



# BAY AREA EXPRESS LANES



## MTC Express Lanes Quarterly Report 2<sup>nd</sup> Quarter, April - June, 2017

Submitted: August 17, 2017

**BAIFA**  
BAY AREA INFRASTRUCTURE  
FINANCING AUTHORITY



METROPOLITAN  
TRANSPORTATION  
COMMISSION

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*Construction is nearly complete on the I-680 Express Lanes in Contra Costa County. The focus now is on toll system testing in preparation for opening in fall 2017.*



# I. PROGRAM HIGHLIGHTS

The purpose of this report is to summarize the progress of delivering Metropolitan Transportation Commission (MTC) Express Lanes. The report covers the second quarter of 2017, April 1 to June 30.

The California Transportation Commission (CTC) approved MTC's application to implement and operate its 270-mile express lane network on October 27, 2011. Soon thereafter, work began to environmentally clear the first phase of express lane conversion projects and produce a Concept of Operations describing how the Express Lanes will operate. Currently, there are several projects at varying stages of development with the first project scheduled to open in 2017.

Project Development & Construction	2 <sup>nd</sup> Quarter 2017 Highlights	Current Activities
<p><b>I-880 Alameda (ALA-880)</b> San Leandro to Milpitas <i>Hegenberger Road/Lewelling Boulevard to Dixon Landing Road</i></p>	<ul style="list-style-type: none"> <li>• Civil construction contract bids were opened in June 2017.</li> <li>• Caltrans issued the encroachment permit for the civil construction contract in June 2017.</li> <li>• BAIFA revised the Express Lanes Expenditure Plan to reflect increased costs, due largely to bid results for the civil construction project for the I-880 Express Lanes. (See Program Cost Summary and Change Management sections on pages 7 and 8.)</li> <li>• Caltrans' median barrier construction from just south of Fremont Boulevard in Fremont to just south of High Street in Oakland, including some express lanes elements, is approximately 64% complete.</li> <li>• Staff modified the opening date from spring 2019 to the end of 2019 as to account for coordination among contractors working in the corridor.</li> </ul>	<ul style="list-style-type: none"> <li>• Staff is completing review of bids in order to award a contract for express lane civil construction and addressing protests, if needed.</li> <li>• Caltrans' median barrier contractor is continuing to demolish the median barrier north of SR-92 and construct express lane infrastructure in the median.</li> <li>• Staff continues to monitor the opening date, which may be delayed due to the need to sequence construction with Caltrans median barrier and resurfacing projects.</li> </ul>
<p><b>I-680 Contra Costa Southern Segment (CC-680 South)</b> Walnut Creek to San Ramon <i>Livorna Road/Rudgear Road to Alcosta Boulevard</i></p>	<ul style="list-style-type: none"> <li>• Toll system equipment installation was mostly finished by June 2017.</li> <li>• Three express lanes data centers (Benicia-Martinez toll plaza, Caltrans District 4 and the Regional Operations Center) and the two corridor hubs were online and utilized by the toll system integrator during system implementation.</li> <li>• Backhaul contractor completed fiber optic installation along the entire I-680 corridor from San Ramon to Martinez in June 2017.</li> <li>• Civil construction was completed in May 2017.</li> </ul>	<ul style="list-style-type: none"> <li>• Final punch list items for toll system equipment installation are being addressed in July 2017.</li> <li>• Site Commission Testing, which ensures each equipment site is operational, is continuing through July 2017.</li> <li>• Corridor Testing, an end-to-end field equipment test to ensure data is collected and sent to the host, will take place in August 2017.</li> <li>• Backhaul contractor is to complete network certification and start operations and maintenance in August 2017.</li> <li>• Backhaul contractor is to complete punch list items and close out backhaul construction in September 2017.</li> <li>• Project is expected to open early in the 4th quarter of 2017.</li> </ul>

Project Development & Construction	2 <sup>nd</sup> Quarter 2017 Highlights	Current Activities
<p><b>I-680 Contra Costa Northern Segment Southbound Conversion (CC-680 North)</b></p> <p>Martinez to Walnut Creek <i>Marina Vista Boulevard to Rudgear Road/SR 242</i></p>	<ul style="list-style-type: none"> <li>Project staff met with the Walnut Creek mayor and city staff in May 2017 to review the construction plan and impacts.</li> <li>Comments on the 95% design were received in June 2017.</li> </ul>	<ul style="list-style-type: none"> <li>Contra Costa Transportation Authority is working to address Caltrans' comments on the 95% design while simultaneously preparing the 100% design for submittal in August 2017.</li> <li>Caltrans requires the project to mitigate pavement scarring from a change to the striping configuration. Project team is working with Caltrans on a cost-effective solution.</li> <li>Project team is working with PG&amp;E to design the new service locations while concurrently initiating the right-of-way engineering process for permanent utility easements.</li> </ul>
<p><b>I-80 Solano (SOL-80)</b></p> <p>Fairfield to Vacaville <i>Red Top Road to I-505</i></p>	<ul style="list-style-type: none"> <li>Caltrans' comments on the 65% design were evaluated and incorporated into the 95% design.</li> </ul>	<ul style="list-style-type: none"> <li>The 95% design to be submitted to Caltrans in July 2017.</li> </ul>
<p><b>Program Management</b></p>	<ul style="list-style-type: none"> <li>Buildout of the Regional Operations Center at the Bay Area Metrocenter was completed in May 2017. Express lanes operations will be managed from this location.</li> <li>Staff prepared for express lanes operations by testing responses to hypothetical incidents at an internal workshop in May 2017 and another workshop that included Caltrans and CHP staff in June 2017.</li> <li>Staff briefed BAIFA about customer education plans.</li> <li>Staff provided updates on the opening of the I-680 Contra Costa Express Lanes to local transportation advisory groups in the corridor.</li> <li>Staff met with field office staff to California Assembly members and senators from districts in Contra Costa and Alameda counties near the I-680 Contra Costa Express Lanes to prepare them for opening.</li> </ul>	<ul style="list-style-type: none"> <li>Staff is preparing for "go live" operations starting the end of the 3rd quarter or early in the 4th quarter of 2017.</li> <li>MTC staff continues to email monthly customer notices to over 8,000 stakeholders and drivers in the I-680 corridor.</li> <li>MTC and CCTA staff continue to provide updates on the I-680 Contra Costa Express Lanes to city councils and other local stakeholders.</li> <li>Starting in late July, staff will run a customer education campaign for several months past lane opening, using both social media and traditional advertising.</li> </ul>
<p><b>Toll System</b></p>	<ul style="list-style-type: none"> <li>Integrator completed the formal First Zone Test in May 2017, which was the first field test to compile live lane transactions into a single trip.</li> <li>Integrator completed Communications End-to-End Testing for the toll systems communication network in June 2017.</li> <li>End-to-End Testing of the data exchange between the toll system and the FasTrak<sup>®</sup> Customer Service Center's back office system was finished in June 2017.</li> <li>Toll system began using the full backhaul network as of June 2017.</li> </ul>	<ul style="list-style-type: none"> <li>Integrator will address punch list items from formal testing in anticipation of the Corridor Test in August 2017, which is to confirm that the toll system forms trips properly.</li> <li>Integrator will perform Disaster Recovery Testing in August 2017 to ensure that the failover to the redundant toll system host is functional.</li> <li>Production Readiness Testing of the data exchange in a live environment will occur with the FasTrak<sup>®</sup> Customer Service Center in September 2017.</li> <li>The operations contractor will hire and train the express lanes operations staff over the next few months.</li> </ul>

## II. PROGRAM OVERVIEW

### A. Program Description

MTC and partner agencies are implementing a regional network of express lanes called Bay Area Express Lanes. Upon completion, Bay Area Express Lanes will comprise 550 miles of express lanes operated by MTC, the Valley Transportation Authority (VTA), the Alameda County Transportation Commission (Alameda CTC) and the Sunol Smart Corridors Joint Powers Authority (Sunol JPA).

Primary objectives for Bay Area Express Lanes include:

- Create a seamless network of HOV lanes to encourage carpools, vanpools and express buses;
- Make the best use of HOV lane capacity;
- Provide reliable travel times for solo drivers; and
- Better manage all lanes to keep traffic moving.

MTC's portion of the Bay Area Express Lanes, referred to as MTC Express Lanes, will include 270 miles of express lanes – 150 miles of converted high occupancy vehicle (HOV) lanes and 120 miles of new lanes – on I-80 in Alameda, Contra Costa and Solano Counties; I-880 in Alameda County; I-680 in Contra Costa and Solano counties; and the westbound approaches to the Bay Bridge, San Mateo Bridge and Dumbarton Bridge.

Appendix B includes an overview of how express lanes operate.



