BAY AREA EXPRESS LANES

MTC Express Lanes Quarterly Report
1st Quarter, January - March, 2018

Submitted: May 9, 2018

BAIFA
BAY AREA INFRASTRUCTURE FINANCING AUTHORITY

METROPOLITAN TRANSPORTATION COMMISSION

TABLE OF CONTENTS

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 first quarter of 2018, January 1 to March 31.

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. The first of MTC's express lanes opened in October 2017 on I-680 in Contra Costa County. Several additional projects are at varying stages of development.

Project Development & Construction	1st Quarter 2018 Highlights	Current Activities
I-880 Alameda (ALA-880) San Leandro to Milpitas *Hegenberger Road/Lewelling Boulevard to Dixon Landing Road*	• As of March 2018, 92% of MTC's express lanes scope of work to be delivered through Caltrans' median barrier contract was complete. Barrier demolition is complete. All express lane sign structure and light foundations are complete. • Caltrans approved the toll system design and issued the encroachment permit for the toll system integrator in March 2018. • Staff responded to community member concerns about tree removal at Hacienda Ave., saving 20 redwood trees.	• The express lanes civil contractor completed preparation work for Pacific Gas & Electric (PG&E) at SR-237 and Fremont Blvd., including conduit, foundations and electrical meters. PG&E has been requested to run power to the meters. • The express lanes civil contractor will start to install a retaining wall in the freeway shoulder near Hacienda Ave. in Hayward. • The toll system integrator will begin work in spring 2018. • The Backhaul contractor will begin installation of fiber in the southern half of the I-880 corridor. • Monthly construction notices and ramp closure/detour notices continue to be sent.
I-680 Contra Costa Southern Segment (CC-680 South) Walnut Creek to San Ramon *Livorna Road/Rudgear Road to Alcosta Boulevard*	• See Appendix C for first quarter performance data.	• The integrator is fine tuning field equipment and addressing punch list items in preparation for Operations Testing in the summer of 2018. • The Backhaul contractor will address the remainder of punch list items and complete project 'as-built' documentation. • Beginning in this Quarterly Report, since civil construction is complete and the express lanes are open, this capital project is being archived in Appendix B and no further updates will be made to the project summary.

Project Development & Construction	1st Quarter 2018 Highlights	Current Activities
I-680 Contra Costa Northern Segment Southbound Conversion (CC-680 North) Martinez to Walnut Creek *Marina Vista Boulevard to Rudgear Road/SR 242*	• Caltrans issued the encroachment permit for the civil construction contract in February 2018.	• PG&E is scheduled to perform utility relocation in April 2018. • CCTA will advertise for civil construction in April 2018 and plans to open bids in June 2018. • The toll system integrator will begin its 100% design package for the toll system. • Staff is preparing a contract change order for the Backhaul contractor to reroute in-use Backhaul fiber in Walnut Creek that is required for this express lane.
I-80 Solano (SOL-80) Fairfield to Vacaville *Red Top Road to I-505*	• The final design document was approved by Caltrans in March 2018. • BAIFA and Caltrans, in partnership with Solano Transportation Authority, submitted an application in February 2018 for construction funds in the amount of $123 million through the Senate Bill 1 (SB1) Solutions for Congested Corridors Program.	• An announcement on the award of SB1 construction funds is anticipated in April 2018. • The project is scheduled to reach the Ready-to-List milestone in April 2018.
Program Management	• Staff completed an evaluation of the outreach strategies used to educate the public about the I-680 Contra Costa Express Lanes opening, and will factor in 'lessons learned' to future outreach plans. • Staff presented to local transportation stakeholder groups about I-680 Contra Costa Express Lanes performance to date. • Staff engaged with community and stakeholders on issues related to I-880 Express Lanes construction. • BAIFA awarded the Express Lanes Program Advisor contract to WSP USA in January 2018.	• Staff will present I-680 Contra Costa Express Lanes performance data to local transportation groups.
Toll System	• The toll system went live to the public on October 9, 2017.	• The integrator started performing the Disaster Recovery Test in February 2018 to demonstrate the failover process to a redundant toll system is functional, and expects to complete the test in May 2018.

I-680 Contra Costa Express Lanes pavement marking (top), I-880 Express Lanes concrete barrier and lighting construction (bottom) and regulatory sign (right).

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.

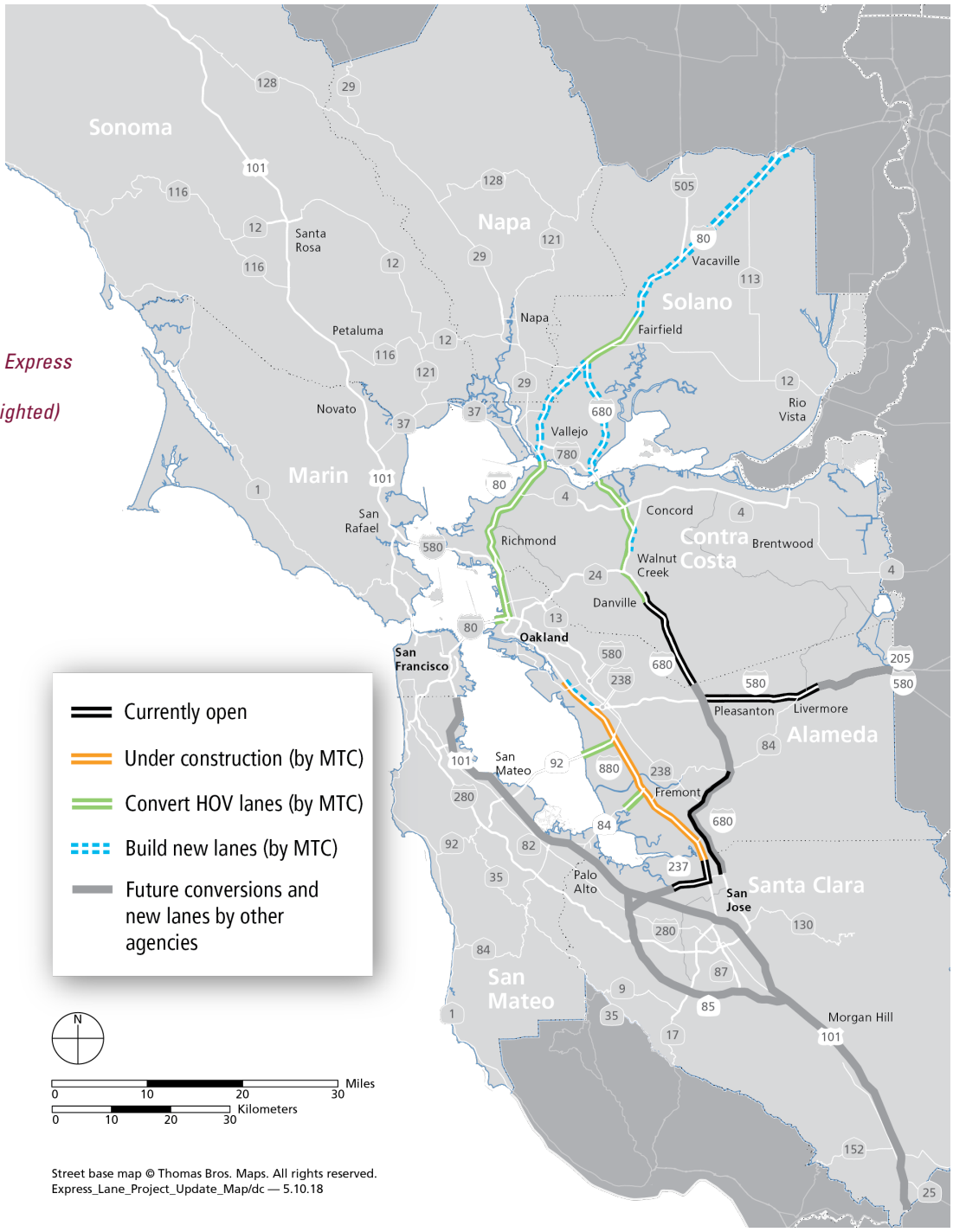
Map of Bay Area Express Lane Network

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)



Express_Lane_Project_Update_Map/dc — 5.10.18

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
NEAR TERM CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS							
ALA	880	I-880 Alameda	Between San Leandro and Milpitas *Hegenberger Rd./Lewelling Blvd. to Dixon Landing Rd.*	51	●	●	●
CC	680	I-680 Contra Costa Southern Segment	Between Walnut Creek and San Ramon *Livorna Rd./Rudgear Rd. to Alcosta Blvd.*	23	●	●	●
					Project completed 2017		
CC	680	I-680 Contra Costa Northern Segment - Southbound Conversion	Martinez to Walnut Creek *Marina Vista Blvd. to Rudgear Rd.*	11	●	●	●
SOL	80	I-80 Solano	Fairfield to Vacaville *Red Top Rd. to I-505*	36	●	●	○
FUTURE CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS							
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 *North Main St. to the Benicia Bridge*	5	◖	○	○
CC	680	I-680 Northern Segment - Northbound Extension	Walnut Creek to Concord *North Main St. to SR 242*	7	○	○	○

KEY

● Funded ◖ Partially Funded ○ Unfunded ALA = Alameda, CC = Contra Costa, SOL = Solano

III. CAPITAL DELIVERY

A. Schedule

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
I-880 Alameda (ALA-880) San Leandro and Milpitas *Hegenberger Rd./Lewelling Blvd. to Dixon Landing Rd.*	Spring 2019	End of 2019	🟡	15
I-680 Contra Costa Southern Segment (CC-680 South) Walnut Creek and San Ramon *Livorna Rd./Rudgear Rd. to Alcosta Blvd.*	Fall 2016	Fall 2017 Actual	🟢	A-5
I-680 Contra Costa Northern Segment - Southbound Conversion (CC-680 North) Martinez to Walnut Creek *Marina Vista Blvd. to Rudgear Rd./SR 242*	Fall 2018	Fall 2021	🟡	19

KEY

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

B. Capital Costs

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 westbound approaches to the San Mateo and Dumbarton Bridges. The expended-to-date amounts shown represent the amount of BATA Express Lane funds expended through March 31, 2018, the end of the first quarter.

Project[1]	Program Estimate[2]	Cost Forecast[3]	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds[4]			Physical % Complete[5]	Confidence Level[6]
				Dec. 2015 Amendment	June 2017 Amendment	Expended through 3/31/18		
NEAR TERM CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS							*Costs shown in millions of escalated dollars*	
I-880 Alameda	132.5	132.5		77.8	132.5	55.1	45%	🟡
I-680 Contra Costa Southern Segment	55.6	55.6		55.6	55.6	49.7	97%	🟢
I-680 Contra Costa Northern Segment Southbound [7]	56.9	56.9	5.6	51.3	51.3	5.3	20%	🟡
I-80 Solano	228.2	34.2	15.2	19.0	19.0	8.7	20%	🟢
Centralized Toll System	33.6	33.6		33.6	33.6	15.7	60%	🟢
Program Planning, Coordination & Management	28.4	28.4		28.4	28.4	17.6	75%	🟢
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	4.6		🟢
FUTURE CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS								
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%	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				
TOTALS	**752.1**	**382.5**	**27.4**	**342.2**	**342.2**	**157.3**	**49%**	

(1) 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.

(2) Program estimate represents current estimated cost to complete each project.

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

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

(5) 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.

(6) 🟢 = within budget, 🟡 = identified potential risks that may significantly exceed budget if not mitigated, 🔴 = known impacts to budget - changes forthcoming.

(7) 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 ($37 million), RM2 ($13 million), STIP ($16 million).

(8) Includes $2.9 million transferred to the I-680 Contra Costa Express Lanes operating budget. See page 20 for a summary of expenses paid through this quarter.

C. Change Management

The change management process captures the changes in the program that have an impact on the approved scope, schedule and budget baselines. There were no changes to the MTC Express Lanes Program in the first quarter.

D. 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 assigning 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. 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.

Chart #1 shows the median risk exposure for the program-level risks using Monte Carlo analysis. As of March 31, 2018, the risk exposure stands at $7.2 million, which is higher than the $6.1 million reported last quarter. This increase is due to an adjustment in the risk based on an updated assessment of the bid environment for the I-680 Northern Segment and the potential for differing site conditions on I-880.

Chart #2 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 is $337.1 million and the authorized budget is $342.2 million.

The current program contingency of $5.1 million would not be sufficient if the risk exposure of $7.2 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 in the corridor. Coordination issues with the project may delay completion of express lanes work and impact the open-to-traffic date. MTC staff has: worked with Caltrans to create a sequence of activities that would reduce the overall schedule; evaluated alternative ways to expedite the work; and recommended specification changes to the Caltrans repaving project. Now that the repaving work is underway, MTC staff is actively working with Caltrans to coordinate construction activities and minimize lane closures.

Chart #1: Median Risk Exposure ($M)

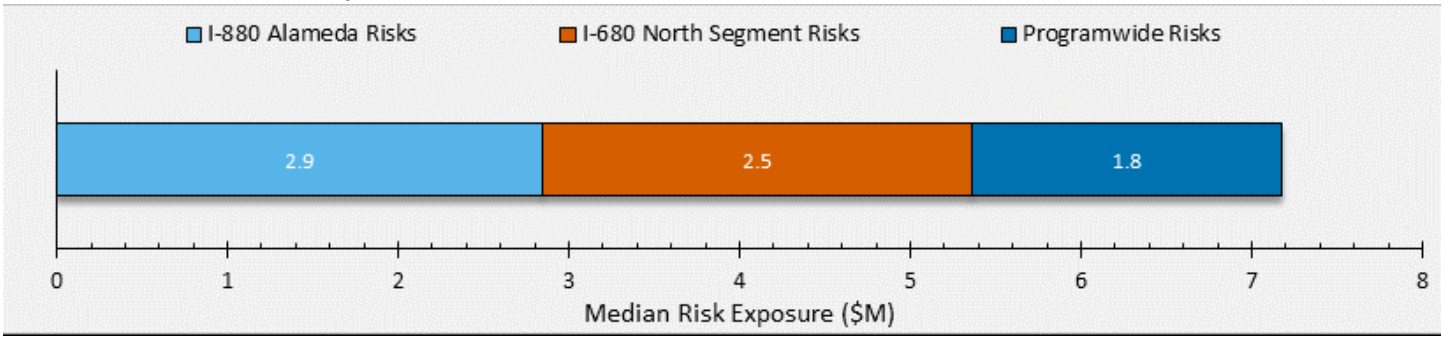


Chart #1 shows the contribution of each project's risks toward the total program risk exposure.

