



BAY AREA EXPRESS LANES



MTC Express Lanes Quarterly Report 3rd Quarter, July - September, 2019

Submitted: December 2019



METROPOLITAN
TRANSPORTATION
COMMISSION

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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 third quarter of 2019, July 1 to September 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. 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.

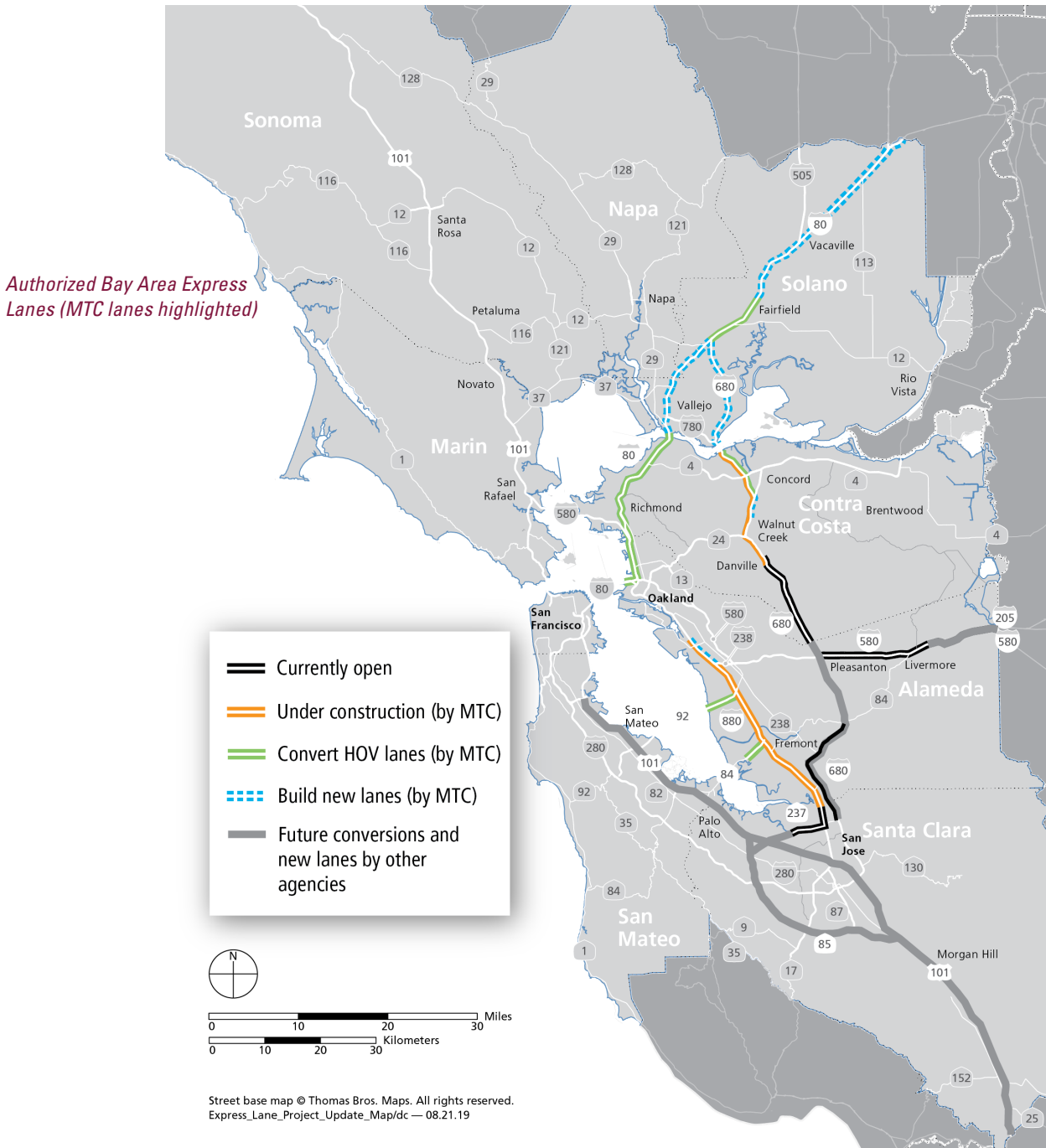
Project Development & Construction	3 rd Quarter 2019 Highlights	Current Activities
I-880 Alameda (ALA-880) San Leandro to Milpitas <i>Hegenberger Road/Lewelling Boulevard to Dixon Landing Road</i>	<ul style="list-style-type: none"> Civil construction work is near complete as of September 2019. The toll system integrator continued installation of toll system equipment, electrical and fiber. 	<ul style="list-style-type: none"> The toll system integrator will continue installation of roadside cabinets, toll system equipment in the median, variable toll message signs, CCTVs and connections of electrical and fiber conduits. MTC staff continues outreach activities in advance of BAIFA adopting tolling rules, and is preparing materials for a customer education campaign. 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 <i>Livorna Road/Rudgear Road to Alcosta Boulevard</i>	<ul style="list-style-type: none"> See Appendix C for second quarter performance data. 	<ul style="list-style-type: none"> Project complete; see Appendix B for archived summary.
I-680 Contra Costa Northern Segment Southbound (CC-680 North SB) Martinez to Walnut Creek <i>Marina Vista Boulevard to Rudgear Road/SR 242</i>	<ul style="list-style-type: none"> The civil contractor completed barrier removal activities and foundations for new overhead sign structures in the median of I-680 between SR-242 and SR-24. 	<ul style="list-style-type: none"> The civil contractor will continue construction of 5 retaining walls and ramp and highway widening at various locations. Completion of the new concrete barrier between SR-242 and North Main Street is expected in October 2019. The contractor will then erect new overhead sign structures in various locations throughout the corridor. The replacement planting design is being updated based on Caltrans’ comments with work anticipated to start spring 2020. Caltrans started its review of the toll system integrator’s design package for issuance of an encroachment permit.
I-80 Solano (SOL-80) Fairfield to Vacaville <i>Red Top Road to I-505</i>	<ul style="list-style-type: none"> USDOT announced that the project was not selected for an Infrastructure for Rebuilding America grant. 	<ul style="list-style-type: none"> The project is shelf-ready should construction funds become available. MTC and STA staff continue to explore other potential funding sources.