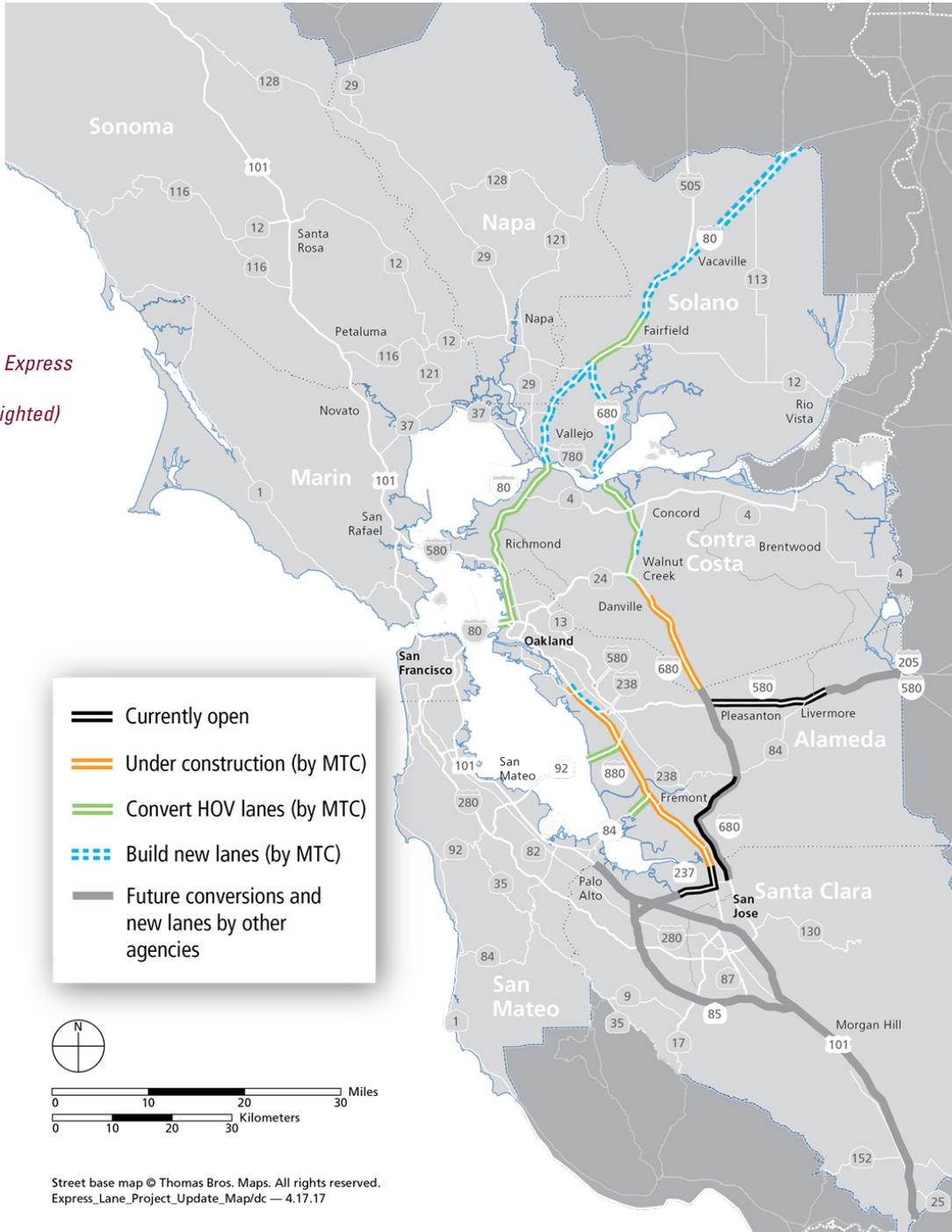
Map of Bay Area Express Lane Network

## B. Operating Authority

MTC and the Bay Area Toll Authority (BATA) have formed a joint powers authority to develop and operate MTC Express Lanes. The joint powers authority, known as the Bay Area Infrastructure Financing Authority (BAIFA), is composed primarily of representatives of the three counties where the express lanes are located: Alameda, Contra Costa and Solano. BAIFA is responsible for policy and operational decisions such as toll rates, project phasing and use of revenue.

The map below highlights MTC’s portion of Bay Area Express Lanes and shows where lanes will be converted from HOV lanes and where new lanes will be added.

Map of Bay Area Express Lanes  
(MTC lanes highlighted)



## C. MTC Express Lane Project Funding

MTC is using existing funding to convert existing HOV lanes to express lanes and to conduct environmental studies and design on some gap closure projects, so they are “shelf-ready” should construction funding become available. This will allow MTC to open as much of its 270-mile network as quickly as possible.

The table below lists the projects that comprise MTC Express Lanes according to current funding status.

County	Route	Project	Geographical Limits	Miles	Environmental	Design	Construction
<b>NEAR TERM CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS</b>							
ALA	880	I-880 Alameda	Between San Leandro and Milpitas <i>Hegenberger Rd./Lewelling Blvd. to Dixon Landing Rd.</i>	51	●	●	●
CC	680	I-680 Contra Costa Southern Segment	Between Walnut Creek and San Ramon <i>Livorna Rd./Rudgear Rd. to Alcosta Blvd.</i>	23	●	●	●
CC	680	I-680 Contra Costa Northern Segment - Southbound Conversion	Martinez to Walnut Creek <i>Marina Vista Blvd. to Rudgear Rd.</i>	11	●	●	●
SOL	80	I-80 Solano	Fairfield to Vacaville <i>Red Top Rd. to I-505</i>	36	●	●	○
<b>FUTURE CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS</b>							
ALA/ CC	80	I-80 and Westbound Bridge Approaches	Cummings Skyway to Bay Bridge San Mateo Bridge Westbound Approach Dumbarton Bridge Westbound Approach	50	◐	○	○
CC	680	I-680 Northern Segment - Northbound Conversion	Walnut Creek to Benicia <i>North Main St. to the Benicia Bridge</i>	5	◐	○	○
CC	680	I-680 Northern Segment - Northbound Extension	Walnut Creek to Concord <i>North Main St. to SR 242</i>	7	○	○	○

### KEY

● Funded ◐ Partially Funded ○ Unfunded

ALA = Alameda, CC = Contra Costa, SOL = Solano

### III. PROGRAM SCHEDULE SUMMARY

The schedule summary below reflects the “open to traffic” dates of the original “baseline” schedule, and the current completion forecast for the projects that are fully funded.

Project	Baseline Opening	Forecast Opening	Confidence Level	Detail Page
<b>I-880 Alameda (ALA-880)</b> San Leandro and Milpitas <i>Hegenberger Rd./Lewelling Blvd. to Dixon Landing Rd.</i>	Spring 2019	End of 2019	●	14
<b>I-680 Contra Costa Southern Segment (CC-680 South)</b> Walnut Creek and San Ramon <i>Livorna Rd./Rudgear Rd. to Alcosta Blvd.</i>	Fall 2016	Fall 2017	●	16
<b>I-680 Contra Costa Northern Segment - Southbound Conversion (CC-680 North)</b> Martinez to Walnut Creek <i>Marina Vista Blvd. to Rudgear Rd./SR 242</i>	Fall 2018	Spring 2020	●	19

**KEY**

- Within schedule shown.
- Identified potential risks that may significantly impact schedule if not mitigated.
- Known impact to schedule, changes forthcoming.

## IV. PROGRAM COST SUMMARY

### A. Conversions and Gap Closure Opportunity Projects

The cost summary below shows: 1) the costs of each express lane [corridor or segment] including planning, design and construction of the civil infrastructure, and installation and integration of the backhaul communications and toll system, and 2) programwide costs including planning and design, and implementation of centralized elements of the backhaul network and toll system. The program cost estimate includes the full estimated cost to complete MTC Express Lanes. The approved expenditure plan fully funds the first three projects listed below, the environmental and design phases for the I-80 projects in Solano County, and the environmental phase for the SR 92 and SR 84 projects. The expended-to-date amounts shown represent the amount of BATA Express Lane funds expended through May 31, 2017 in the second quarter. June 2017 expended-to-date amounts will be included once the 2017 fiscal year is fully closed out.

Project <sup>(1)</sup>	Program Estimate <sup>(2)</sup>	Cost Forecast <sup>(3)</sup>	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds <sup>(4)</sup>			Physical % Complete <sup>(5)</sup>	Confidence Level <sup>(6)</sup>
				Dec. 2015 Amendment	June 2017 Amendment	Expended through 5/30/17		
<b>NEAR TERM CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS</b>							<i>Costs shown in millions of escalated dollars</i>	
I-880 Alameda	132.5	132.5		77.8	132.5	32.5	25%	●
I-680 Contra Costa Southern Segment	55.6	55.6		55.6	55.6	40.5	90%	●
I-680 Contra Costa Northern Segment Southbound <sup>(7)</sup>	56.9	56.9	5.6	51.3	51.3	2.5	15%	●
I-80 Solano	179.4	34.2	15.2	19.0	19.0	4.3	15%	●
Centralized Toll System	33.6	33.6		33.6	33.6	13.5	65%	●
Program Planning, Coordination & Management	28.4	28.4		28.4	28.4	15.1	60%	●
Program Contingency	18.1	18.1		35.9	5.1	0.0		●
Capitalized Start-up O&M	16.0	16.0		16.0	16.0	1.0		●
<b>FUTURE CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS</b>								
I-80 Alameda/Contra Costa and Westbound approaches to the Bay, San Mateo & Dumbarton Bridges	110.9	5.7	5.0	0.7	0.7	0.7	1%	
I-680 Contra Costa Northern Segment - Northbound Conversion	14.6	1.5	1.5			0.0	5%	
I-680 Contra Costa Northbound Express Lane Completion (North Main Street to SR-242)	57.3							
Centralized & Program Costs & Start-Up O&M - Gap Closures & Future Conversions	TBD							
Previously unallocated BATA Express Lanes Capital Budget funds				23.9				
<b>TOTALS</b>	<b>703.3</b>	<b>382.5</b>	<b>27.4</b>	<b>342.2</b>	<b>342.2</b>	<b>110.1</b>	<b>39%</b>	

<sup>(1)</sup> Other gap closure and extension projects not shown: ALA-880 extension northbound from Lewelling to Hegenberger; SOL-80 gap closure from Carquinez Bridge to Red Top Road; SOL-80 extension east of I-505; SOL-80 gap closure.