I-880 Alameda (continued)

- Toll system integrator costs associated with schedule slippage and midday tolling may exceed available contingency, which was originally allocated for other known changes to tolling hardware. The project team is actively negotiating with the toll systems integrator on additional cost items, especially schedule slippage and overhead sign installation.

I-680 Contra Costa Northern Segment

- Caltrans is currently managing a safety project in the corridor. Coordination with the project may delay completion of express lanes work and impact the open-to-traffic date. MTC and Caltrans staff continue to look for ways to coordinate the construction sequence that would reduce the overall schedule.
- Demand for construction-related services in the Bay Area is driving up some project costs. As a result, since a construction contract has not been awarded yet, 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 has conducted an independent review of engineers' estimates, and moving forward, will explore ways to better account for the bid environment prior to advertising construction projects for the corridor.

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.

Chart #2: Program Cost Forecast and Risk Exposure vs. Authorized Budget ($M)

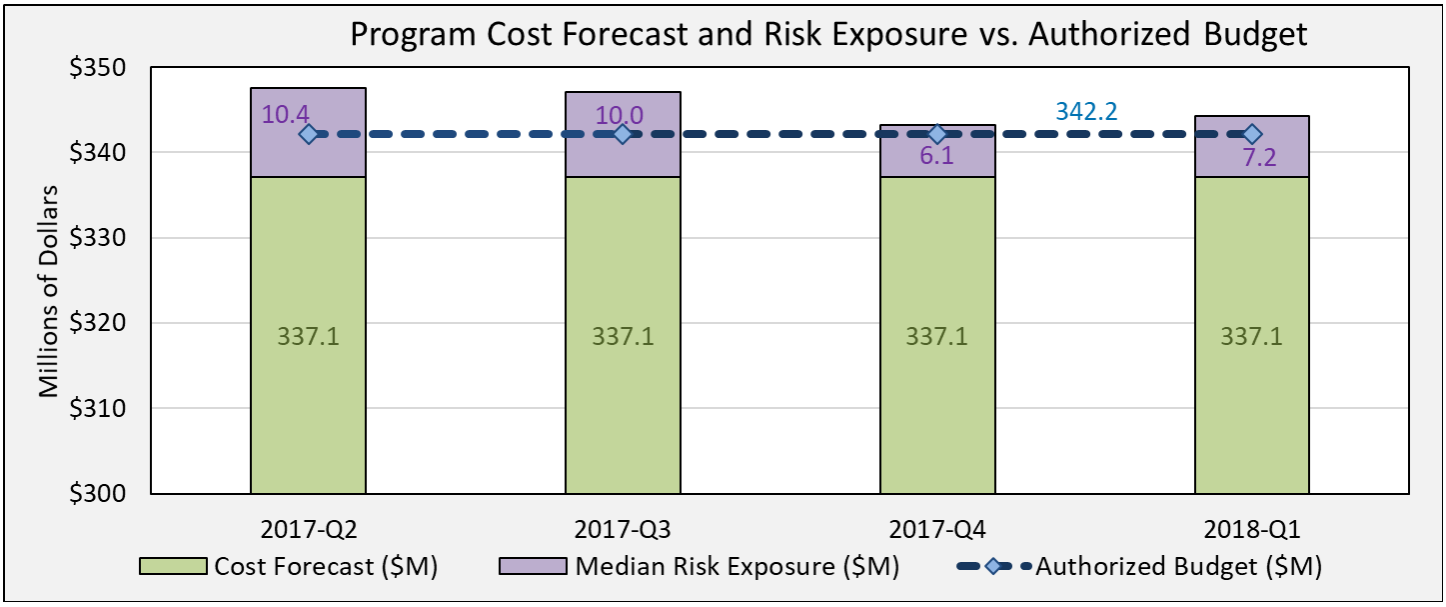


Chart #2 shows the program cost forecast and risk exposure as compared to the authorized program budget.

E. Active Capital Project Summaries

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 was ready for the opening of the I-680 Contra Costa Southern Segment on October 9, 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 tollsetting and trip building, integration with the FasTrak® 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

- Staff completed an evaluation of the outreach strategies used to educate the public about the I-680 Contra Costa Express Lanes opening, and will factor in 'lessons learned' to future outreach plans.
- Staff presented to local transportation stakeholder groups about I-680 Contra Costa Express Lanes performance to date.
- Staff engaged with community and stakeholders on issues related to I-880 Express Lanes construction.
- BAIFA awarded the Express Lanes Program Advisor contract to WSP USA in January 2018, combining responsibilities in the former Program Manager and Toll System Manager contracts into a single contract. A hand-off of responsibilities to the new consultant team was completed in March 2018.

Current Program Management Activities

- Staff will present I-680 Contra Costa Express Lanes performance data to local transportation groups.
- Staff is preparing the Fiscal Year 2018/19 Operating Budget.

Toll System Highlights and Progress

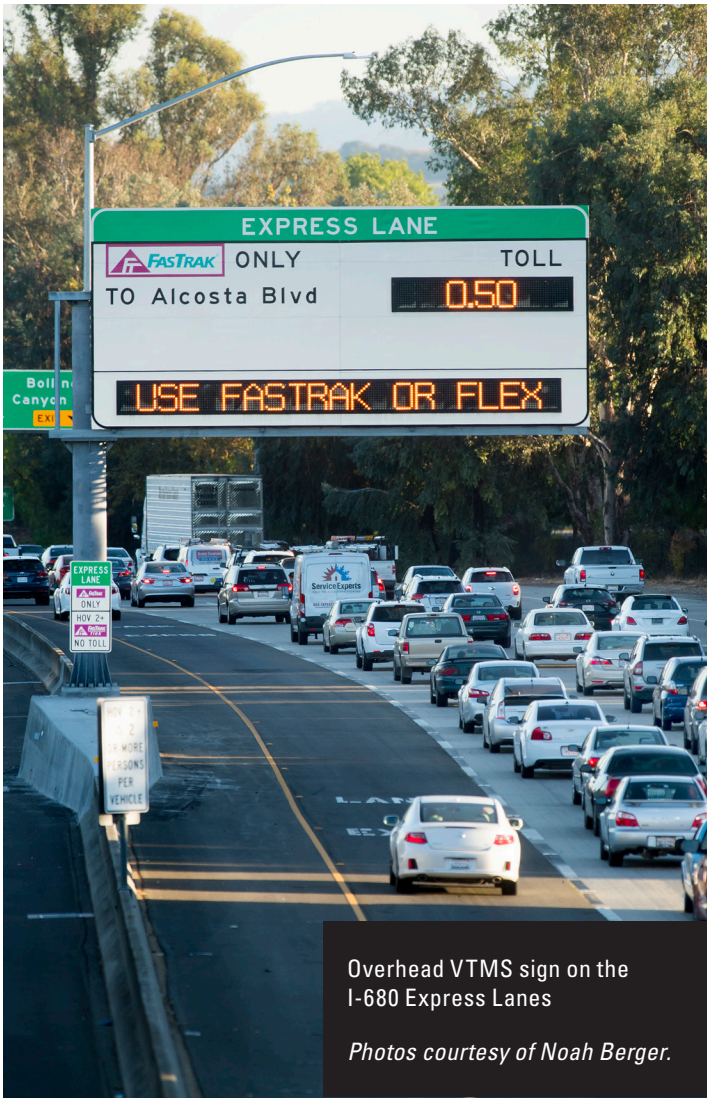
- The construction contract for the backhaul communications network for the host data centers and I-680 Contra Costa Southern Segment was awarded in December 2015.
- The toll operations staffing contract was awarded in March 2016.
- Final toll system host and software design was approved in March 2016, 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.
- The integrator completed the formal First Zone Test, which was the first field test to compile live lane transactions into a single trip, in May 2017 and the Communications End-to-End Testing for the toll systems communications network in June 2017.
- The toll system began using the full backhaul network as of June 2017.
- The integrator completed Corridor Testing, which fully tested the entire toll and communications system, in August 2017 and finished installing and commissioned all field equipment in September 2017.
- The integrator and the FasTrak® Customer Service Center completed Production Readiness Testing of the data exchange in September 2017.
- The toll system went live to the public on October 9, 2017.

Current Toll System Activities

- The integrator started performing the Disaster Recovery Test in February 2018 to demonstrate the failover process to a redundant toll system is functional, and expects to complete the test in May 2018.

Closed-circuit television (CCTV) camera.

Photos courtesy of Noah Berger.



Overhead VTMS sign on the I-680 Express Lanes

Photos courtesy of Noah Berger.

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 for a large portion of the express lanes corridor.

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.
- Caltrans issued the encroachment permit for the civil construction contract in June 2017.
- The express lanes civil contractor began construction in September 2017.
- Caltrans' median barrier construction contractor began work in April 2016. Overall, 92% of MTC's express lanes scope of work to be delivered through Caltrans' median barrier contract was complete as of March 2018. Barrier demolition is complete. All express lane sign structure and light foundations are complete. (See construction photos on page 14.) Caltrans approved the toll system design and issued the encroachment permit for the toll system integrator in March 2018.
- Staff responded to community member concerns about tree removal on I-880 southbound at Hacienda Ave., saving 20 redwood trees.

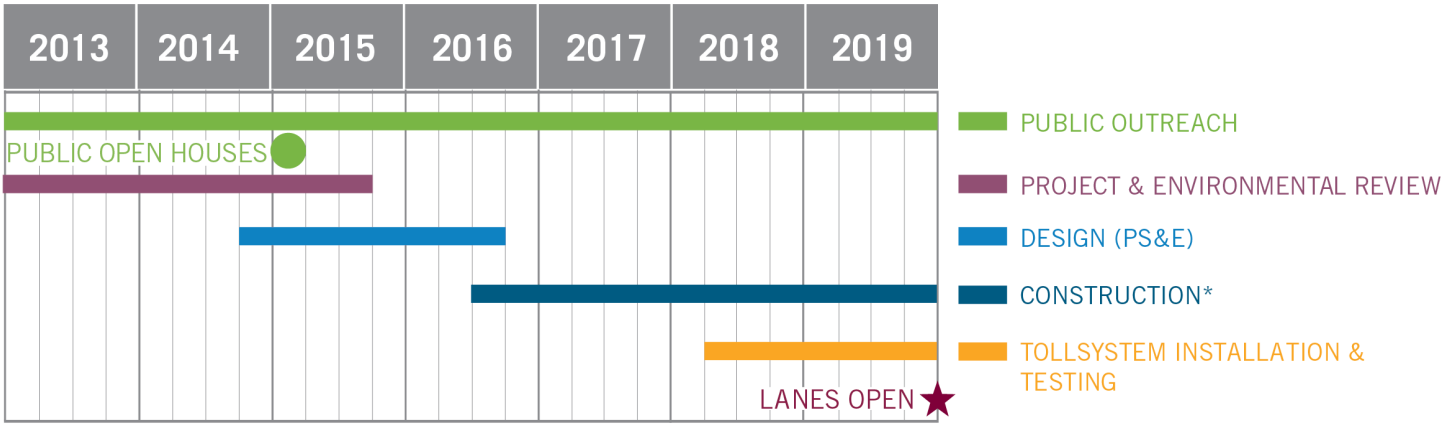
Current Project Activities

- The express lanes civil contractor completed preparation work for Pacific Gas & Electric (PG&E) at SR-237 and Fremont Blvd., including conduit, foundations and electrical meters. PG&E has been requested to run power to the meters.
- The express lanes civil contractor will start to install a retaining wall in the freeway shoulder near Hacienda Ave. in Hayward.
- The toll system integrator will begin work in spring 2018.

Current Project Activities (continued)

- The Backhaul contractor will begin installation of fiber in the southern half of the I-880 corridor.
- Monthly construction notices and ramp closure/detour notices continue to be sent.

Project Schedule by Phase



*Includes I-880 median barrier improvements.

Project Cost

Program Estimate[1]	Cost Forecast[2]	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds[3]			Physical % Complete[4]
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 3/31/18	
132.5	132.5		77.8	132.5	55.1	45%

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

Costs shown in millions of escalated dollars.

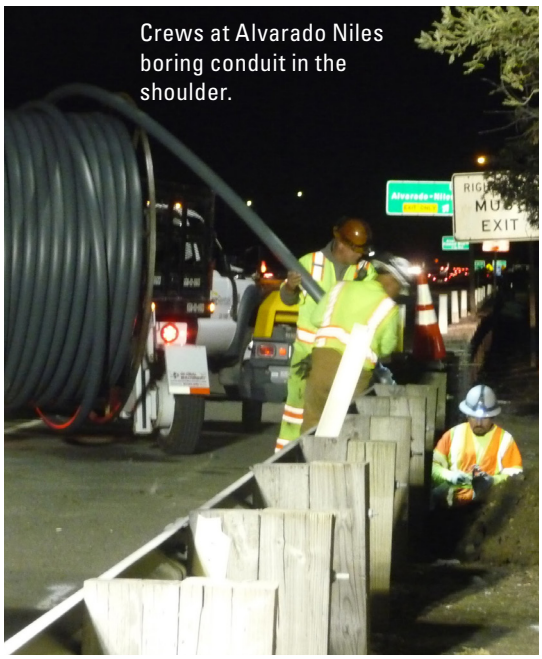
(1) Program estimate represents current estimated cost to complete each project.

(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.

Crews detailing pull boxes between Dixon and Warren.



Crews at Alvarado Niles boring conduit in the shoulder.

