transit	2009Z	AC Transit Bus Rapid Transit Project	For cost increases via supplemental	**13,125**	0	13,125	0	0	0	0	0	0	13,125	0	0	0	0
BART	2010C2	19th Street BART Station Modernization		**3,726**	0	3,726	0	0	0	0	0	0	3,726	0	0	0	0
MTC	2100	Planning, programming, and monitoring		**606**	0	140	0	150	155	161	0	0	606	0	0	0	0
ACTC	2179	Planning, programming, and monitoring		**2,100**	0	565	0	1,535	0	0	0	0	2,100	0	0	0	0
ACTC	new	SR 84/I-680 Widening and I/C Imps.	New	**11,114**	0	0	0	11,114	0	0	0	0	0	0	0	0	11,114
ACTC	new	I-80 Gilman I/C Reconstruction and Access Imps.	New, Includes $12M from East West Connector	**25,784**	0	25,784	0	0	0	0	0	0	21,384	0	0	0	4,400
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	5,063	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtoal			**56,455**	0	43,340	0	12,799	155	161	5,063	0	40,941	0	0	0	15,514
Proposed 2018 RTIP Programming (APDE)																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtoal			**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
Proposed 2018 RTIP Total - Alameda County				**56,455**	**0**	**43,340**	**0**	**12,799**	**155**	**161**	**5,063**	**0**	**40,941**	**0**	**0**	**0**	**15,514**

Contra Costa

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year					Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP Programming																	
CCTA	222E	I-680 SB HOV Gap Closure (N. Main-Livorna)		**15,557**	0	15,557	0	0	0	0	0	0	15,557	0	0	0	0
CCTA	242K	I-80/San Pablo Dam Rd Interchange (Ph. 2)		**9,200**	0	0	9,200	0	0	0	0	9,200	0	0	0	0	0
CCTA	298E	I-680/SR4 Interchange Improvements – Phase 3		**18,800**	0	18,800	0	0	0	0	0	0	18,800	0	0	0	0
BART	2010B	Walnut Creek BART TOD Intermodal Project		**5,300**	0	0	5,300	0	0	0	0	0	5,300	0	0	0	0
BART	2010C1	Concord BART Station Modernization		**13,000**	0	3,500	0	9,500	0	0	0	0	9,500	0	3,500	0	0
CCTA	2011O	Planning, programming, and monitoring		**1,521**	0	454	0	355	356	356	0	0	1,521	0	0	0	0
MTC	2118	Planning, programming, and monitoring		**393**	0	91	0	97	101	104	0	0	393	0	0	0	0
CCTA	2025H	I-80/Central Avenue - Local Road Improvement		**7,773**	0	0	0	5,900	1,873	0	0	5,900	1,873	0	0	0	0
CCTA	2025J	Kirker Pass Rd NB Truck Climbing Lane		**2,650**	0	2,650	0	0	0	0	0	0	2,650	0	0	0	0
CCTA	0299A	SR4 Operational Improvements	New, Split APDE	**1,379**	0	0	0	0	1,379	0	0	0	0	0	1,379	0	0
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	31,090	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**75,573**	0	41,052	14,500	15,852	3,709	460	31,090	15,100	55,594	0	4,879	0	0
Proposed 2018 RTIP Programming (APDE)																	
CCTA				**6,121**	0	0	0	0	6,121	0	0	0	0	0	6,121	0	0
	0299A	SR4 Operational Improvements (APDE)		**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**6,121**	0	0	0	0	6,121	0	0	0	0	0	6,121	0	0
Proposed 2018 RTIP Total - Contra Costa County				**81,694**	**0**	**41,052**	**14,500**	**15,852**	**9,830**	**460**	**31,090**	**15,100**	**55,594**	**0**	**11,000**	**0**	**0**

Marin

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year						Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
	Proposed 2018 RTIP Programming																
MTC	2127	Planning, programming, and monitoring		**113**	0	26	0	28	29	30	0	0	113	0	0	0	0
TAM	2127C	Planning, programming, and monitoring		**287**	0	0	0	287	0	0	0	0	287	0	0	0	0
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	571	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**400**	0	26	0	315	29	30	571	0	400	0	0	0	0
	Proposed 2018 RTIP Programming (APDE)																
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Total - Marin County			**400**	**0**	**26**	**0**	**315**	**29**	**30**	**571**	**0**	**400**	**0**	**0**	**0**	**0**