<sup>(2)</sup> Program estimate represents current estimated cost to complete each project.

<sup>(3)</sup> Cost forecast represents current estimated cost to complete phases that are funded for each project.

<sup>(4)</sup> BATA Express Lane Funds represent the funds that have been allocated from the BATA budget.

<sup>(5)</sup> Physical percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds. Projects that have completed milestones using other funds include I-680 Contra Costa Northern Segment, I-80 Solano West and I-80 Solano East.

<sup>(6)</sup> ● = within budget, ● = identified potential risks that may significantly exceed budget if not mitigated, ● = known impacts to budget - changes forthcoming.

<sup>(7)</sup> Program estimate reflects total cost for express lanes (\$37.9 million of which BAIFA's contribution is \$32.3 million and RM2's contribution is \$5.6 million) plus BAIFA's contribution to the HOV Completion project (\$19 million). The table does not reflect other funding for the HOV Completion Project: Measure J (\$37million), RM2 (\$13million), STIP (\$16m million).

## B. Change Management

The change management process captures the changes in the program that have an impact on the approved baselines.

These are the major changes to the MTC Express Lanes Program:

- The forecast opening of the I-680 Contra Costa Express Lanes was changed from summer to fall 2017 to reflect a minor schedule slip into the the fall season.
- The Express Lanes Expenditure Plan was amended on June 28, 2017, to increase the I-880 Express Lanes project budget to \$132.5 million. The cost increase is attributed to changes in the project scope to address Caltrans requirements for widening at access locations, pavement work, lighting and overhead sign structures. The cost increase also reflects additional contingency funds for the backhaul communications network based on lessons from I-680. In addition, bids for the civil construction contract were considerably higher than the engineer's estimate. To accommodate the cost increase, \$23.9 million of unallocated funds in the BATA Express Lanes Capital Budget was added to the Expenditure Plan and \$30.8 million was drawn from the Program Contingency.
- The opening date for the I-880 express lanes has been adjusted from spring 2019 to the end of 2019, and the confidence level has been upgraded from red to yellow. The change is a result of longer timelines for required for coordination with the median barrier, repaving and toll system integrator projects.

## C. Risk Management Plan

MTC manages risk at both the program and contract level by identifying risks that could negatively impact the program's cost and schedule, and assigns responsibility to the person best positioned to manage each risk. Risks managed at the contract level are associated with contingency funding authorized by BAIFA for specific contracts. Risks managed at the program level would draw upon the program contingency line item in the Express Lanes Expenditure Plan. Staff regularly review the risk exposure and mitigation plans at both the contract and program level.

In 2016, the program began using Monte Carlo simulation to evaluate potential collective impacts of identified risks in the program's capital cost risk register. Prior to 2016, the program tracked the mean risk-assessed contingency, which was a somewhat simplified assessment of risk. Monte Carlo simulation is a computerized technique that uses repeated random sampling from a range of variable inputs (risk probabilities and cost impact ranges) to determine the probability of different cost outcomes. This tool provides a realistic way of estimating uncertainty due to identified risks.

The chart on page 9 shows the median risk exposure for the program-level risks using Monte Carlo analysis. As of June 30, 2017, the risk exposure stands at \$10.4 million, which is lower than the \$18.1 million reported last quarter. The reasons for this reduction are two-fold. First, a few risks on the I-880 Express Lanes project were realized and the cost forecast for

the program has been increased accordingly. Examples include: cost escalation in excess of forecasts; and increased cost due to paving required to avoid scarring at access locations. Second, staff has excluded from the program level risk analysis those risks accounted for in contingencies authorized by BAIFA for specific contracts. Examples include: cost increases resulting from increase in median barrier concrete depth in the I-880 median barrier contract; and costs due to delays in the I-880 civil construction contract as a result of sequencing with other contracts (median barrier and resurfacing contracts) or due to weather.

The chart on the following page tracks the program's cost forecast and risk exposure as compared to the authorized program budget. Consistent with the amendment to the Expenditure Plan that was adopted on June 28, 2017, the cost forecast for the program has been increased to \$337.1 million and the authorized budget has been increased to \$342.2 million. The current program contingency of \$5.1 million would not be sufficient if the risk exposure of \$10.4 million were to be realized. Staff plans to be diligent in managing cost and risk while seeking new funding opportunities.

The top contributors to the program-level risk exposure and the associated mitigation strategies are as follows:

### I-880 Alameda

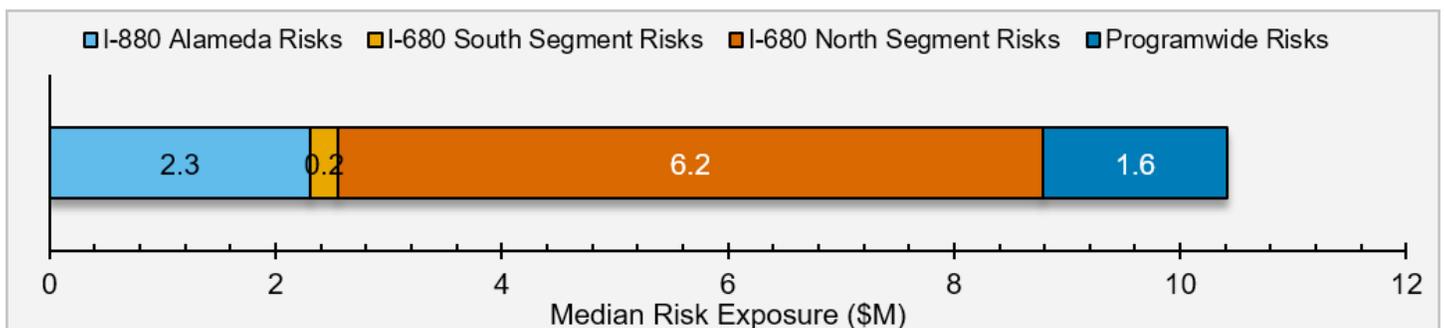
- Caltrans is currently managing a repaving project. Coordination issues with the project may delay completion of I-880 Express Lanes work and impact the open-to-traffic date. MTC staff is: meeting with Caltrans to create a sequence of activities that would reduce the overall schedule; evaluating alternative ways to expedite the work; and recommending specification changes to the Caltrans repaving project.
- The project includes the establishment of 36 PG&E electrical service points. The timely completion of these service points is critical to the schedule, but PG&E is unable to commit to specific dates of delivery. As a mitigation strategy, MTC staff has executed all but two service contracts with PG&E for field work, and the schedule has been provided to PG&E to prioritize their work flow.
- Adverse site conditions for existing conduit and pull boxes may require repair or replacement of existing sections of conduit or pull boxes which would increase capital costs. MTC staff is performing conduit investigation as part of the median barrier contract to identify potential issues. Additionally, the scope of work for the contractor includes provisions for site investigation.

### I-680 Contra Costa Southern Segment

- Delays in toll systems implementation and testing could delay opening of the express lanes. This could result in extended ramp up, during which additional costs would be incurred for power and communications, the Customer Service Center, and civil overhead prior to generating revenue. The project team is actively working with the toll systems contractor to resequence work to minimize delays such as by bringing on additional software programmers and prioritizing work that is critical for toll system functionality on opening day (as a result, some non-critical functions may be delayed until after opening).