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

Fall 2021

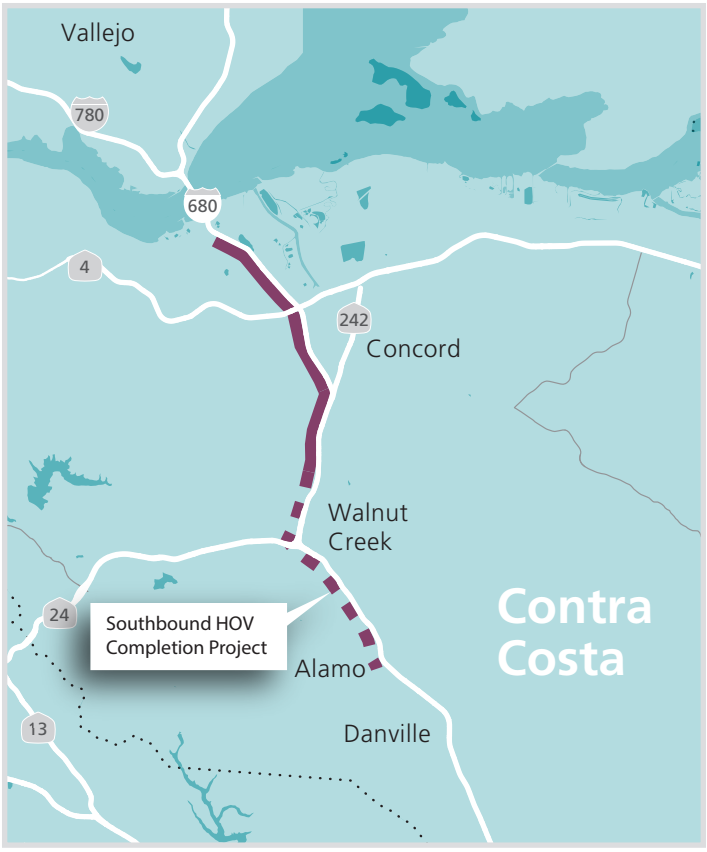
Project Description

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

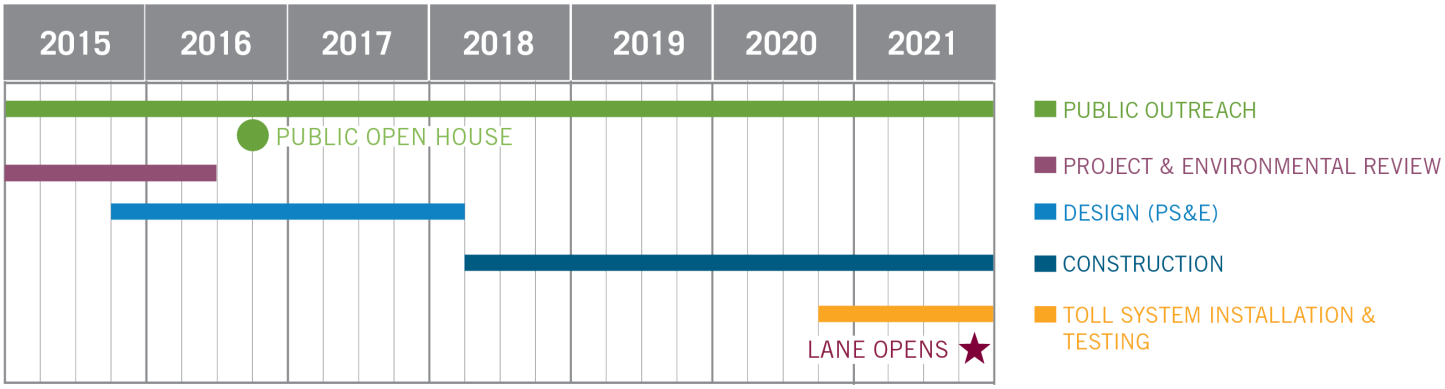
- Caltrans accepted the Traffic Operation Analysis Report in October 2015, and agreed with the mid-day hours of operation analysis in early 2017.
- Caltrans signed the environmental document in December 2016 and approved the Project Report in August 2017.
- Project staff met with the Walnut Creek Mayor and city staff in May 2017 to review the construction plan and impacts.
- Environmental revalidation was completed in September 2017. The Office of U.S. Fish and Wildlife Service provided concurrence that the project is not likely to adversely affect any known federally listed species.
- A contract to remove trees along southbound I-680 in Walnut Creek between South Main Street and Livorna Road was awarded in October 2017, and work was completed in December 2017.
- Caltrans issued the encroachment permit for the civil construction contract in February 2018.



Current Project Activities

- PG&E is scheduled to perform utility relocation in April 2018.
- CCTA will advertise for civil construction in April 2018 and plans to open bids in June 2018.
- The toll system integrator will begin its 100% design package for the toll system.
- Staff is preparing a contract change order for the Backhaul contractor to reroute in-use Backhaul fiber in Walnut Creek that is required for this express lane.

Project Schedule by Phase



Project Cost

Program Estimate[1]	Cost Forecast[2]	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds[3]			Physical % Complete[4]
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 3/31/18	
56.9	56.9	5.6	51.3	51.3	5.3	20%

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

(1) 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).

(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.

I-80 Solano (SOL-80)

Fairfield to Vacaville

Red Top Road to I-505

Total Program Estimate

$228.2 million

Scheduled Open Date

End of 2021, subject to funding

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.

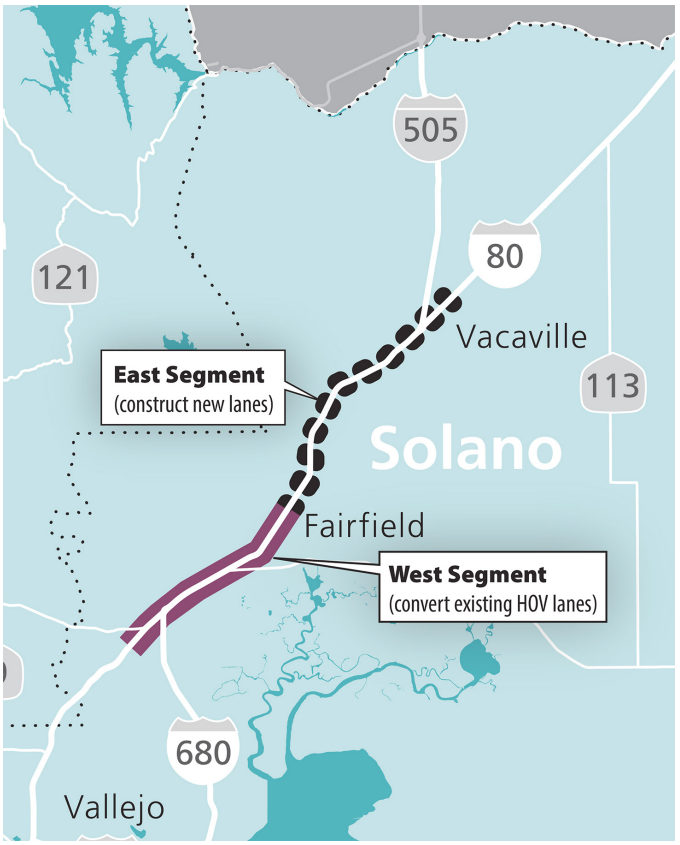
The project will also construct new eastbound and westbound lanes between Air Base Parkway and I-505 in Vacaville. In this section, the highway will be widened along with the installation of express lane striping, signage and equipment. The project will result in 36 miles of express lanes on I-80 in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

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

Caltrans will advertise and award the construction contract, and a blended Caltrans/STA team will administer construction. MTC will install toll and communications equipment and will operate the express lanes.

Project Highlights and Progress

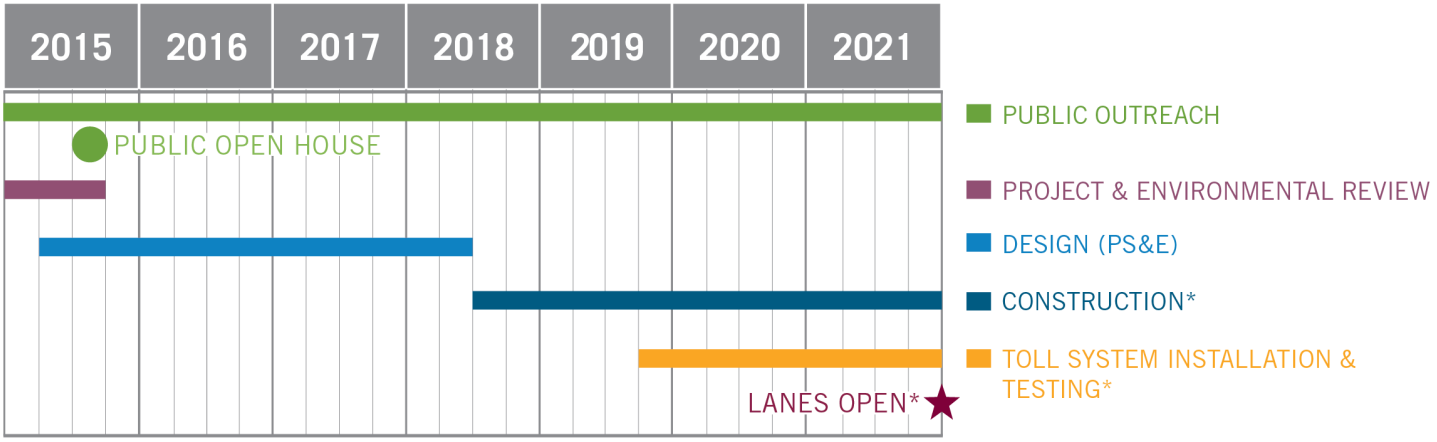
- A public open house was held in August 2015.
- The preliminary engineering report and environmental document were completed in December 2015.
- The final design document was approved by Caltrans in March 2018.
- BAIFA and Caltrans, in partnership with STA, submitted an application in February 2018 for construction funds in the amount of $123 million through the Senate Bill 1 (SB1) Solutions for Congested Corridors Program.



Current Project Activities

- An announcement on the award of SB1 construction funds is anticipated in April 2018.
- The project is scheduled to reach the Ready-to-List milestone in April 2018.

Project Schedule by Phase



* Funding for these activities is not yet secured.

Project Cost

Program Estimate[1]	Cost Forecast[2]	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds[3]			Physical % Complete[4]
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 3/31/18	
228.2	34.2	15.2	19.0	19.0	8.7	20%

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. I-80 Solano is funded through the design phase.

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

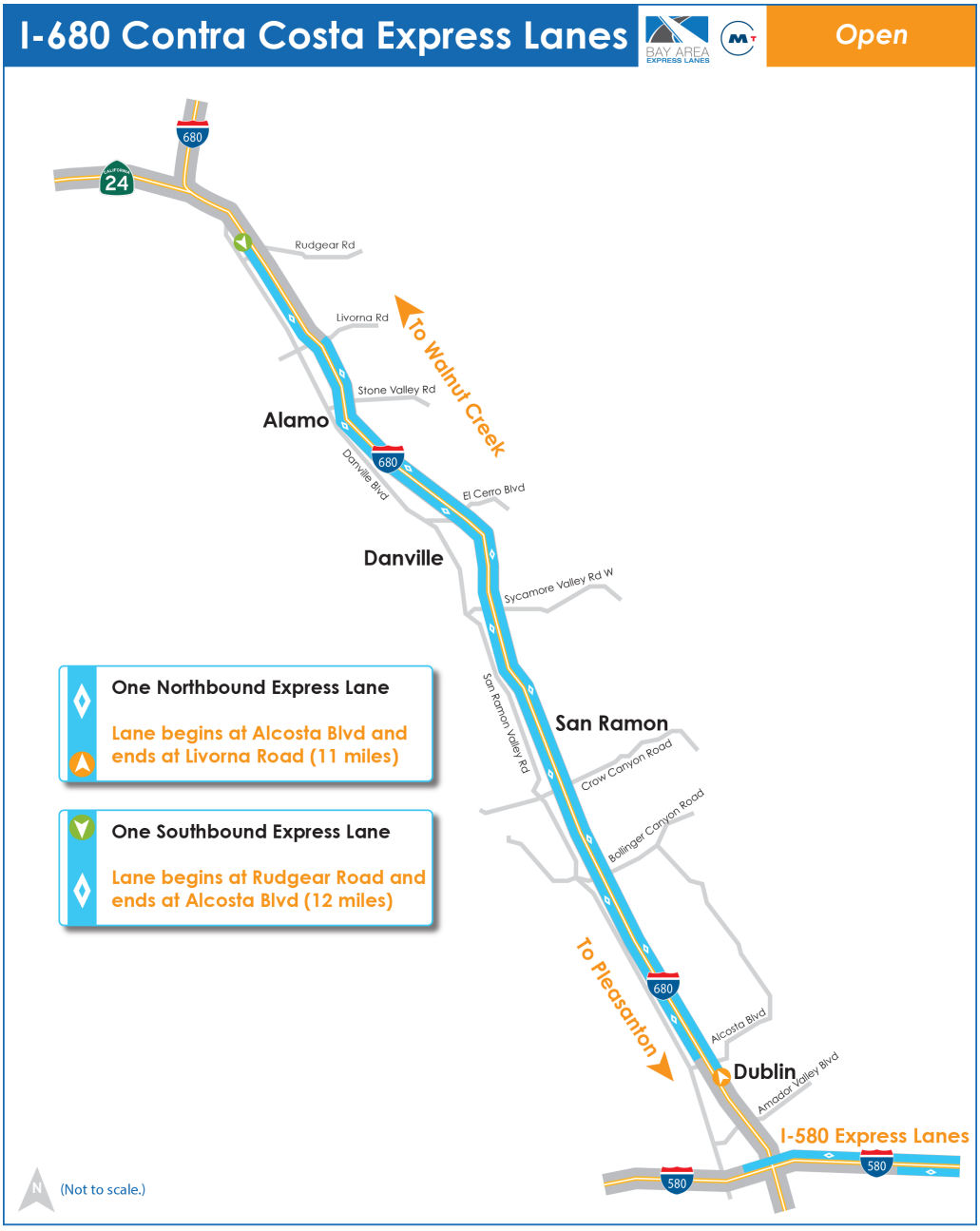
(4) Physical percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.

IV. OPERATIONS

I-680 Contra Costa Express Lanes

The I-680 Contra Costa Express Lanes opened October 9, 2017. The lanes run 11 miles northbound from Alcosta Boulevard to Livorna Road and 12 miles southbound from Rudgear Road to Alcosta Boulevard. Regional Operations Center staff monitor equipment and lane performance, make toll rate adjustments, and coordinate with the California Highway Patrol (CHP) and Caltrans on incident management. The FasTrak® Customer Service Center issues toll tags, handles toll invoicing and collections, and provides customer service. Toll tag and vehicle occupancy requirements are enforced automatically by the toll system and manually by the CHP under contract to BAIFA. A 'backhaul' fiber network and supplemental leased-line services offer fast and secure transfer of tolling data. Roadway maintenance is also funded by the express lanes. Program and contactor staff perform public outreach and education, track and report on program performance and analyze traffic, and support operations in other ways as needed.