Napa

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year						Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP Programming																	
NVTA	0376	Soscol Junction		**6,521**	0	3,000	600	0	2,921	0	0	300	2,921	0	3,000	300	0
NVTA	1003E	Planning, programming, and monitoring		**193**	0	0	0	65	64	64	0	0	193	0	0	0	0
MTC	2130	Planning, programming, and monitoring		**69**	0	16	0	17	18	18	0	0	69	0	0	0	0
American Cyn	2130D	Devlin Road and Vine Trail Extension		**4,151**	0	4,151	0	0	0	0	0	0	4,151	0	0	0	0
Calistoga	2130M	Petrified Forest Rd and SR-128, Intersection Improvements		**-50**	-50	0	0	0	0	0	0	-50	0	0	0	0	0
Calistoga	2130M	Petrified Forest Rd and SR-128, Intersection Improvements		**525**	50	0	475	0	0	0	0	50	475	0	0	0	0
Yountville	2130N	Hopper Creek Pedestrian Path (Oak Cir - Mission)		**500**	0	0	500	0	0	0	0	0	500	0	0	0	0
City of Napa	0380N	Silverado Five- Way Intersection Improvements	New	**1,153**	0	0	0	0	1,153	0	0	1,153	0	0	0	0	0
County of Napa	2130R	Silverado Trail Repaving Phase L	New	**98**	0	0	98	0	0	0	0	0	98	0	0	0	0
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	376	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**13,160**	0	7,167	1,673	82	4,156	82	376	1,453	8,407	0	3,000	300	0
Proposed 2018 RTIP Programming (APDE)																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
Proposed 2018 RTIP Total - Napa County				**13,160**	**0**	**7,167**	**1,673**	**82**	**4,156**	**82**	**376**	**1,453**	**8,407**	**0**	**3,000**	**300**	**0**

San Francisco

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year						Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP Programming																	
SFCTA	2007	Planning, programming, and monitoring		**778**	0	0	0	260	259	259	0	0	778	0	0	0	0
MTC	2131	Planning, programming, and monitoring		**308**	0	71	0	76	79	82	0	0	308	0	0	0	0
SFMTA	new	2020 Restoration of SFMTA Light Rail Lines	New	**5,500**	0	0	5,500	0	0	0	0	0	5,500	0	0	0	0
SFMTA	new	2021 Restoration of SFMTA Light Rail Lines	New	**8,252**	0	0	0	8,252	0	0	0	0	8,252	0	0	0	0
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	1,548	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**14,838**	0	71	5,500	8,588	338	341	1,548	0	14,838	0	0	0	0
Proposed 2018 RTIP Programming (APDE)																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
Proposed 2018 RTIP Total - San Francisco County				**14,838**	**0**	**71**	**5,500**	**8,588**	**338**	**341**	**1,548**	**0**	**14,838**	**0**	**0**	**0**	**0**

San Mateo

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year					Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP Programming																	
SM C/CAG	668D	SR 92/US 101 Interchange Imps. - Phase 2		**5,628**	0	0	2,411	3,217	0	0	0	0	0	2,411	3,217	0	0
Caltrans	690A	US-101 Willow Rd I/C Reconst. (AB3090 Reimbursement)	AB 3090	**8,000**	0	0	4,000	4,000	0	0	0	0	8,000	0	0	0	0
MTC	2140	Planning, programming, and monitoring		**320**	0	74	0	79	82	85	0	0	320	0	0	0	0
SM C/CAG	2140A	Planning, programming, and monitoring		**1,125**	0	338	0	263	262	262	0	0	1,125	0	0	0	0
Caltrans	2140E	Countywide ITS Imps. - San Mateo County		**4,298**	0	240	4,058	0	0	0	0	0	4,058	0	240	0	0
SM C/CAG	new	US 101 Managed Lane Project	New	**33,498**	0	16,000	17,498	0	0	0	0	16,000	17,498	0	0	0	0
Redwood City	new	US 101/Woodside Road Interchange Imp. Project	New	**8,000**	0	8,000	0	0	0	0	0	8,000	0	0	0	0	0
S. San Francisco	new	US 101 Produce Avenue Interchange - Imps.	New	**5,000**	0	0	0	5,000	0	0	0	0	0	0	5,000	0	0
SM C/CAG	new	ITS Imps. in Daly City, Brisbane, and Colma	New	**8,500**	0	600	0	0	1,000	6,900	0	0	6,900	600	1,000	0	0
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	1,598	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**74,369**	0	25,252	27,967	12,559	1,344	7,247	1,598	24,000	37,901	3,011	9,457	0	0
Proposed 2018 RTIP Programming (APDE)																	
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
Proposed 2018 RTIP Total - San Mateo County				**74,369**	**0**	**25,252**	**27,967**	**12,559**	**1,344**	**7,247**	**1,598**	**24,000**	**37,901**	**3,011**	**9,457**	**0**	**0**