### I-680 Contra Costa Northern Segment

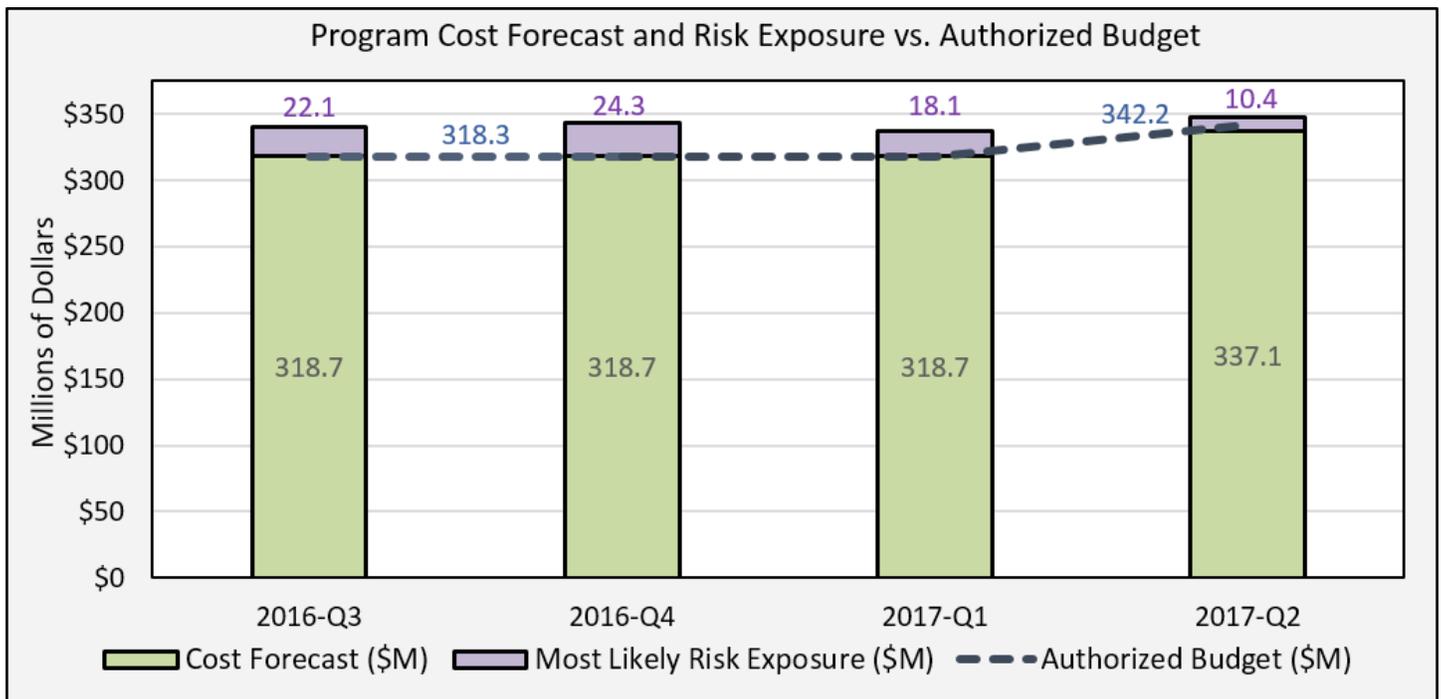
- Pavement stripe removal and additional pavement resurfacing is required for all lanes of the I-680 corridor to eliminate scarring due to existing narrow lanes in the corridor. This increased scope of work may impact project schedule and cost. This risk is being mitigated by researching other solutions and coordinating the needs and requirements with Caltrans. The team is currently refining the construction sequence of activities and incorporating the results of the I-880 corridor tests that evaluated ways to avoid pavement damage and resurfacing costs.
- I-680 through Walnut Creek must be widened to connect the existing southbound HOV lanes and create a continuous express lane from Martinez to Dublin. To mitigate the construction impacts to Walnut Creek residents, CCTA is looking at options that may lengthen the schedule.



This chart shows the contribution of each project’s risks toward the total program risk exposure.

### Programwide Risks

- Potential changes to state or national interoperability requirements may cause changes to design or operational policy that may have cost impacts for MTC’s Express Lanes Program. The California Toll Operators Committee has a goal that all operators will be able to read and process 6C transactions by spring of 2019. This would require tuning for the I-680 Contra Costa Southern Segment and thus may have cost impacts for MTC’s Express Lanes. This risk will be managed by participating in the development plan of the transition from Title 21 compliant toll technology to 6C compliant toll technology.
- Costs may escalate at higher than projected levels resulting in increased costs for design or construction. The program management team is monitoring the Caltrans Construction Cost Index, ENR Construction Cost Index and CPI and would adjust estimates if the escalation level is higher than estimated in the program budget. The program management team conducts independent reviews of engineers’ estimates, and moving forward, will explore ways to better account for the bid environment prior to advertising construction projects.



This chart shows the program cost forecast and risk exposure as compared to the authorized program budget.

## V. PROJECT SUMMARY SHEETS

## Centralized Functions

### Toll System and Program Management, Planning and Regional Coordination

#### Total Estimated Cost

\$33.6 million for the Centralized Toll System  
 \$28.4 for Program Planning, Coordination and Management

#### Schedule

Centralized Toll System will be ready with opening of the I-680 Contra Costa Southern Segment in fall of 2017.

Program Planning, Coordination and Management is ongoing through the opening of the funded projects.

#### Project Description

The Centralized Toll System includes the elements of the toll system that are needed to toll all the express lanes, as well as the backhaul communications network components, such as fiber optic cable and leased line services, that transport toll data from MTC lanes to host and toll operations data centers. Centralized toll system work includes designing and implementing the hardware and software for dynamic toll setting and trip building, integration with the FasTrak® Regional Customer Service Center, and acquiring spare parts.

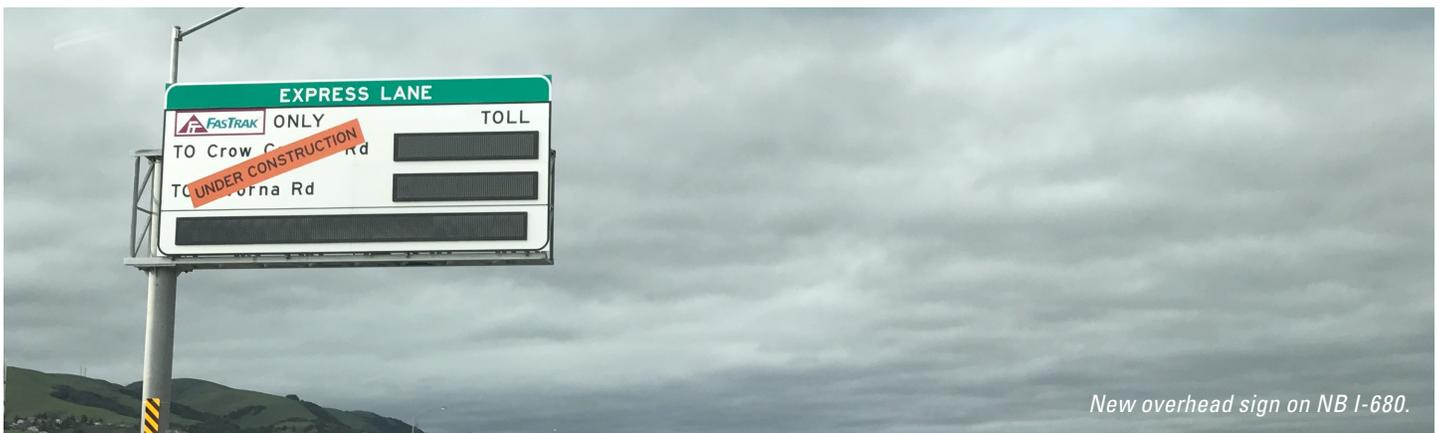
Program management, planning and regional coordination tasks include managing the expenditure plan, cost, schedule and risk; developing the express lane business rules and toll ordinance; conducting customer education and outreach; building out the Regional Operations Center and developing operating procedures; planning for future express lanes; and coordinating with partner agencies to offer a seamless experience for drivers.

#### Program Management Highlights and Progress

- Buildout of the Regional Operations Center at the Bay Area Metrocenter was completed in May 2017. Express lanes operations will be managed from this location.
- Staff prepared for express lanes operations by testing responses to hypothetical incidents at an internal workshop in May 2017 and another workshop that included Caltrans and CHP staff in June 2017.
- Staff briefed BAIFA about customer education plans.
- Staff provided updates on the opening of the I-680 Contra Costa express lanes to local transportation advisory groups in the corridor.
- Staff met with field office staff to California Assembly members and Senators from districts in Contra Costa and Alameda counties near the I-680 Contra Costa express lanes to prepare them for opening.

#### Current Program Management Activities

- MTC staff continues to email monthly customer notices to over 8,000 stakeholders and drivers in the I-680 corridor.
- MTC and CCTA staff continue to provide updates on the I-680 Contra Costa Express Lanes to city councils and other local stakeholders.
- Starting in late July, staff will run a customer education campaign for several months past lane opening, using both social media and traditional advertising.
- Staff is preparing for “go live” operations starting early in the 4th quarter of 2017.



*New overhead sign on NB I-680.*



*The Regional Operations Center (ROC) at the Bay Area Metrocenter in San Francisco.*

## Toll System Highlights and Progress

- The construction contract for the backhaul communications network for the host data centers and I-680 Contra Costa Southern Segment was awarded in December 2015.
- The toll operations staffing contract was awarded in March 2016.
- Final toll system host and software design was approved in March 2016, and Factory Acceptance Testing of hardware and software was held in June 2016.
- Primary toll system host hardware was installed at the Benicia-Martinez Bridge toll plaza in November 2016 and communications were established with the field equipment. Back-up operations hardware was also installed at the Traveler Information Center (TIC) located at Caltrans District 4, in Oakland.
- Buildout of the Regional Operations Center was finished in March 2017.
- Dry-run testing of file exchanges between the toll system and FasTrak<sup>®</sup> Customer Service Center was finished in March 2017.
- The integrator completed the formal First Zone Test in May 2017, which was the first field test to compile live lane transactions into a single trip.