See **Appendix C** for a summary of first quarter express lanes performance.



expresslanes.511.org • mtc.ca.gov/express-lanes

Rules of the Road

- Hours are Monday through Friday, 5 a.m. – 8 p.m.
- Tolls change based on traffic congestion; there is no maximum toll
- All vehicles in the express lane must use a FasTrak® or FasTrak Flex® toll tag
- Carpools of 2 or more people, eligible clean air vehicles, motorcycles and transit buses travel toll-free with a properly set FasTrak Flex® toll tag
- Learn more at expresslanes.511.org

Operating Revenue and Expense Summary

The summary below shows the FY 2017/18 operating budget compared to the most recent 'actuals' for revenue and expenses. Revenue reflects revenue received by BAIFA from tolls, violations and capital start-up funds. Expenses reflect expense incurred by BAIFA for the FasTrak® Customer Service Center, the I-680 Contra Costa Express Lanes, the Backhaul communications network, and program staffing and administration.

FY 2017/18 BAIFA Operating Budget[1]

	FY 2017-18 Budget	Actual as of 3/31/2018	% of Budget
REVENUE			
General Toll Revenue	5,200	4,369	84%
Violation Revenue	500	222	44%
Interest Revenue	-	28	100%
Transfers In from Capital Fund	2,915	2,915	100%
Total Revenue	8,615	7,534	87%
EXPENSE			
FasTrak® Operations and Maintenance			
RCSC Operations	1,335	817	61%
Banking/Credit Card Fees	240	148	61%
Toll Collection Services	225	94	42%
Subtotal	1,800	1,059	59%
Express Lanes Administration			
Salaries, Benefits & Overhead	1,460	499	34%
Professional/Consultant Service	322	169	53%
Audit/Accounting/Other	30	-	0%
Insurance	59	2	4%
Other	99	0	0%
Subtotal	1,970	670	34%
Express Lanes & Backhaul Operations and Maintenance			
Express Lane Toll Operators	799	224	28%
California Highway Patrol Enforcement	320	-	0%
Roadway Maintenance	1,392	37	3%
Toll System Operations & Maintenance	1,916	-	0%
Caltrans Express Lanes Operations & Maintenance	155	-	0%
Utility Service	263	21	8%
Subtotal	4,845	282	6%
Total Expense	8,615	2,011	
NET (Total Revenue less Total Expense)	**-**	**5,523**	

[1] Dollars rounded to nearest thousand.

APPENDICES

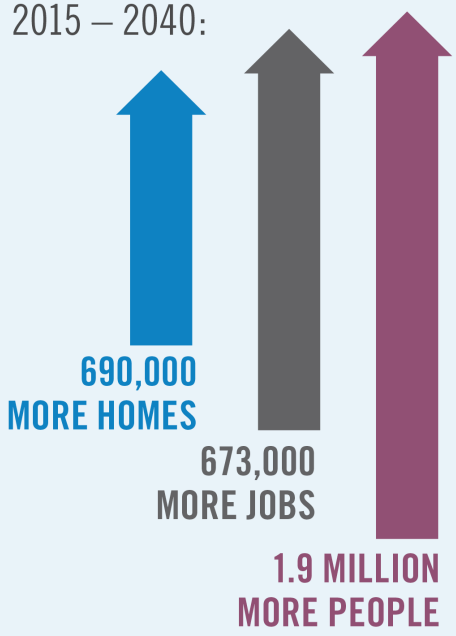
APPENDIX A

Express Lanes Overview

1. 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.

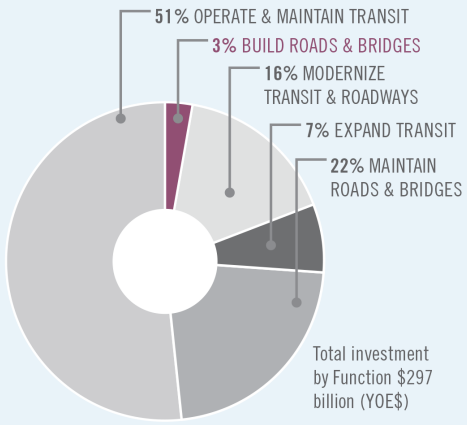
REGIONAL GROWTH 2015 – 2040:



Data Source: Plan Bay Area 2040 (2017).

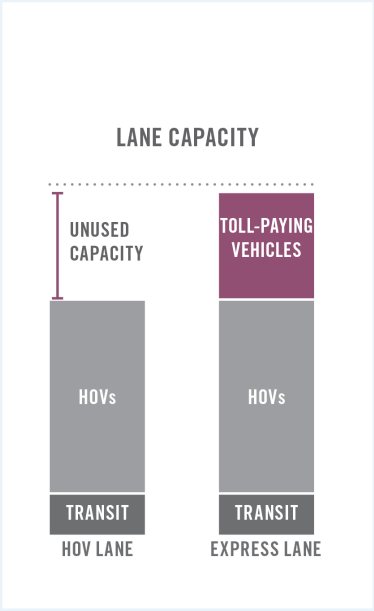
REGIONAL INVESTMENT BY 2040:

ONLY 3% OF THE REGION'S TRANSPORTATION DOLLARS WILL BE USED TO BUILD NEW ROADS.



Data Source: Plan Bay Area 2040 (2017).

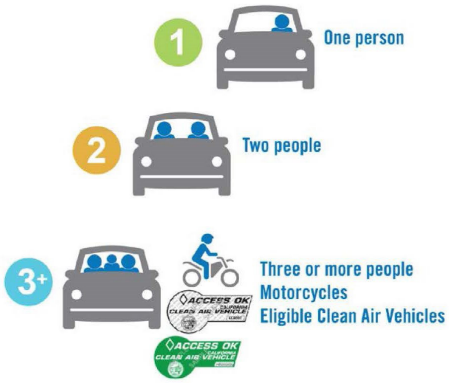
HOW EXPRESS LANES HELP:

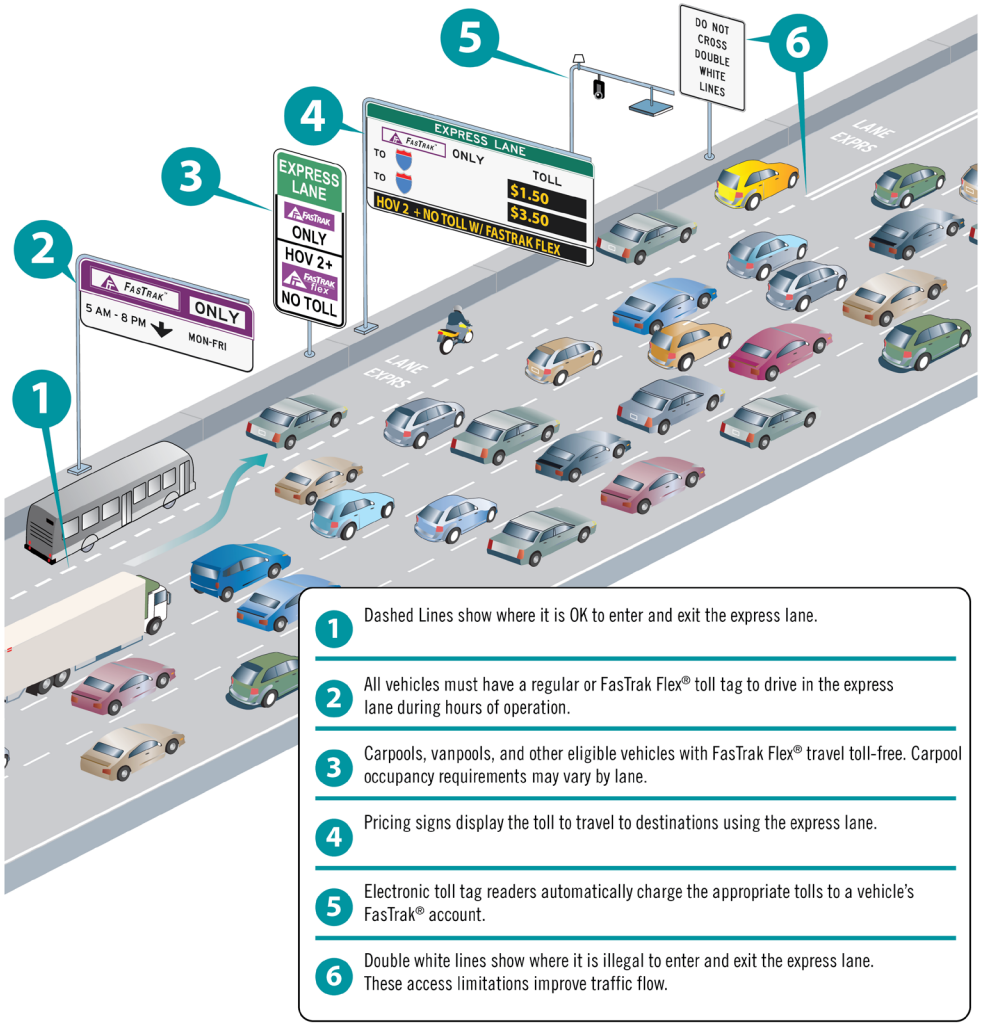


2. How Express Lanes Work

MTC Express Lanes are free to carpoolers, 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.





1. Dashed Lines show where it is OK to enter and exit the express lane.
2. All vehicles must have a regular or FasTrak Flex® toll tag to drive in the express lane during hours of operation.
3. Carpools, vanpools, and other eligible vehicles with FasTrak Flex® travel toll-free. Carpool occupancy requirements may vary by lane.
4. Pricing signs display the toll to travel to destinations using the express lane.
5. Electronic toll tag readers automatically charge the appropriate tolls to a vehicle's FasTrak® account.
6. Double white lines show where it is illegal to enter and exit the express lane. These access limitations improve traffic flow.

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.

3. 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

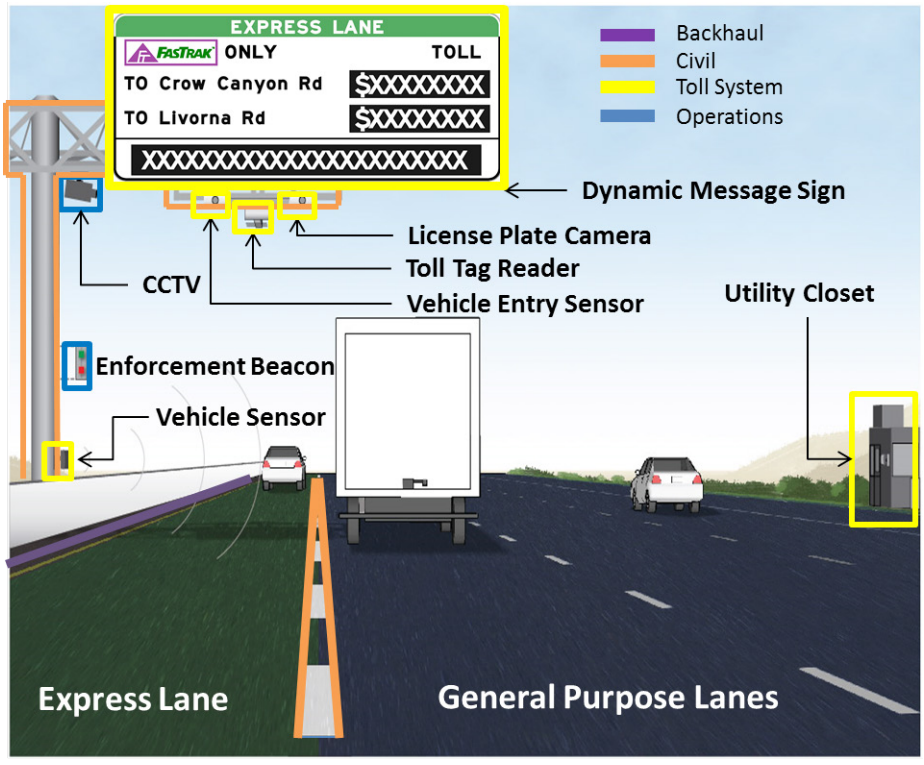
The toll system consists of two components, the in-lane system and the back-end "host" system. The lane system consists of all the equipment on the highway needed to operate the toll system including toll tag readers, cameras and vehicle detection. The host system serves as the brain of the toll system, 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

APPENDIX B

Completed Capital Project Summaries

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

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 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.
- Backhaul contractor completed installation of 26 miles of fiber optic cable in June 2017.
- Corridor Testing was completed in August 2017.
- Toll system equipment and software was finalized and tested in September 2017.

- Backhaul operations and maintenance started in October 2017.
- The toll system went live to the public on October 9, 2017.

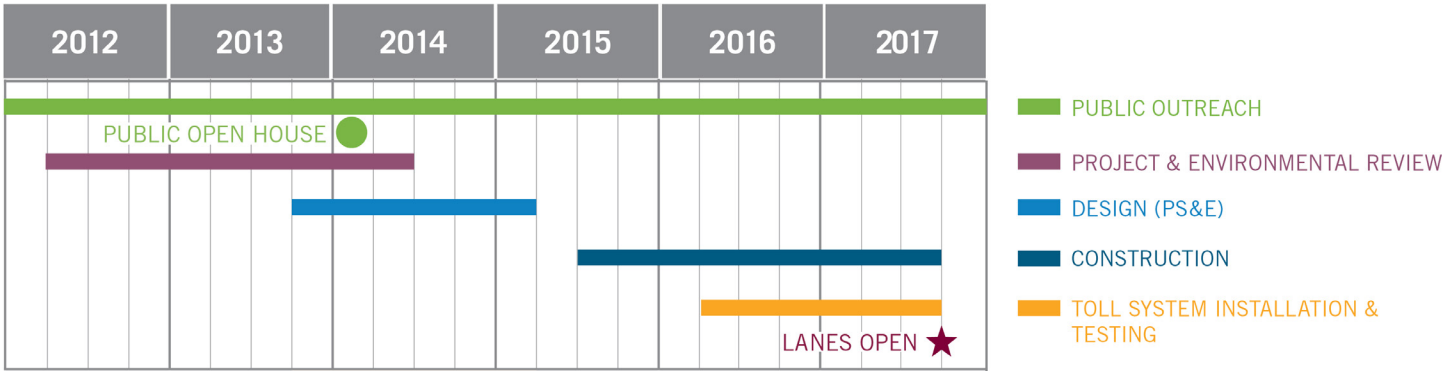
Current Project Activities

- The integrator is fine tuning field equipment and addressing punch list items in preparation for Operations Testing in summer of 2018. This test verifies the toll system meets all specifications and leads to the maintenance phase of operations.
- The Backhaul contractor completed project 'as-built' documentation and is performing ongoing operations of the communications network.
- Beginning in this Quarterly Report, since civil construction is complete and the express lanes are open, this capital project will be archived in Appendix B and no further updates will be made to the project summary.