Santa Clara

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year						Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
Proposed 2018 RTIP Programming																	
VTA	503J	I-280 Soundwalls at Bird Ave. in San Jose		**7,000**	0	0	833	929	456	4,782	0	456	4,782	833	929	0	0
VTA	521C	I-680 Soundwall from Capitol to Mueller		**3,630**	0	355	3,275	0	0	0	0	355	3,275	0	0	0	0
MTC	2144	Planning, programming, and monitoring		**707**	0	163	0	175	181	188	0	0	707	0	0	0	0
BART	2147E	BART Phase 2: Extension to Downtown San Jose/Santa Clara		**29,702**	0	0	0	0	29,702	0	0	0	29,702	0	0	0	0
SCVTA	2255	Planning, programming, and monitoring		**2,607**	0	783	0	912	912	0	0	0	2,607	0	0	0	0
San Jose	new	San Jose West San Carlos Urban Village Streetscape Imps.	New	**4,350**	0	0	0	0	4,350	0	0	0	4,350	0	0	0	0
VTA	new	US 101 Express Lanes - Phase 3	New	**14,268**	0	14,268	0	0	0	0	0	368	13,900	0	0	0	0
VTA	new	US 101 Express Lanes - Phase 4	New	**11,500**	0	2,300	9,200	0	0	0	0	600	8,600	0	2,300	0	0
VTA	new	US 101 Express Lanes - Phase 5	New	**10,188**	0	0	10,188	0	0	0	0	0	0	0	10,188	0	0
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	3,632	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**83,952**	0	17,869	23,496	2,016	35,601	4,970	3,632	1,779	67,923	833	13,417	0	0
Proposed 2018 RTIP Programming (APDE)																	
VTA		US 101 Express Lanes - Phase 5 (APDE)	New	**10,589**	0	10,589	0	0	0	0	0	0	0	0	10,589	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**10,589**	0	10,589	0	0	0	0	0	0	0	0	10,589	0	0
Proposed 2018 RTIP Total - Santa Clara County				**94,541**	**0**	**28,458**	**23,496**	**2,016**	**35,601**	**4,970**	**3,632**	**1,779**	**67,923**	**833**	**24,006**	**0**	**0**

Solano

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year						Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
	Proposed 2018 RTIP Programming																
MTC	2152	Planning, programming, and monitoring		**186**	0	43	0	46	48	49	0	0	186	0	0	0	0
STA	2263	Planning, programming, and monitoring		**681**	0	204	0	159	159	159	0	0	681	0	0	0	0
Solano TA	5301L	I-80/I-680/SR12 I/C Package 2A (EB SR12 to EB I-80 Connector)		**9,000**	0	9,000	0	0	0	0	0	0	0	0	9,000	0	0
Vacaville	5301V	Jepson Pkwy (Leisure Town from Commerce to Orange)		**9,296**	0	0	0	9,296	0	0	0	0	9,296	0	0	0	0
Solano TA	new	SR 37 Project/Mare Island Interchange Project	New	**5,000**	0	5,000	0	0	0	0	0	0	0	5,000	0	0	0
County of Napa	2130R	Silverado Trail Repaving Phase L	New	**98**	0	0	98	0	0	0	0	0	98	0	0	0	0
Solano TA	new	SR 12/Church Rd	New	**1,939**	0	0	0	1,939	0	0	0	0	1,377	0	0	0	562
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	945	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**26,200**	0	14,247	98	11,440	207	208	945	0	11,638	5,000	9,000	0	562
	Proposed 2018 RTIP Programming (APDE)																
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Total - Solano County			**26,200**	**0**	**14,247**	**98**	**11,440**	**207**	**208**	**945**	**0**	**11,638**	**5,000**	**9,000**	**0**	**562**

Sonoma

2018 RTIP

December 20, 2017

(all numbers in thousands)

Agency	PPNO	Project	Comments	Total	2018 RTIP Funding by Fiscal Year						Info	2018 RTIP Funding by Component					
					Prior	18-19	19-20	20-21	21-22	22-23	23-24+	R/W	Const	E & P	PS&E	R/W Sup	Con Sup
	Proposed 2018 RTIP Programming																
SCTA	770E	Planning, programming, and monitoring		**591**	0	0	0	197	197	197	0	0	591	0	0	0	0
MTC	2156	Planning, programming, and monitoring		**223**	0	52	0	55	57	59	0	0	223	0	0	0	0
MTC		MTC Transportation Incentive Program	New	**0**	0	0	0	0	0	0	1,177	0	0	0	0	0	0
	Proposed 2018 RTIP Programming Subtotal			**814**	0	52	0	252	254	256	1,177	0	814	0	0	0	0
	Proposed 2018 RTIP Programming (APDE)																
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Programming (APDE) Subtotal			**0**	0	0	0	0	0	0	0	0	0	0	0	0	0
	Proposed 2018 RTIP Total - Sonoma County			**814**	**0**	**52**	**0**	**252**	**254**	**256**	**1,177**	**0**	**814**	**0**	**0**	**0**	**0**

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

SECTION 19. ALTERNATIVE DELIVERY METHODS

(OPTIONAL – NOT INCLUDED)

2018 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

SECTION 20. ADDITIONAL APPENDICES

(NONE)