- The integrator completed Communications End-to-End Testing for the toll systems communications network in June 2017.
- End-to-End Testing of the data exchange between the toll system and FasTrak<sup>®</sup> Customer Service Center's back office system was finished in June 2017.
- Toll system began using the full backhaul network as of June 2017.

## Current Toll System Activities

- The integrator will address punch list items from formal testing in anticipation of the Corridor Test in August 2017, which is to confirm that the toll system forms trips properly.
- The integrator will perform a Disaster Recovery Test in August 2017 to ensure that the failover to the redundant toll system host is functional.
- Production Readiness Testing of the data exchange in a live environment will occur with the FasTrak<sup>®</sup> Customer Service Center in September 2017.
- The operations contractor will hire and train the express lanes operations staff over the next few months.

# I-880 Alameda (ALA-880)

## Oakland to Milpitas

### Hegenberger Road/Lewelling Boulevard to Dixon Landing Road

#### Total Program Estimate

\$132.5 million

#### Scheduled Open Date

End of 2019

#### Project Description

The project converts the existing I-880 HOV lanes that run from Hegenberger Road to Dixon Landing Road in the southbound direction and from Dixon Landing Road to Lewelling Boulevard in the northbound direction to express lanes.

The conversion involves lane striping and installing sign gantries, signs, FasTrak® toll tag readers, traffic monitoring video cameras and California Highway Patrol observation areas. It will result in 51 express lane miles between Oakland and Milpitas.

The express lanes conversion project is being coordinated with a median barrier reconstruction project and a future pavement resurfacing project, both led by Caltrans. The median barrier reconstruction project will install foundations and other infrastructure required for the future express lanes construction.

#### Project Highlights and Progress

- Public open house was held in March 2015.
- Preliminary engineering report and environmental document were completed in October 2016.
- Caltrans approved the mid-day hours of operation assessment in December 2016.
- Resolution of Caltrans comments on 100% design was completed in May 2017.
- Civil construction contract bids were opened in June 2017.
- Caltrans issued the encroachment permit for the civil construction contract in June 2017.
- Civil construction costs exceeded the I-880 project budget, prompting BAIFA to revise its Express Lanes Expenditure Plan in June 2017. (See Program Cost Summary and Change Management Sections on pages 7 and 8.)
- Project team reached agreement with Caltrans on pavement resurfacing scope and budget. This retires a major risk item for the project.
- Caltrans median barrier construction contractor began work in April 2016. Work from just south of Fremont Boulevard in Fremont to just south of High Street in Oakland is approximately 64% complete including construction of express lane sign structure foundations. (See construction photo on page 15.)
- Staff modified the opening date from spring 2019 to the end of 2019 as to account for coordination among contractors working in the corridor.



### Current Project Activities

- Caltrans median barrier contractor is continuing to demolish the median barrier north of SR-92 and construct express lane infrastructure in the median.
- Staff is completing review of bids in order to award a contract for express lane civil construction and will address protests, if needed.
- Staff is reviewing the projected open date, which likely will be delayed due to the need to sequence construction with Caltrans median barrier and resurfacing projects.

### Project Schedule by Phase



### Project Cost

Program Estimate <sup>(1)</sup>	Cost Forecast <sup>(2)</sup>	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds <sup>(3)</sup>			Physical % Complete <sup>(4)</sup>
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 5/30/17	
132.5	132.5		77.8	132.5	32.5	25%

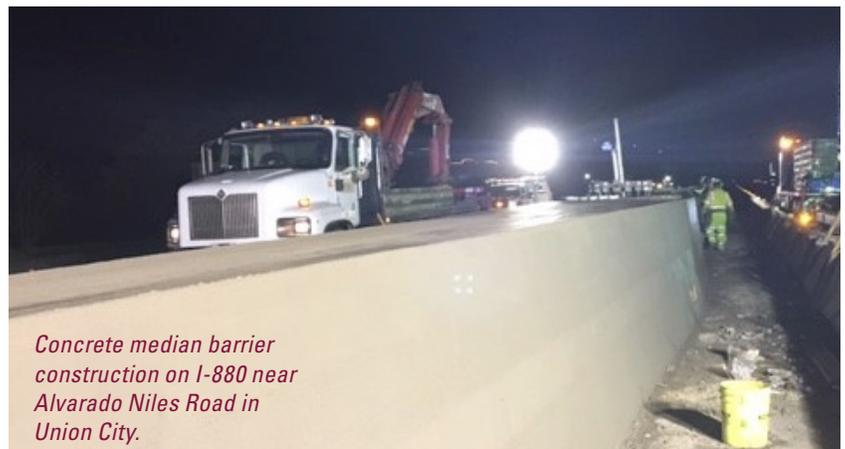
The program estimate for this project includes planning, design, construction, utilities, backhaul communications and toll system integration.

Costs shown in millions of escalated dollars.

- (1) Program estimate represents current estimated cost to complete each project.
- (2) Cost forecast represents current estimated cost to complete phases that are funded for each project.
- (3) BATA Express Lane Funds represent the funds that have been allocated from the BATA budget.
- (4) Physical percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.



Contractors drilling pile foundation for overhead sign.



Concrete median barrier construction on I-880 near Alvarado Niles Road in Union City.

# I-680 Contra Costa Southern Segment (CC-680 South)

## Walnut Creek to San Ramon

### Livorna Road/Rudgear Road to Alcosta Boulevard

#### Total Program Estimate

\$55.6 million

#### Scheduled Open Date

Fall 2017

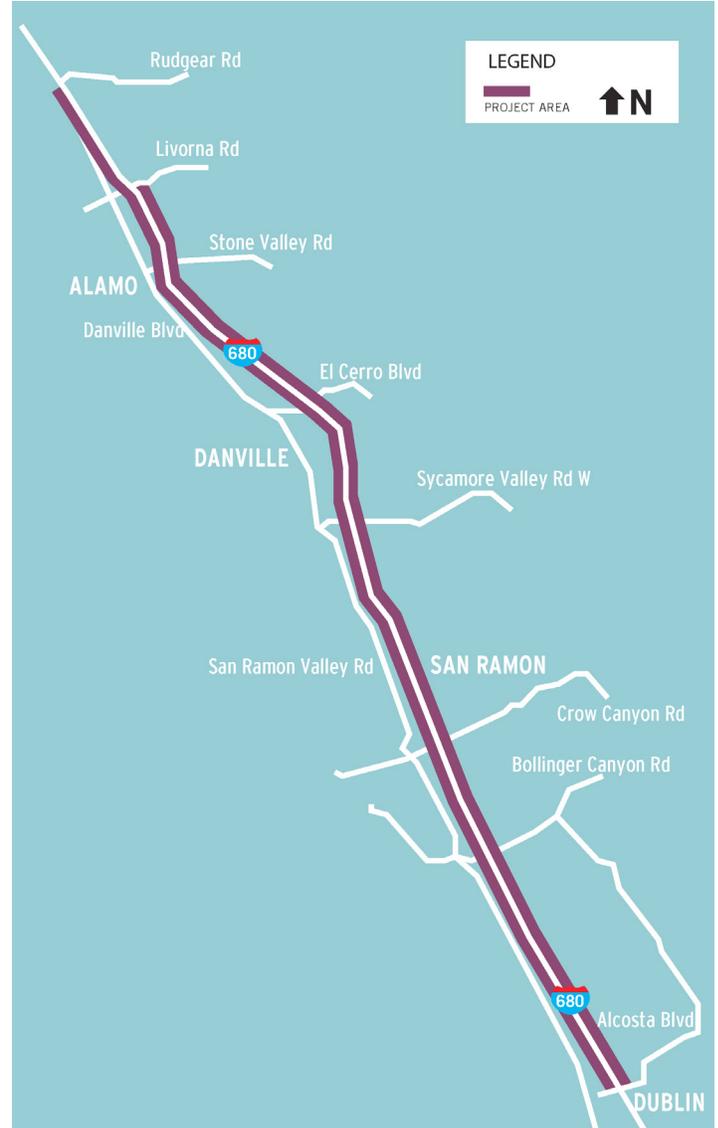
#### Project Description

The project converts existing HOV lanes to express lanes on I-680 from Rudgear Road to Alcosta Boulevard in the southbound direction and from Alcosta Boulevard to Livorna Road in the northbound direction. It will result in 23 express lane miles through San Ramon, Danville, Alamo and southern Walnut Creek. No widening or additional lanes will be added to the freeway.

This conversion project includes striping lanes and installing sign gantries, signs, FasTrak® toll tag readers, and traffic monitoring video cameras. In addition, the project installs equipment and observation areas to help the California Highway Patrol enforce proper use of the lanes.