I-680 Contra Costa Express Lanes regulatory sign.

Photos courtesy of Noah Berger.

Project Schedule by Phase



Project Cost

Program Estimate[1]	Cost Forecast[2]	Regional Measure 2 Funds (allocated)	BATA Express Lane Funds[3]			Physical % Complete[4]
			Dec. 2015 Amendment	June 2017 Amendment	Expended through 3/31/18	
55.6	55.6		55.6	55.6	49.7	97%

Costs shown in millions of escalated dollars.

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

(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.

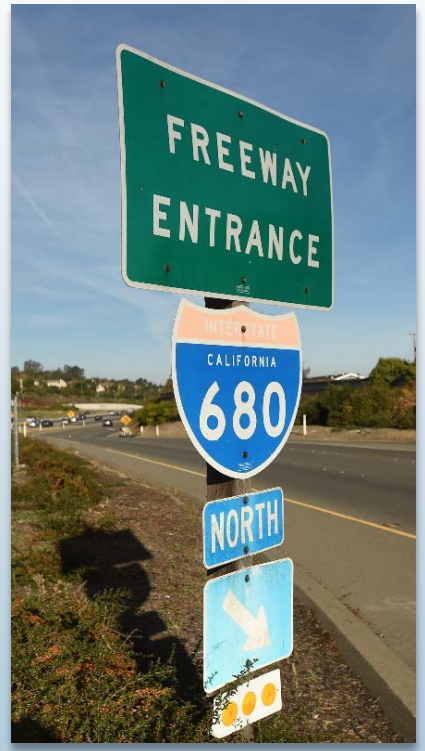
(4) Physical percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.

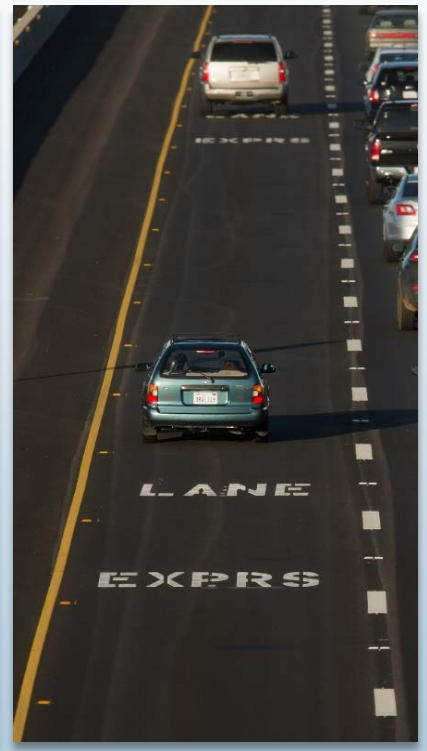
APPENDIX C

I-680 Contra Costa Express Lanes Operations Report

I-680 Contra Costa Express Lanes Performance

1st Quarter, January – March 2018





Bay Area Infrastructure Financing Authority

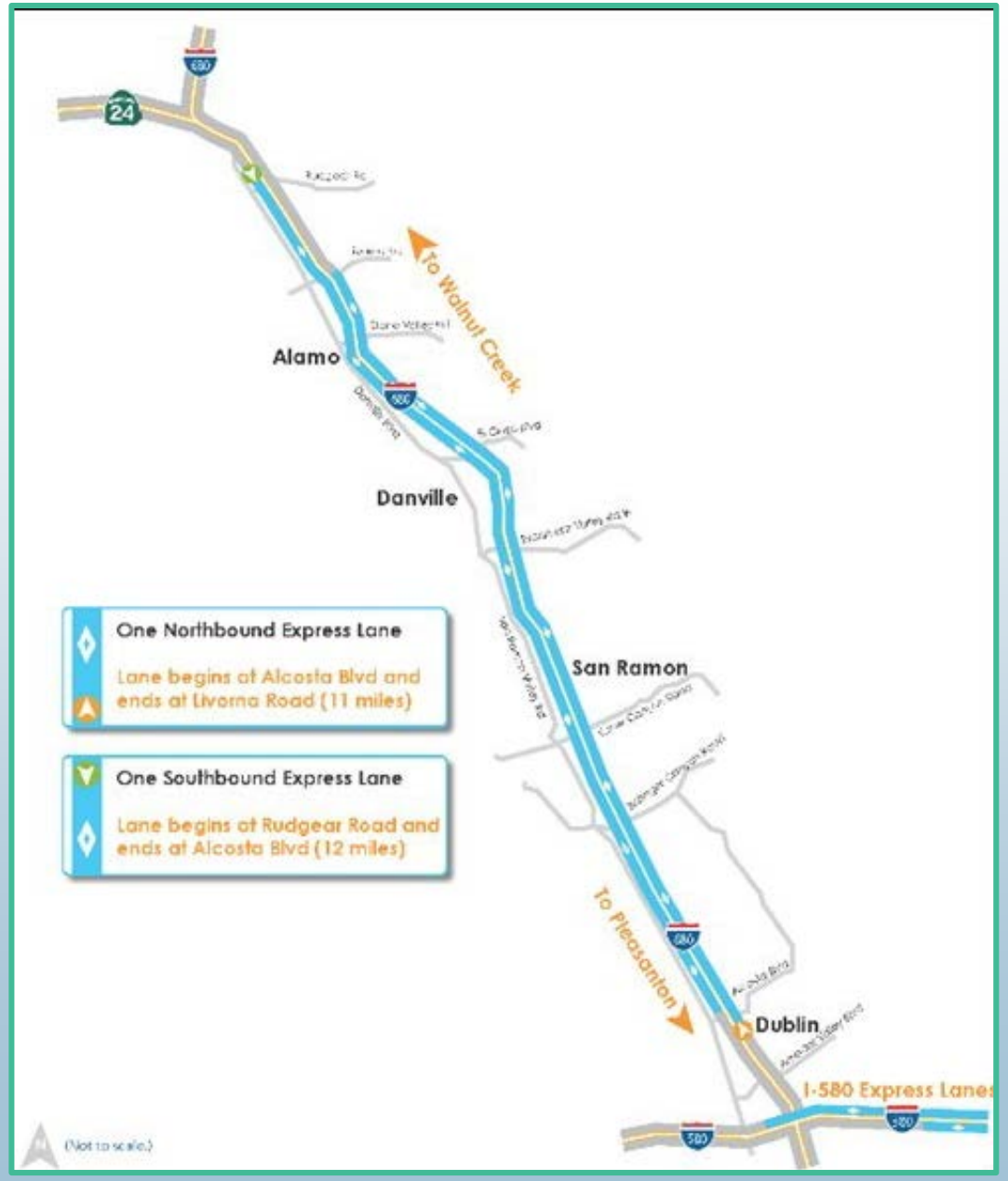
Last Updated: May 11, 2018

BAY AREA EXPRESS LANES

METROPOLITAN TRANSPORTATION COMMISSION

Rules of the Road

- Hours: 5 a.m. to 8 p.m. Monday-Friday
- FasTrak® required
- Carpools (2+), clean-air vehicles & motorcycles toll-free with FasTrak Flex®



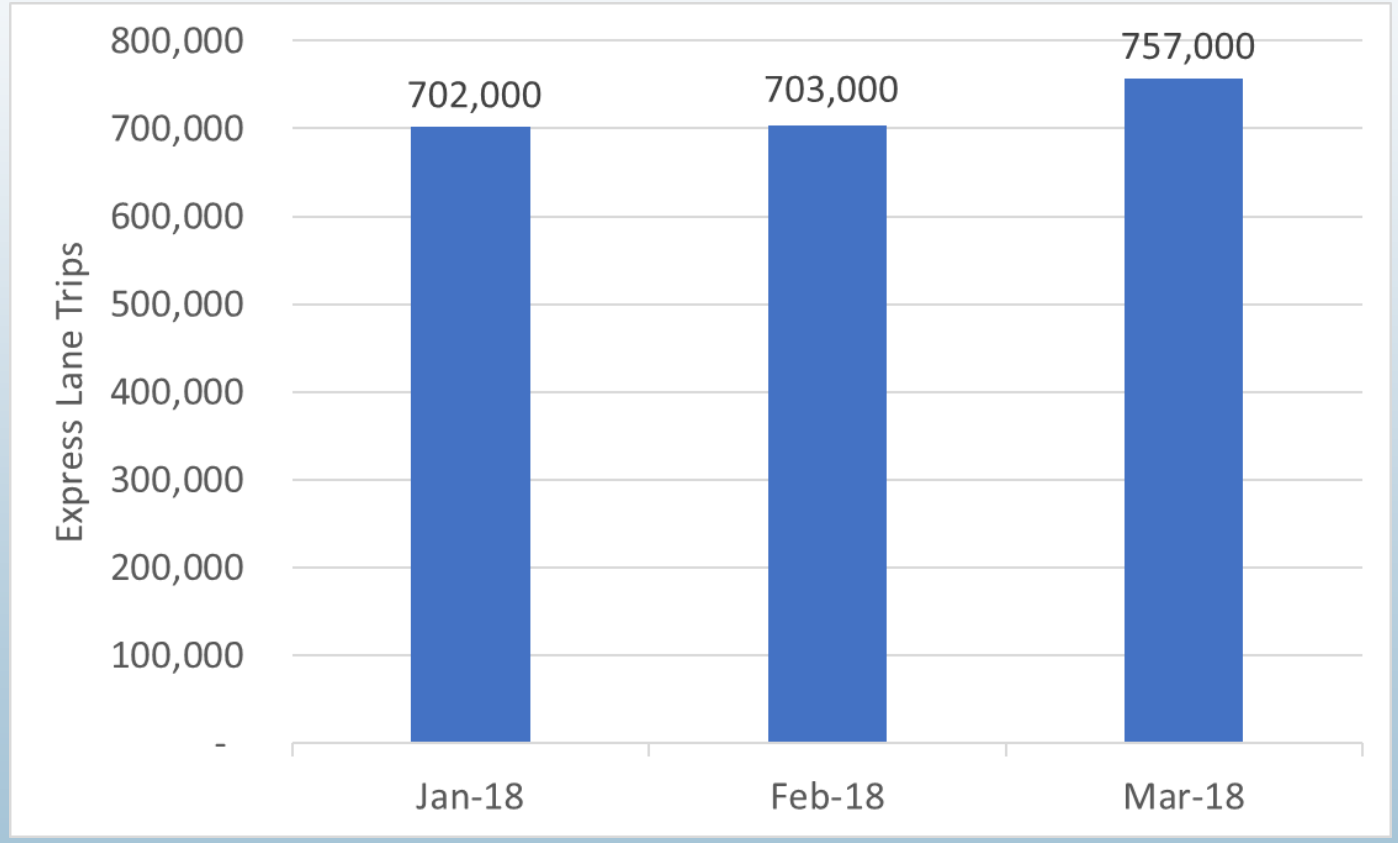
Performance Highlights

- Express lane usage has increased steadily since opening, reaching 757,000 trips in March 2018 and 2.1 million for the quarter, January through March 2018.
- In March, 37% of trips were by vehicles declared as carpools. Vehicles without FasTrak® accounts represented 7% of all trips.
- In the peak periods, express lane users were able to travel at speeds that were 5 to 8 miles per hour faster than the general purpose lanes in March, on average.

- Peak period tolls paid increased over the quarter, corresponding with growing usage. In March, the average toll paid in the northbound p.m. peak period was $6.50. In the southbound a.m. peak period it was $4.10. In the middle of the day, it was less than $1.00.
- The highest posted toll to travel the entire corridor during the quarter was $8.50 in the p.m. peak period in the northbound direction, in February and March.

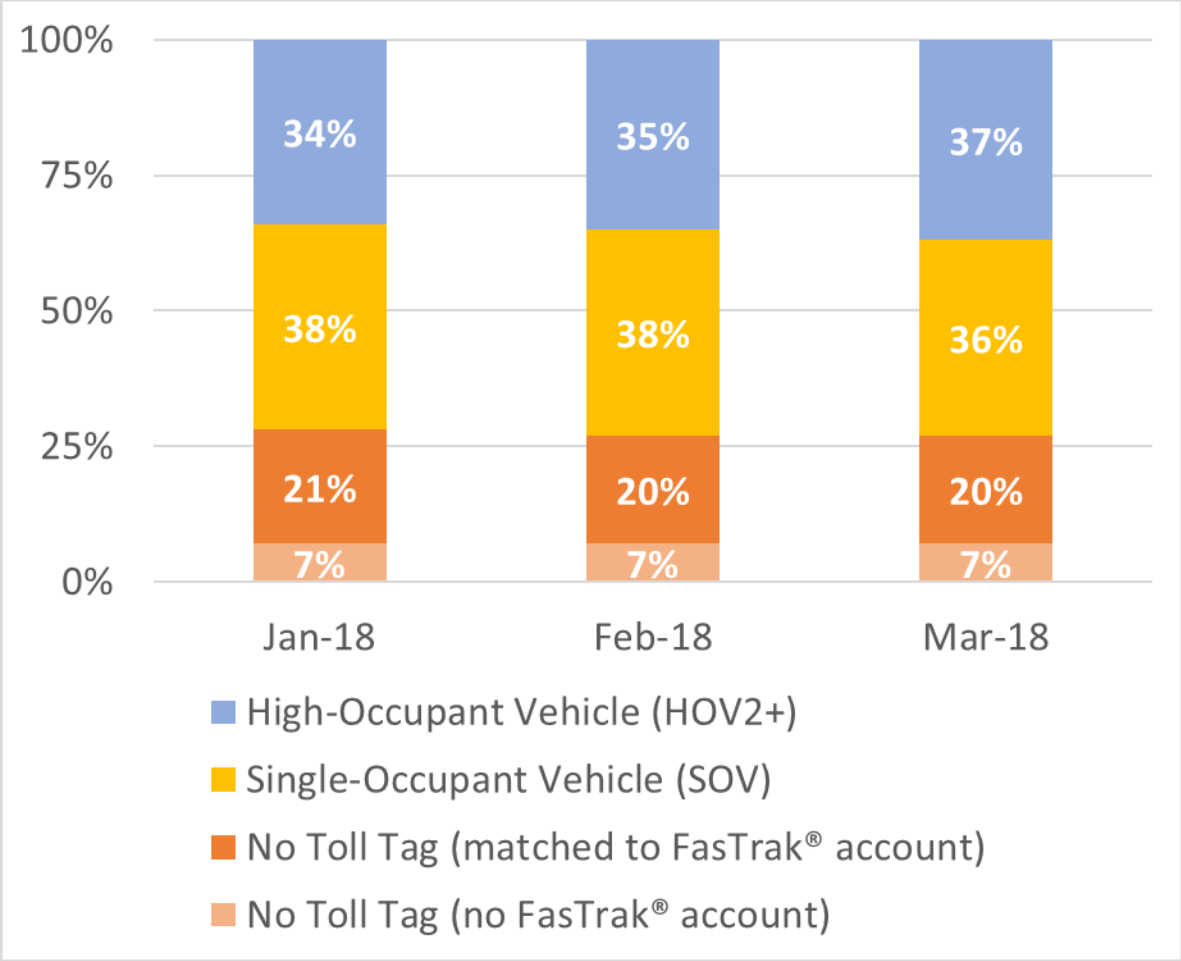
Express Lane Trips

In total, drivers took over 2.1 million trips in the express lanes between January and March 2018, an increase from 1.8 million total trips during the prior three months (reported last quarter). March 2018 had the highest monthly usage since the lanes opened in October 2017.