Project Development & Construction	3 rd Quarter 2019 Highlights	Current Activities
<p>Program Management</p>	<ul style="list-style-type: none"> Staff developed a draft amendment to the BAIFA Toll Facility Ordinance for proposed tolling rules on the I-880 Express Lanes. 	<ul style="list-style-type: none"> Staff continues to develop a 10-year strategic plan to help prioritize express lanes funding and delivery in the region. Staff continues to implement the I-880 Stakeholder and Customer Outreach Plan by meeting with stakeholder agencies to discuss project progress and future lane operations, coordinating with partners on messaging and outreach strategies, and developing materials about how the I-880 Express Lanes work. At the October 2019 BAIFA meeting, staff presented proposed tolling rules for the I-880 Express Lanes, including half-price tolls for 2-person vehicles and clean air vehicles. The presentation initiated a multi-month process to solicit public feedback prior to an adoption vote by BAIFA in early 2020.
<p>Toll System</p>	<ul style="list-style-type: none"> The toll system integrator and the FasTrak® back office finished testing an updated regional interface control document to enable the two systems to communicate and share FasTrak 6C tag compliant data. The integrator went live with the Host 6C software updates. 	<ul style="list-style-type: none"> The toll system integrator will update the lane-side equipment software to finalize the 6C enhancements and allow for 6C tag tolling.

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. BAIFA will also operate the toll system on US-101 in San Mateo County under contract to San Mateo County transportation agencies, which are responsible for project delivery, operational policy and use of revenue.