#### Project Highlights and Progress

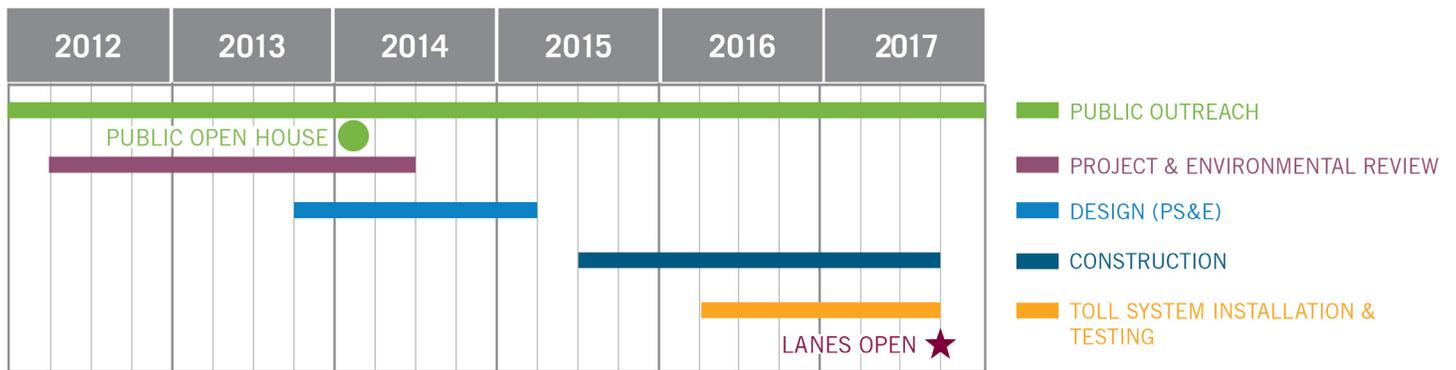
- Public open house was held in March 2014.
- Preliminary engineering report and environmental document were completed in August 2014.
- Final design and permits for both the backhaul communication network and the toll system were completed in December 2015.
- Final roadway design was completed in April 2015. Civil construction was completed in May 2017.
- Toll system equipment installation was mostly finished by June 2017.
- Backhaul contractor completed fiber optic installation between Walnut Creek and San Ramon in June 2016 and from Walnut Creek to the express lanes data center in Martinez in June 2017, totaling 26 miles of fiber.
- Three express lanes data centers (Benicia-Martinez toll plaza, Caltrans District 4 and the Regional Operations Center) and the two corridor hubs were online and utilized by the toll system integrator during system implementation.



### Current Project Activities

- Final punch list items for toll system equipment installation are being addressed in July 2017.
- Site Commission Testing, which ensures each equipment site is operational, is continuing through July 2017.
- Corridor Testing, an end-to-end field equipment test to ensure data is collected and sent to the toll system host, will take place in August 2017.
- Backhaul contractor is to complete network certification and start operations and maintenance in August 2017.
- Backhaul contractor is to complete punch list items and close out backhaul construction in September 2017.
- Project is expected to open early in the 4th quarter of 2017.

### Project Schedule by Phase



### Project Cost

Program Estimate <sup>(1)</sup>	Cost Forecast <sup>(2)</sup>	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds <sup>(3)</sup>			Physical % Complete <sup>(4)</sup>
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 5/30/17	
55.6	55.6		55.6	55.6	40.5	90%

The program estimate for this project includes planning, design, construction, utilities, backhaul communications and toll system integration.

<sup>(1)</sup> Program estimate represents current estimated cost to complete each project.  
<sup>(2)</sup> Cost forecast represents current estimated cost to complete phases that are funded for each project.  
<sup>(3)</sup> BATA Express Lane Funds represent the funds that have been allocated from the BATA budget.  
<sup>(4)</sup> Physical percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.

## I-680 Northern Segment Southbound Conversion (CC-680 North)

### Martinez to Walnut Creek

#### Benicia Bridge to Rudgear Road

#### Total Program Estimate

\$56.9 million (\$51.3 million to be funded by BAIFA)

#### Scheduled Open Date

Spring 2020

#### Project Description

The project will convert 11 miles of the existing HOV lane on southbound I-680 from just south of Marina Vista Avenue in Martinez to North Main Street in Walnut Creek into an express lane. It also includes express lane elements for the I-680 Southbound HOV Completion Project. Once complete, I-680 will have a continuous southbound express lane from Martinez to the Alameda County line.

Civil construction will be delivered by the Contra Costa Transportation Authority (CCTA). MTC will install toll and communications equipment and will operate the express lanes.

#### Project Highlights and Progress

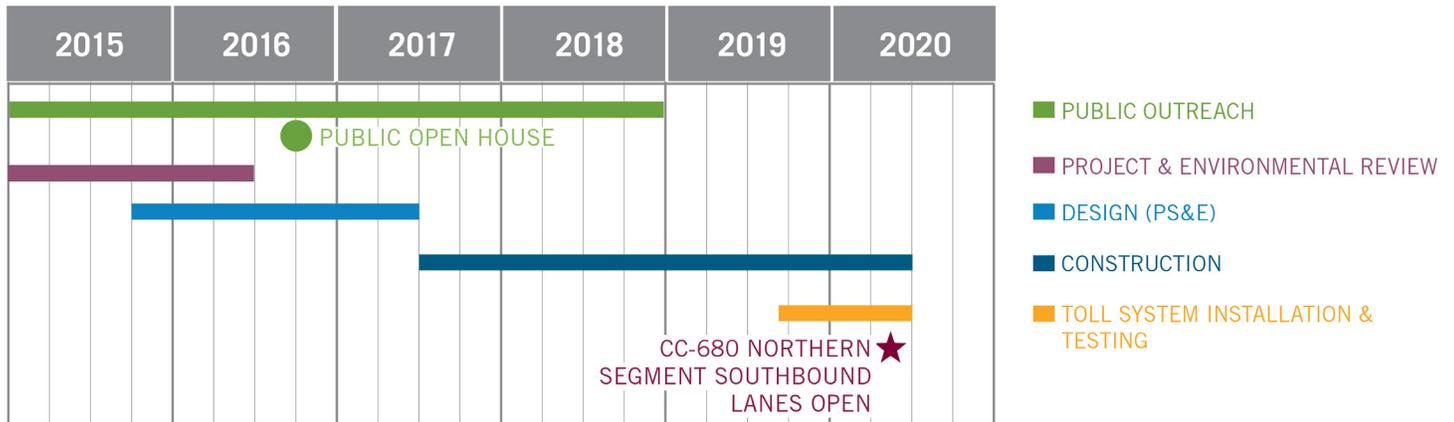
- Caltrans accepted the Traffic Operation Analysis Report in October 2015, and agreed with the mid-day hours of operation analysis in early 2017.
- The California Department of Fish and Wildlife provided concurrence in April 2016 that the CC-680 North express lanes project is not likely to adversely affect any known federally listed species.
- The environmental document for the express lane was signed by Caltrans in December 2016.
- An online open house to describe the project and solicit feedback was held in November and December of 2016. CCTA developed a summary of feedback in January 2017.
- Project staff met with the Walnut Creek Mayor and city staff in May 2017 to review the construction plan and impacts.
- Comments on the 95% design were received in June 2017.



#### Current Project Activities

- CCTA is working to address Caltrans' comments on the 95% design while simultaneously preparing the 100% design for submittal in August 2017.
- Caltrans requires the project to mitigate pavement scarring from a change to the striping configuration. The project team is working with Caltrans on a cost-effective solution.
- The project team is working with PG&E to design the new service locations while concurrently initiating the right-of-way engineering process for permanent utility easements..

### Project Schedule by Phase



### Project Cost

Program Estimate <sup>(1)</sup>	Cost Forecast <sup>(2)</sup>	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds <sup>(3)</sup>			Physical % Complete <sup>(4)</sup>
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 5/30/17	
56.9	56.9	5.6	51.3	51.3	2.5	15%

The program estimate for this project includes planning, design, construction, utilities, backhaul communications and toll system integration

<sup>(1)</sup> Program estimate reflects total cost for express lanes (\$37.9 million of which BAIFA's contribution is \$32.3 million and RM2's contribution is \$5.6 million) plus BAIFA's contribution to the HOV Completion project (\$19 million). The table does not reflect other funding for the HOV Completion Project: Measure J (\$37million), RM2 (\$13million), STIP (\$16m million).

<sup>(2)</sup> Cost forecast represents current estimated cost to complete phases that are funded for each project.

<sup>(3)</sup> BATA Express Lane Funds represent the funds that have been allocated from the BATA budget.

<sup>(4)</sup> Physical percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.

## I-80 Solano (SOL-80)

### Fairfield to Vacaville

#### Red Top Road to I-505

#### Total Program Estimate

\$179.4 million

#### Scheduled Open Date

TBD

#### Project Description

This project will convert the existing eastbound and westbound HOV lanes to express lanes between Red Top Road and Air Base Parkway in Fairfield. Conversion work includes striping lanes and installing sign gantries, signs, FasTrak® toll tag readers and traffic-monitoring video cameras.

The project will also construct new eastbound and westbound lanes between Air Base Parkway and I-505 in Vacaville. In this section, the highway will be widened along with the installation of express lane striping, signage and equipment. The project will result in 36 miles of express lanes on I-80 in Solano County.