Includes toll-free trips, tolled trips and violation trips taken during express lane hours.

Express Lane Trip Types



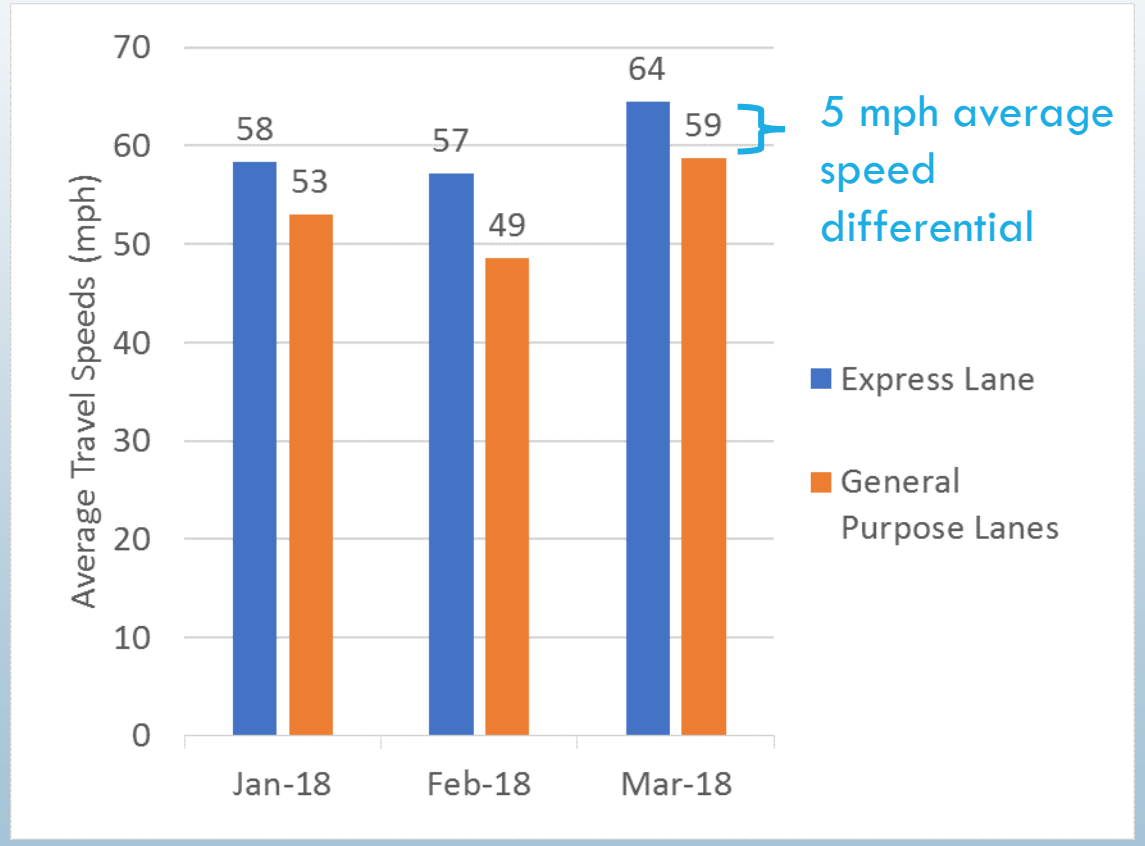
- The share of vehicles declared as carpools, including clean air vehicles eligible to use the lanes toll-free, increased to 37% in March from the high of 31% reported last quarter.
- Paying customers represented 56% of all users in March. This includes single occupant vehicles and users with no tag that were matched to a FasTrak® account.
- In March, 7% of trips were by users without a FasTrak® account (violators).

Percentages of SOVs and HOVs are based on toll tag settings detected by the toll system.

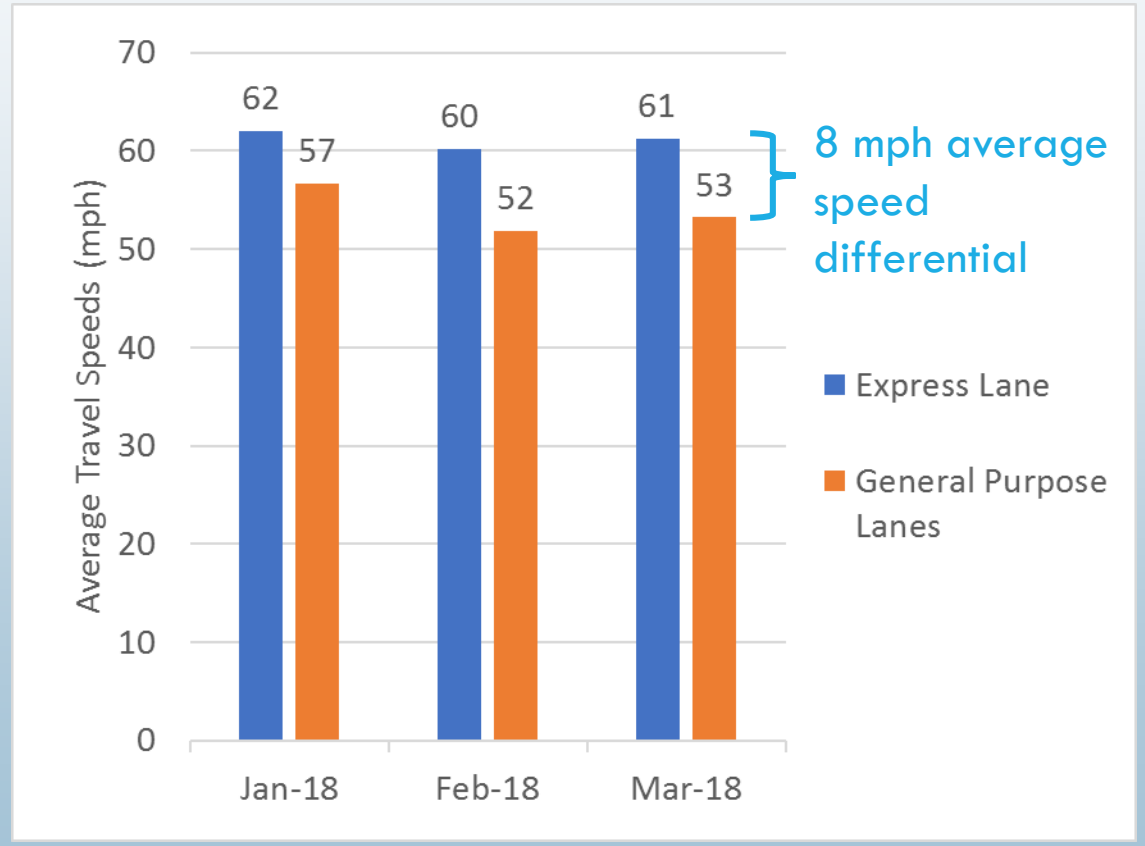
Traffic Speeds

Speeds in the express lanes were an average of 5 to 8 miles faster than those in the general purpose lanes, about the same as last quarter.

Northbound P.M. Peak Hour (5 - 6pm)



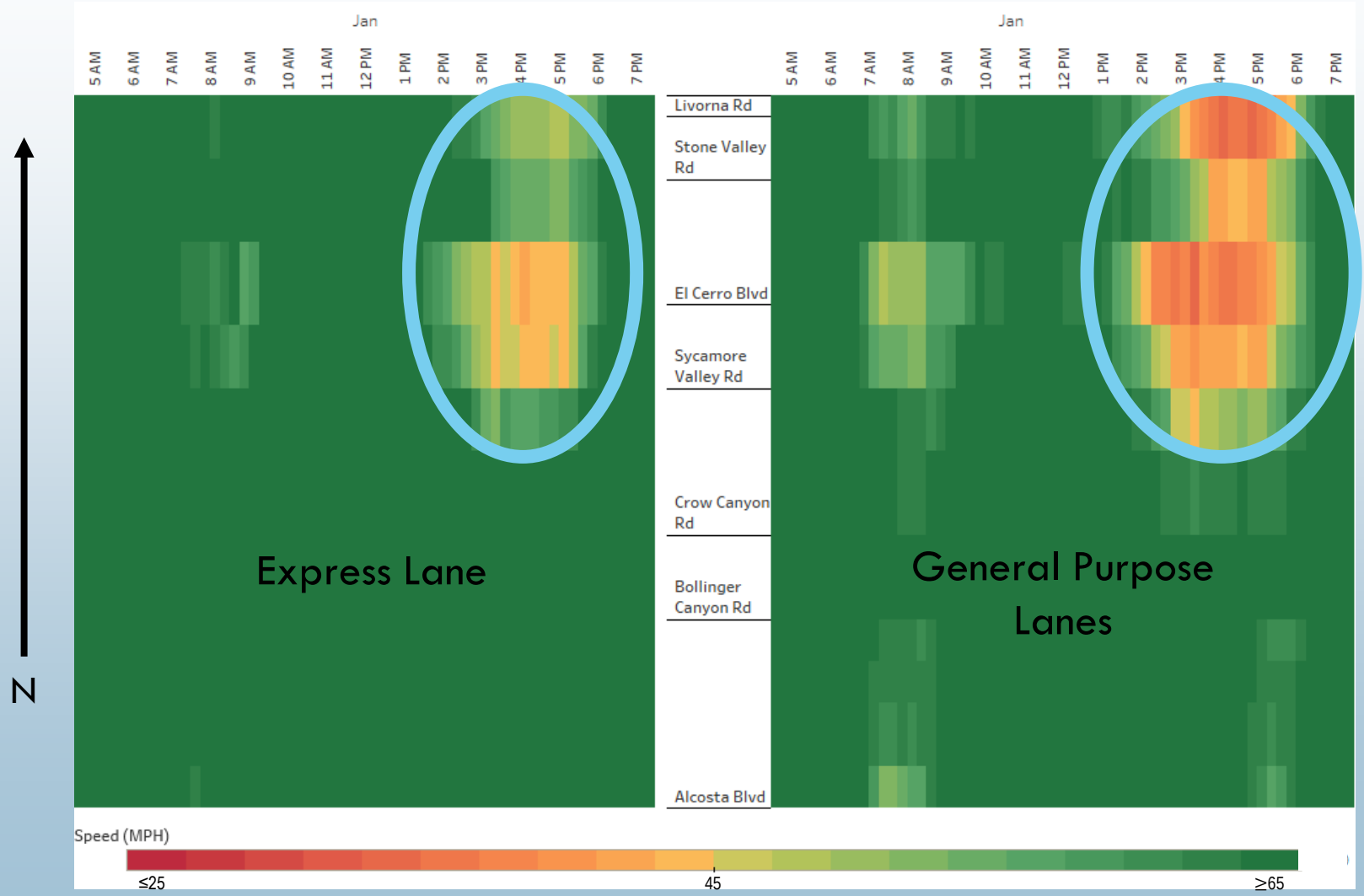
Southbound A.M. Peak Hour (8 - 9am)



Speeds are averaged over the distance of the express lane. Peak hours are defined as the hours with lowest average corridor speeds across all lanes.

Northbound Corridor Speeds

(January 1 – January 31)



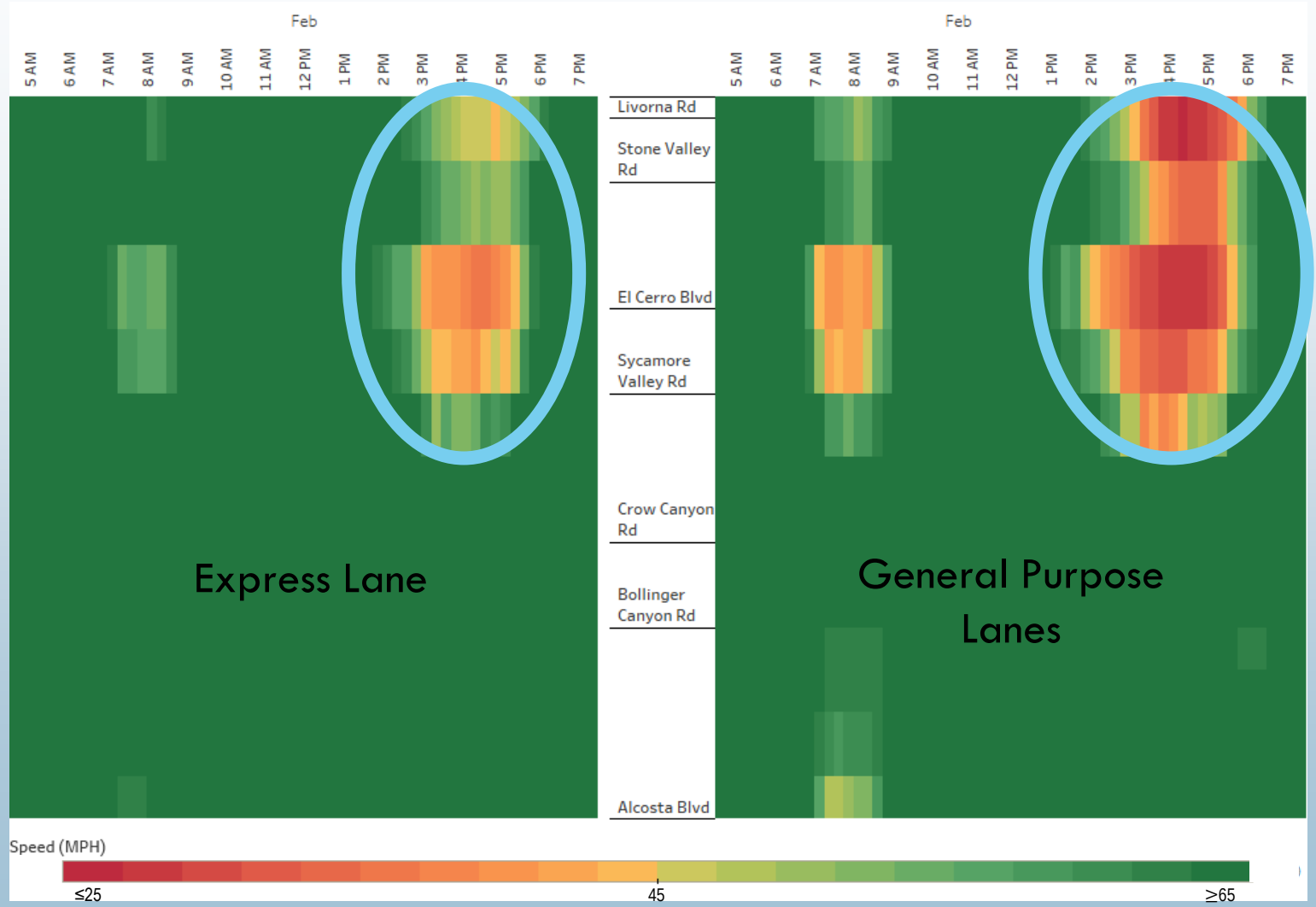
Congestion originating north of the express lane regularly caused the slowdowns shown in the general purpose lanes in the p.m. peak period. However, the slow down was less pronounced than in prior months, reflecting lighter than normal peak traffic due to holidays.

In the congested areas circled at left, express lane users were able to travel an average of 5 mph faster than vehicles in the general purpose lanes.

Traffic flowed well in all lanes during the middle of the day, 10 a.m. to 2 p.m.

Northbound Corridor Speeds

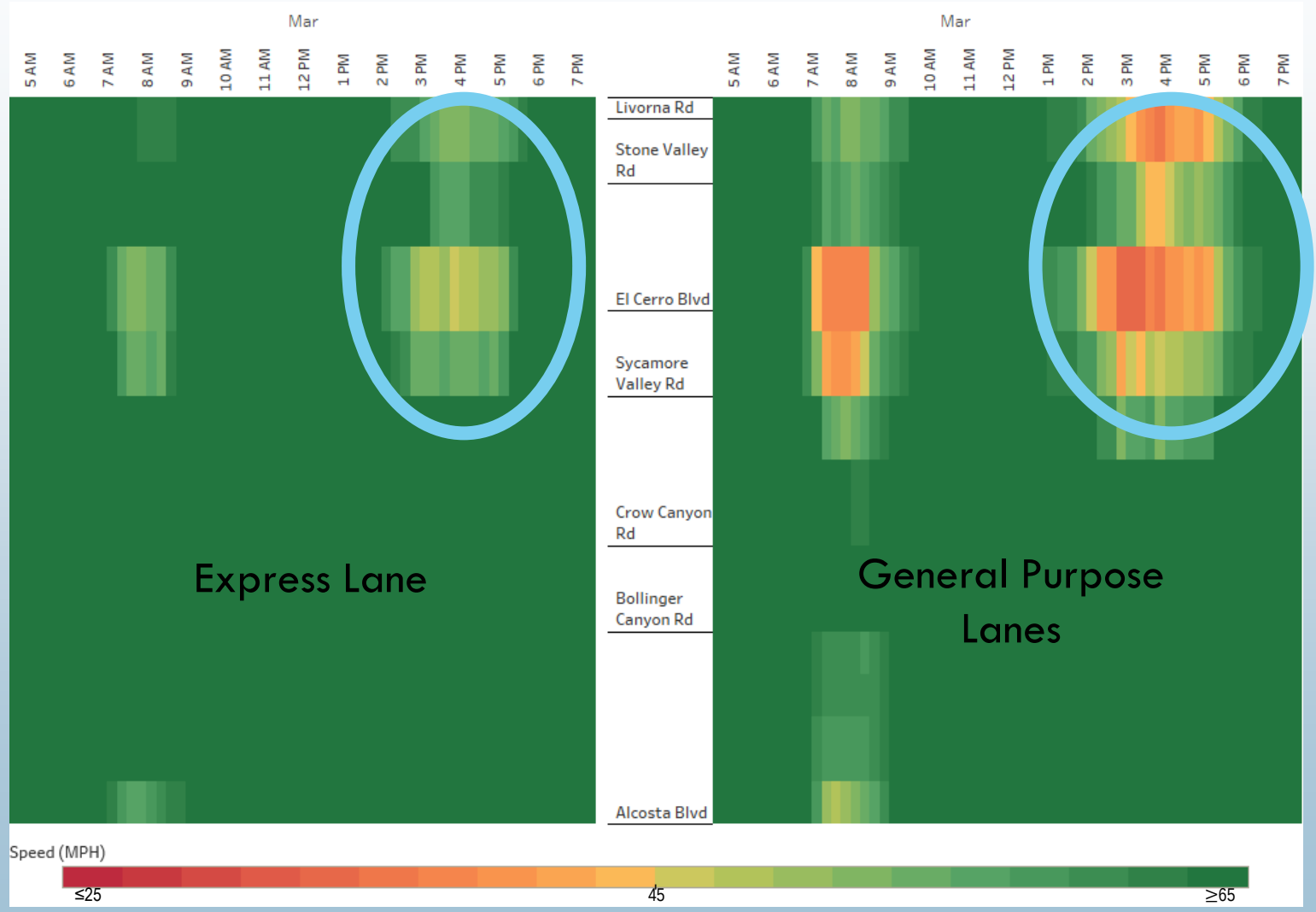
(February 1 – February 28)



The same congestion patterns were present in February with slower peak period speeds, corresponding with rebounding traffic levels in the corridor.

Northbound Corridor Speeds

(March 1 – March 31)



Average speeds in the general purpose lanes and the express increased in March. This is reflected by less red shading in the circled areas and less orange and yellow throughout the charts. This pattern likely reflects lighter than normal peak traffic during spring break holidays.

Southbound Corridor Speeds

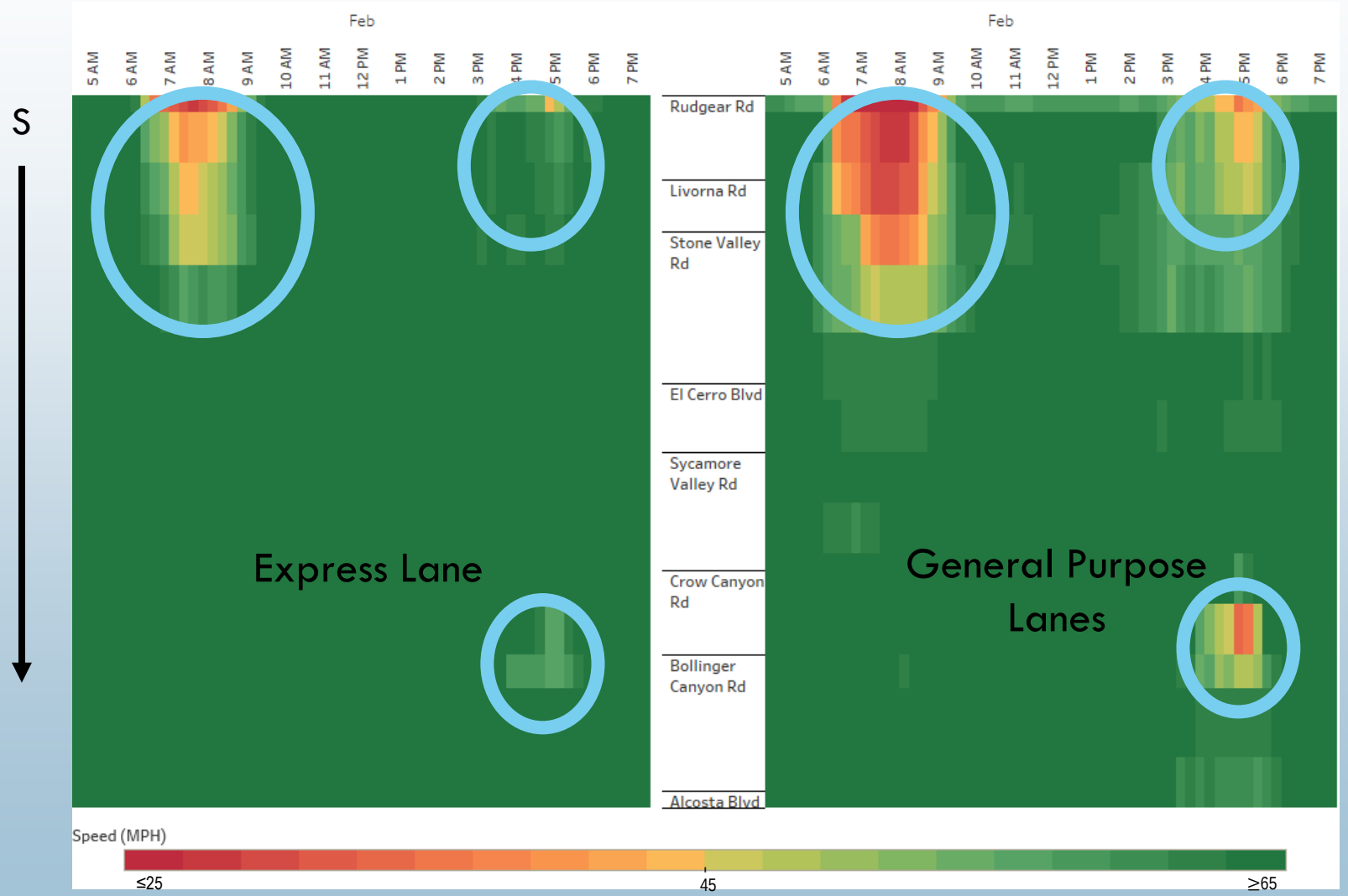
(January 1 – January 31)

As shown on the right, slowdowns regularly occurred in the general purpose lanes between Rudgear Rd. and Stone Valley Rd. in both the a.m. and p.m. peak periods, and near Bollinger Canyon Rd. in the p.m. peak. However, the slow down was less pronounced than in prior months, reflecting lighter than normal peak traffic due to holidays.

In the congested areas circled at left, express lane users were able to travel an average of 8 mph faster than vehicles in the general purpose lanes.

Southbound Corridor Speeds

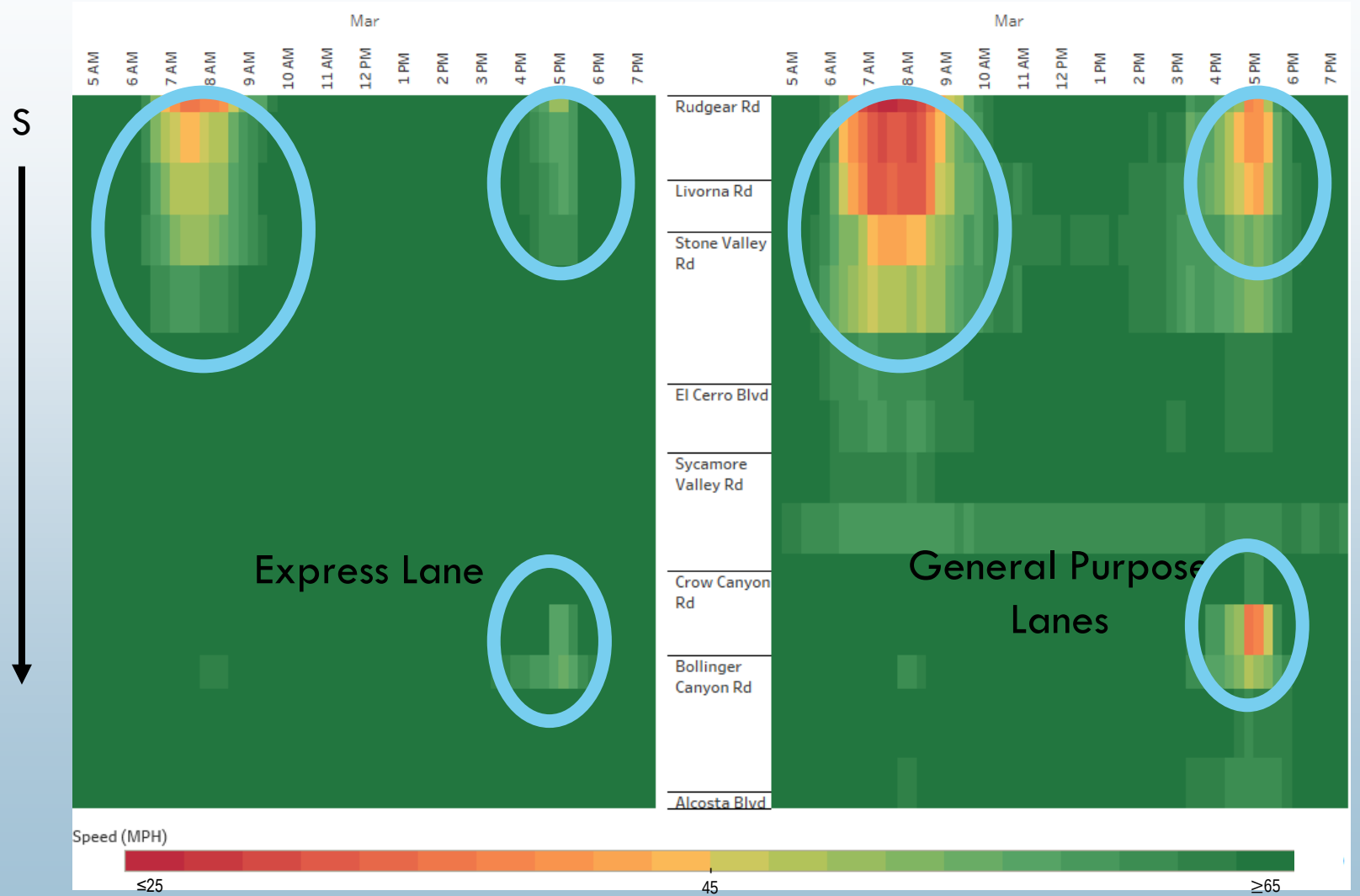
(February 1 – February 30)



The same congestion patterns were present in February with slower peak period speeds in the a.m. in the express lane, corresponding with rebounding traffic levels in the corridor.