The Solano Transportation Authority (STA) is the lead agency for environmental clearance and civil design.

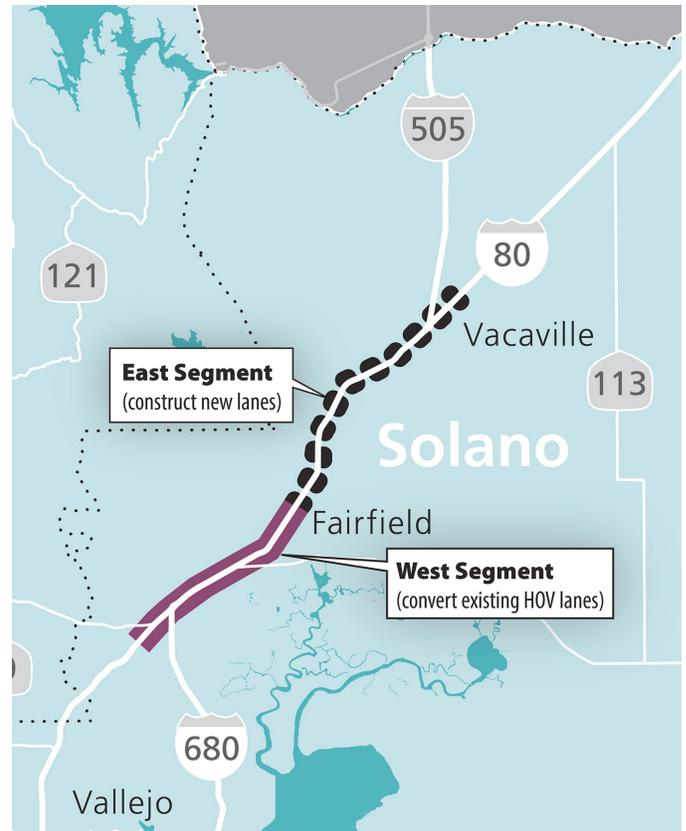
STA will advertise, award and administer the construction contract. MTC will install toll and communications equipment and will operate the express lanes.

#### Project Highlights and Progress

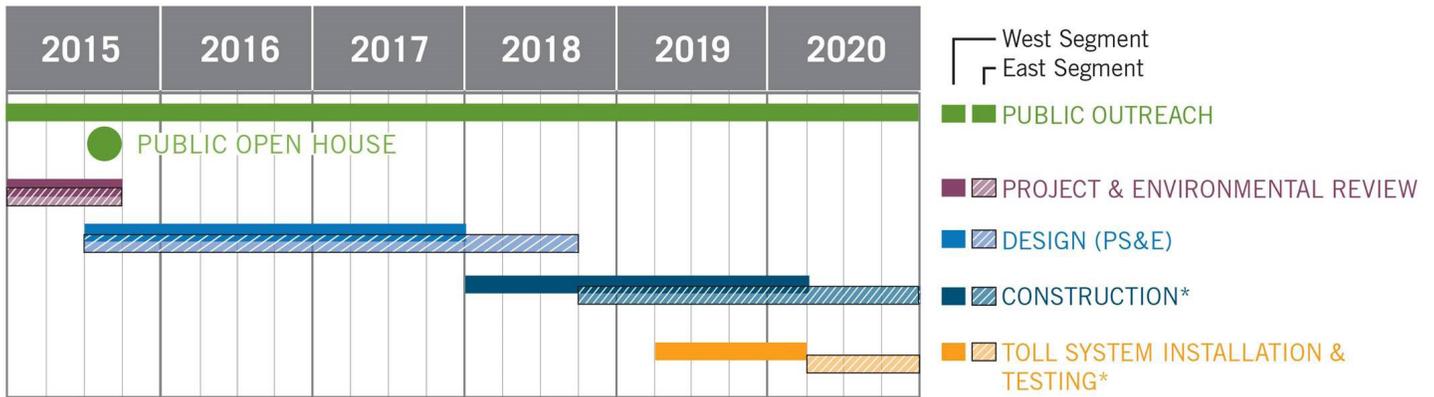
- A public open house was held in August 2015.
- The preliminary engineering report and environmental document were completed in December 2015.
- Caltrans' comments on the 65% design were evaluated and incorporated into the 95% design.

#### Current Project Activities

- The 95% design is to be submitted to Caltrans in July 2017.



### Project Schedule by Phase



\* Funding for these activities is not yet secured.

### Project Cost

Program Estimate <sup>(1)</sup>	Cost Forecast <sup>(2)</sup>	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds <sup>(3)</sup>			Physical % Complete <sup>(4)</sup>
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 5/30/17	
179.4	34.2	15.2	19.0	19.0	4.3	15%

The program estimate for this project includes planning, design, construction, utilities, backhaul communications and toll system integration.

Costs shown in millions of escalated dollars.

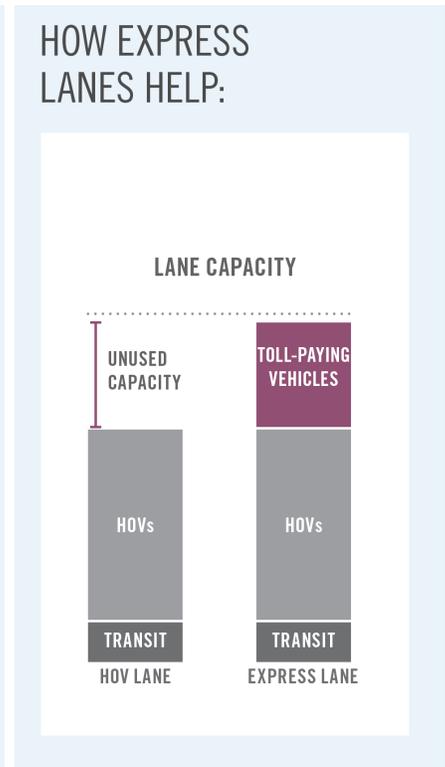
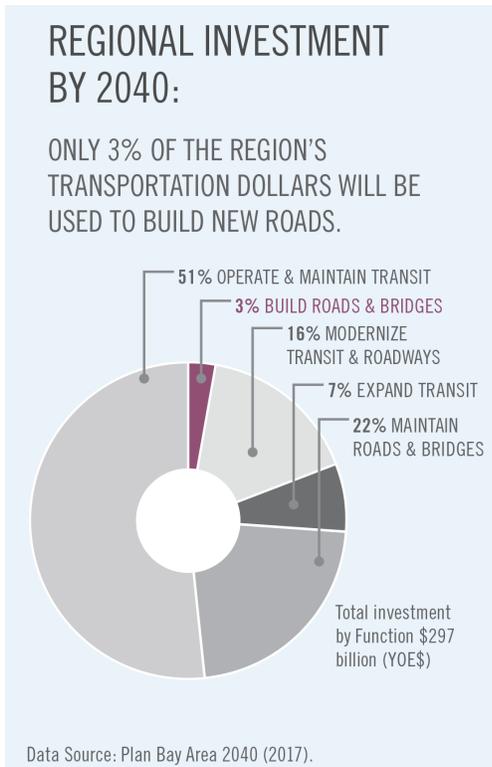
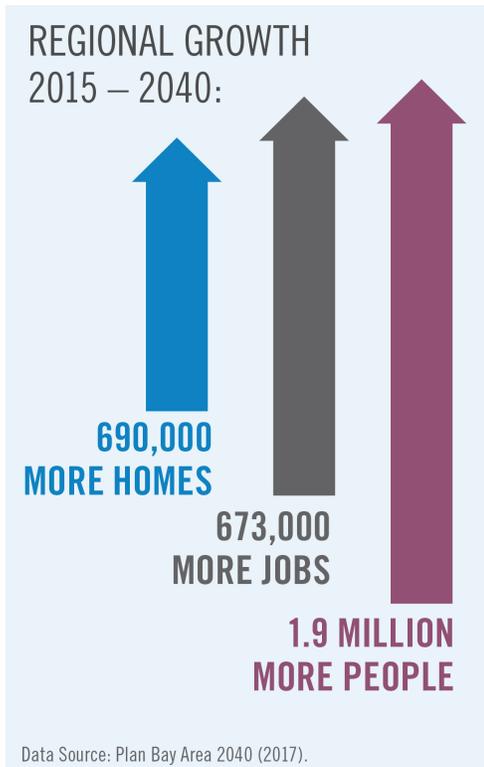
- <sup>(1)</sup> Program estimate represents current estimated cost to complete each project.
- <sup>(2)</sup> Cost forecast represents current estimated cost to complete phases that are funded for each project. I-80 Solano is funded through the design phase.
- <sup>(3)</sup> BATA Express Lane Funds represent the funds that have been allocated from the BATA budget.
- <sup>(4)</sup> Physical percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.

# APPENDICES

## A. Why Express Lanes?

The Bay Area lacks the necessary transportation funding and land to build enough transportation capacity to keep up with regional growth. Bay Area Express Lanes maximize use of our highways by A) filling any empty space in existing HOV lanes,

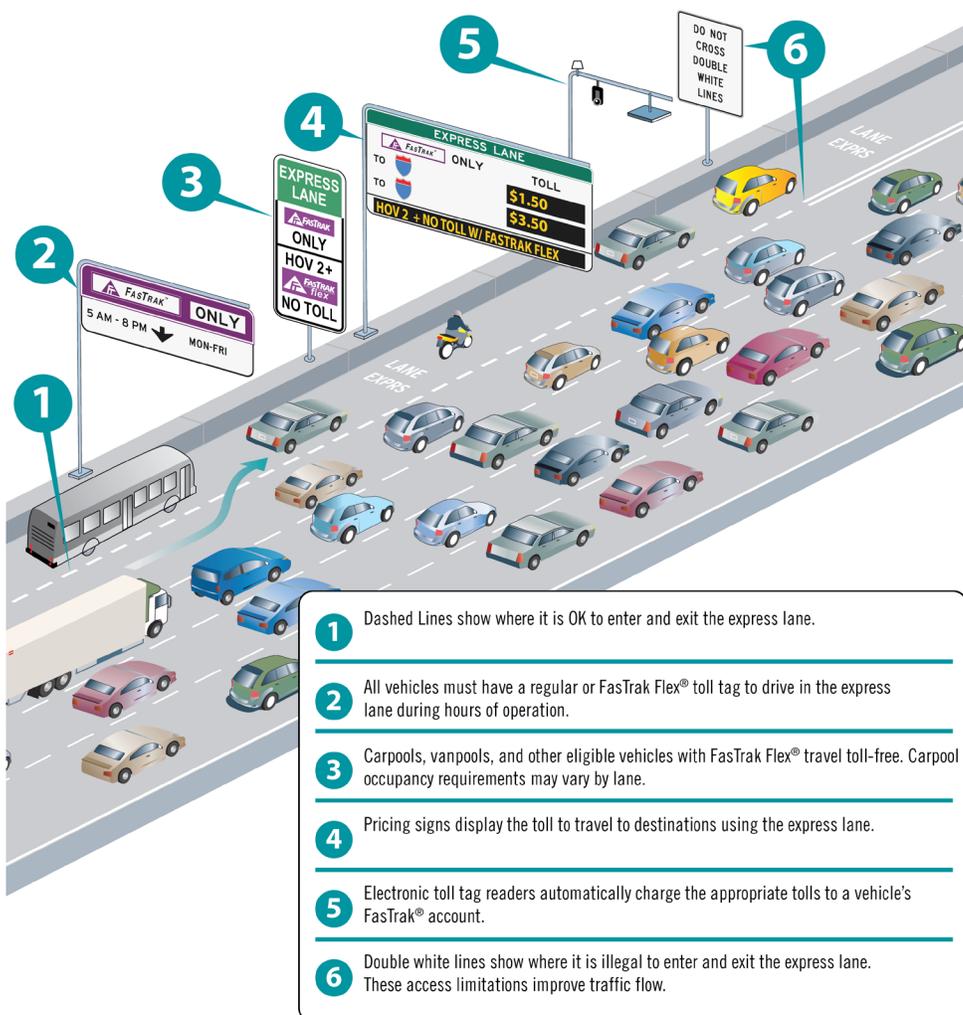
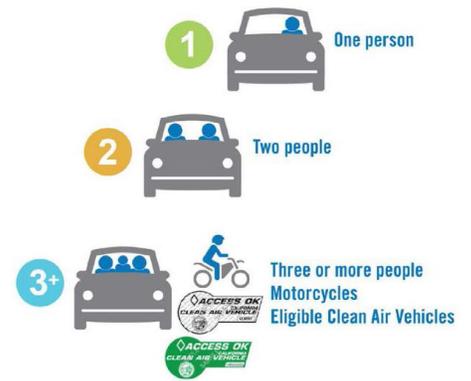
B) improving operations in existing HOV lanes through better carpool enforcement and strategies to prevent lane slowdowns, and C) filling gaps in the HOV lane system to encourage more carpooling.



## B. How Express Lanes Work

MTC Express Lanes are free to carpools, vanpoolers, motorcycles, eligible clean air vehicles and transit buses. Solo drivers can choose to pay tolls to use the lanes. Tolls for solo drivers will be collected electronically via FasTrak®, as on Bay Area toll bridges. Overhead electronic pricing signs will display the current toll rates, which will increase as traffic congestion increases and decrease as traffic congestion decreases.

On MTC Express Lanes, carpools, qualifying clean-air vehicles and other toll-exempt vehicles must use a FasTrak Flex® toll tag set to “2” or “3+” to travel toll-free. Solo drivers pay to use the lanes with either a standard FasTrak® toll tag or a FasTrak Flex® toll tag set to “1.” Drivers should move the switch before driving.



The figure to the left explains how to use Bay Area Express Lanes. MTC Express Lanes will be mostly “open” access, meaning drivers will enter and exit the express lanes similar to how they enter and exit HOV lanes today. Areas in locations prone to excessive weaving or with safety issues will have limited access to restrict entry and exit at these locations. Signage and lane striping will identify the limited entry and exit locations. Limited access is a way to improve travel speeds in express lanes.

## C. System Technology and Elements

MTC Express Lanes are implemented by overlaying communications equipment on new and existing freeway infrastructure. Express lanes implementation requires four discrete elements that are integrated through design, construction and operations, including:

### Civil Infrastructure (Highway Modifications)

For lane conversions, the civil infrastructure consists of sign structures, sign panels, lane striping, and conduit work for power and communications. For gap closure and extension projects, the civil infrastructure includes highway widening to add lanes as well as the signage and communications equipment required for conversions.

The civil contractor will put in place the foundations and structures upon which the toll systems contractor will install the toll equipment. In addition, the civil contractor will construct the infrastructure necessary to provide power and communications to the toll system.

### Toll System

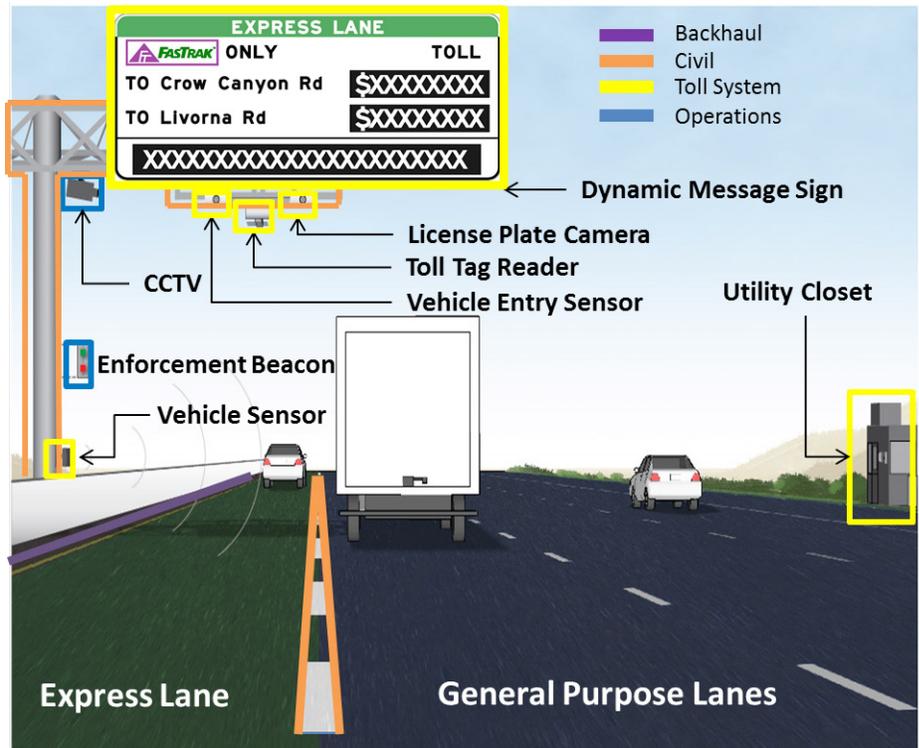
The toll system consists of two components, the in-lane system and the back-end "host" system. The lane system consists of all the equipment on the highway needed to operate the toll system including toll tag readers, cameras and vehicle detection. The host system serves as the brain of the toll system, which collects and processes all the data from the highway and sends it to the regional customer service center for billing.

### Backhaul Communications Network

The backhaul network is the communication line along which data collected in the lanes is sent to the toll host system, operations center and regional customer service center. The backhaul contractor will install new conduit and communications fiber as well as utilize existing Caltrans, BART and other infrastructure to build the network. The backhaul network is being designed with the expectation that it will become part of a broader regional communications network.

### Operations

The operations element consists of everything that is needed to successfully operate the express lanes including: an operations center, the regional customer service center, enforcement, public outreach, performance monitoring and ongoing maintenance. An express lanes Regional Operations Center will be established in the Bay Area Metrocenter building in San Francisco where operators will actively monitor the condition of the lanes and coordinate with Caltrans and the California Highway Patrol to ensure that the lanes operate efficiently.



For illustrative purposes only