Southbound Corridor Speeds

(March 1 – March 31)

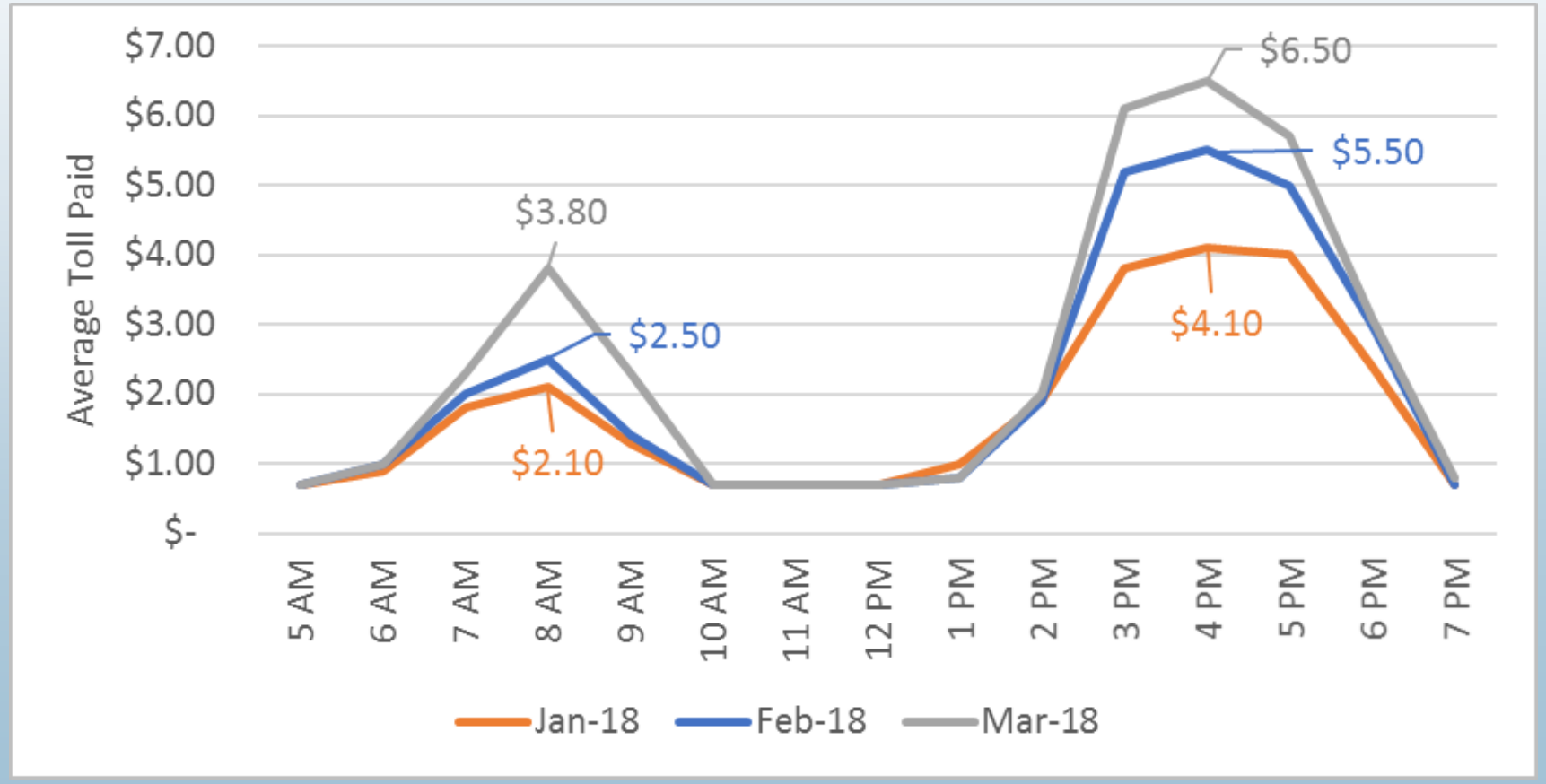


Average speeds increased in the express lane in March but speeds in the general purpose lanes stayed similar to those in February.

Northbound Tolls

(January 1 – March 31)

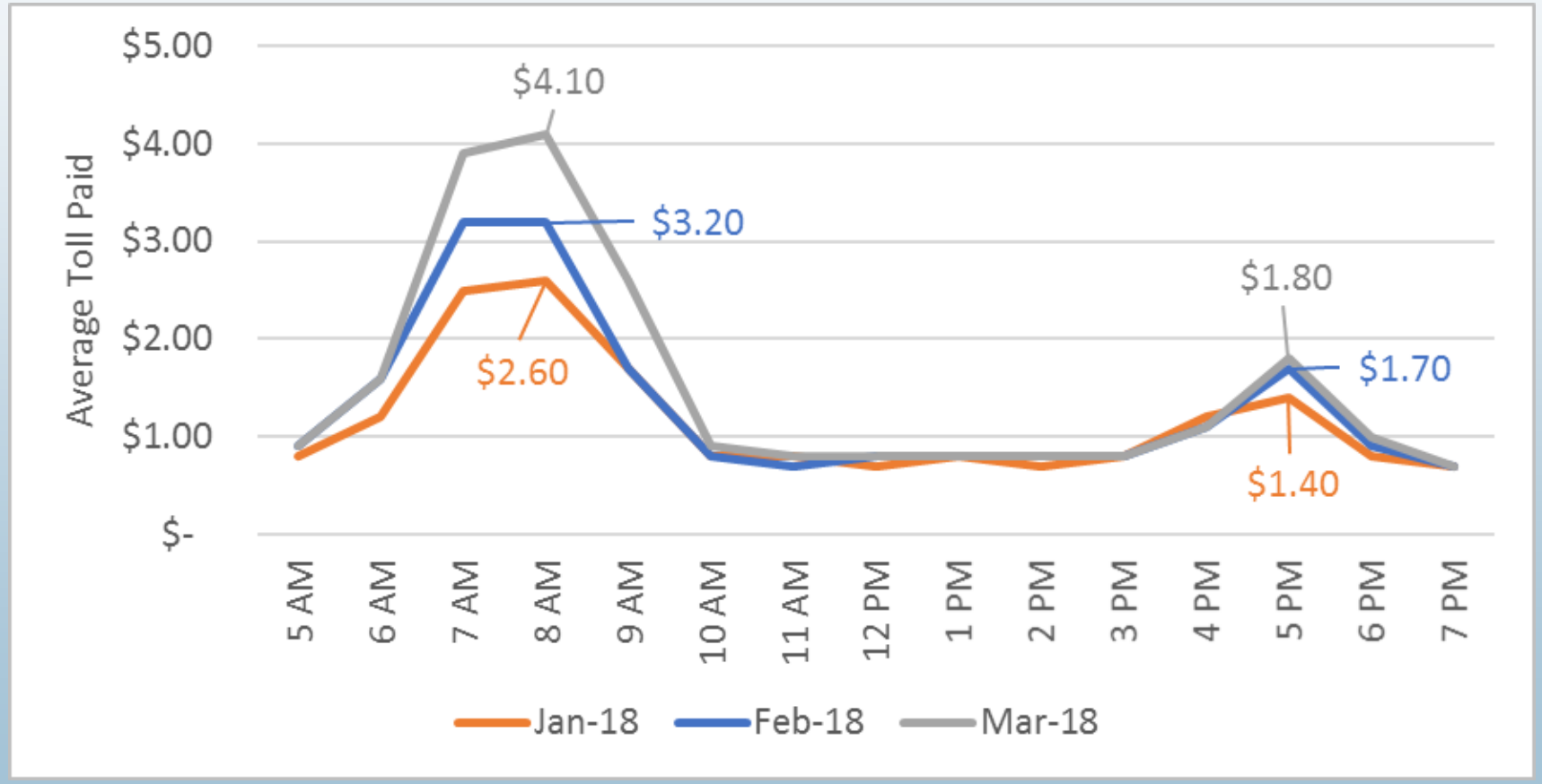
The graph below shows the average toll paid by time of day for the northbound direction. The highest toll posted to travel the entire corridor was $8.50, higher than in the last quarter, during which the highest posted toll was $6.25. The increase in tolls corresponds with increased usage.



Southbound Tolls

(January 1 – March 31)

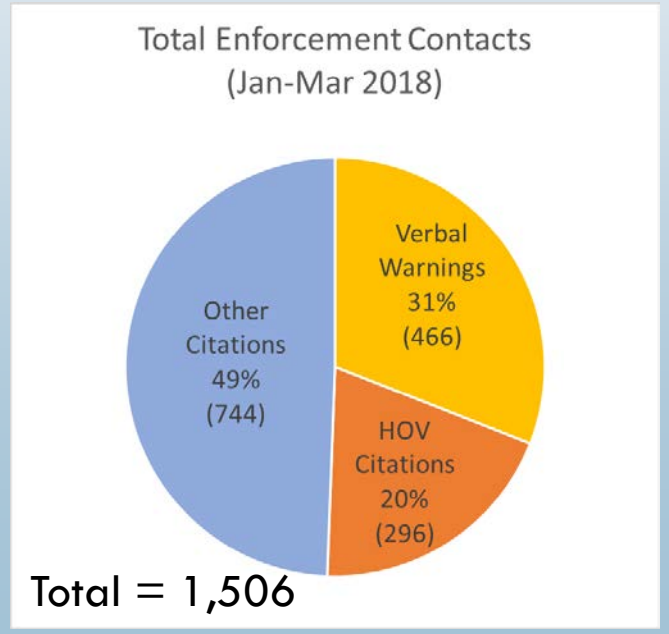
The graph below shows the average toll paid by time of day for the southbound direction. The highest toll posted to travel the entire corridor was $5.50, higher than in the last quarter, during which the highest posted toll was $4.50. The increase in tolls corresponds with increased usage.

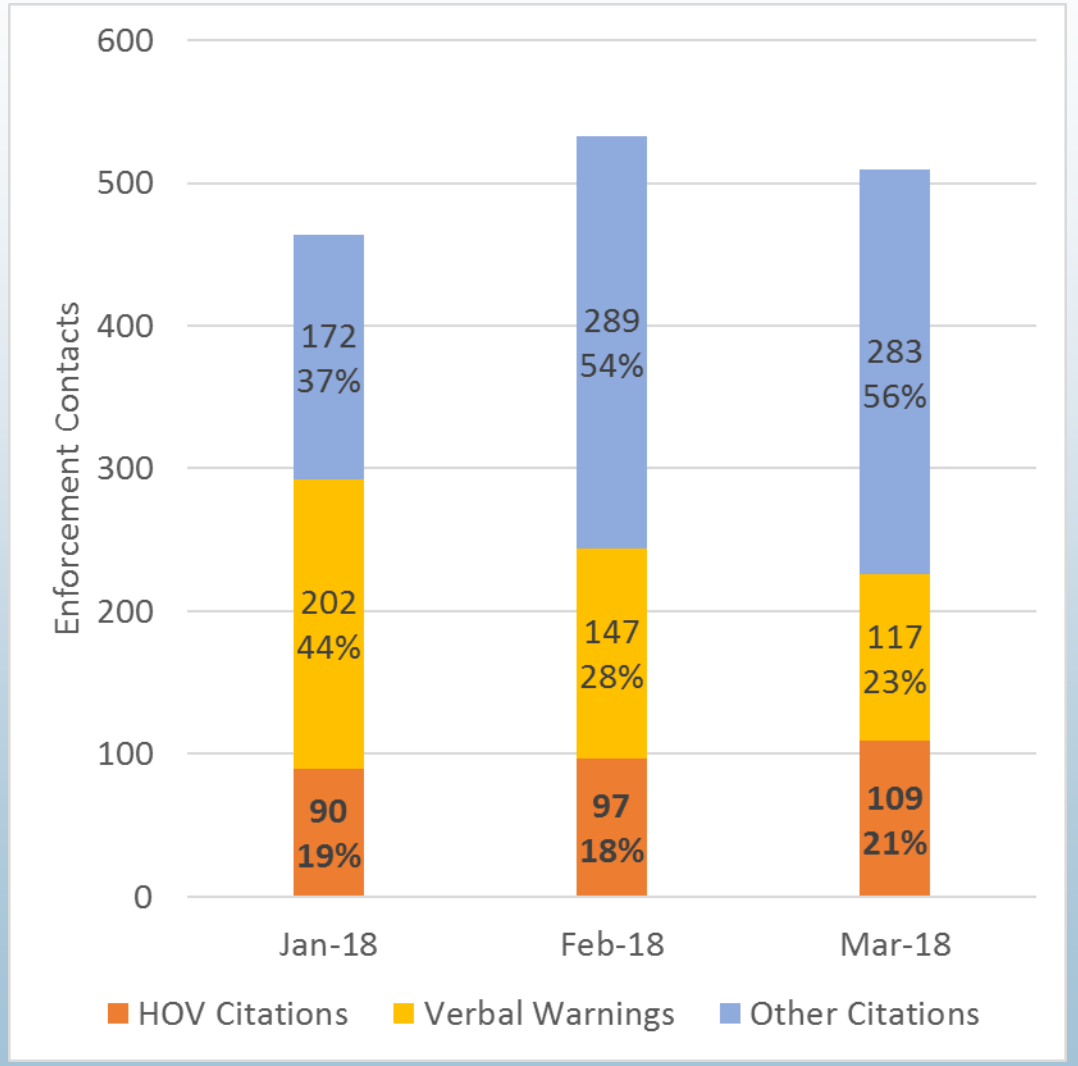


CHP Enforcement

(January 1 – March 31)

- CHP made 1,506 total enforcement contacts January through March 2018, an increase from 943 in the last quarter.
- The number of HOV citations increased while the number of verbal warnings decreased from January to March. This is a continuation of trends from the last quarter.





For more information, go to: mtc.ca.gov/express-lanes