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



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 <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	Project completed 2017		
CC	680	I-680 Contra Costa Northern Segment Southbound	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	●	●	○
MID-TERM CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS							
ALA/ CC	80	I-80 and Westbound Approaches to the Bay Bridge	Between Crockett and Bay Bridge <i>Cummings Skyway to Bay Bridge; I-80, I-580, I-880 and West Grand approaches to Bay Bridge</i>	44	◐	○	○
ALA/ SM	84	Dumbarton Bridge Western Approach	Fremont/Newark <i>I-880 to Dumbarton Bridge</i>	3	●	○	○
ALA/ SM	92	San Mateo Bridge Westbound Approach	Hayward <i>I-880 to San Mateo Bridge</i>	3	●	○	○
CC	680	I-680 Contra Costa Northbound Express Lane Completion	Walnut Creek to Benicia <i>North Main St. to Marina Vista Blvd.</i>	9	●	○	○

KEY

● Funded ◐ Partially Funded ○ Unfunded

ALA = Alameda,

CC = Contra Costa,




SM = San Mateo,

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 <i>Hegenberger Rd./Lewelling Blvd. to Dixon Landing Rd.</i>	Spring 2019	Summer 2020		13
I-680 Contra Costa Southern Segment (CC-680 South) Walnut Creek and San Ramon <i>Livorna Rd./Rudgear Rd. to Alcosta Blvd.</i>	Fall 2016	Fall 2017 Actual		A-5
I-680 Contra Costa Northern Segment Southbound (CC-680 North SB) Martinez to Walnut Creek <i>Marina Vista Blvd. to Rudgear Rd.</i>	Fall 2018	Fall 2021		16

KEY

-  Within schedule shown.
-  Identified potential risks that may significantly impact schedule if not mitigated. See *Section III.D Risk Management Plan* for further discussion of schedule risk.
-  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 total 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-as-of amounts shown represent the unaudited amount of BATA Express Lane funds expended through September, 2019. The confidence level assessment reflects potential risks to each project budget; for more information, see Section III.D Risk Management Plan.

Project ⁽¹⁾	Total Cost Estimate ⁽²⁾	Cost Estimate, Funded Phases ⁽³⁾	Regional Measure 2 Funds (allocated)	Other Funding (allocated)	BAIFA Express Lane Funds ⁽⁴⁾			Percent Complete ⁽⁵⁾	Confidence Level ⁽⁶⁾
					July 2018 Amendment	Sept. 2018 Amendment	Expended as of 9/30/19		
NEAR-TERM CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS					<i>Costs shown in millions of escalated dollars</i>				
I-880 Alameda	139.1	139.1			135.5	139.1	102.6	85%	●
I-680 Contra Costa Southern Segment	54.0	54.0			55.6	54.0	52.3	99%	●
I-680 Contra Costa Northern Segment Southbound ⁽⁷⁾	127.4	127.4	19.4	54.3	51.3	53.6	17.0	40%	●
I-80 Solano	228.2	33.3	15.2		19.0	18.1	11.6	20%	●
Centralized Toll System	32.4	32.4			33.6	32.4	20.9	85%	●
Program Planning, Coordination & Management	28.4	28.4			28.4	28.4	20.6	75%	●
Program Contingency	6.1	6.1			5.1	2.9			●
Capitalized Start-up O&M	16.0	16.0			16.0	16.0	4.9		●
MID-TERM CONVERSIONS AND GAP CLOSURE OPPORTUNITY PROJECTS									
I-80 Alameda/Contra Costa and Westbound approaches to the Bay Bridge (I-80, I-580, I-880, West Grand)	193.0	5.0	5.0						
Dumbarton Bridge Westbound Approach (SR-84)	9.0	0.3			0.3	0.3	0.3	5%	
San Mateo Bridge Westbound Approach (SR-92)	10.0	0.4			0.4	0.4	0.4	5%	
I-680 Contra Costa Northbound Express Lane Completion ⁽⁸⁾	390.0	21.5	1.5	20.0				5%	
Centralized & Program Costs & Start-Up O&M - Gap Closures & Future Conversions	TBD								
TOTALS	1,233.6	463.9	41.1	74.3	345.2	345.2	230.6	71%	

⁽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-680 gap closure from Benicia to Cordelia

⁽²⁾ Total Cost Estimate represents current estimated cost to complete each project.

⁽³⁾ Cost Estimate, Funded Phases represents current estimated cost to complete phases that are funded for each project.

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

⁽⁵⁾ Percent completes shown are 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 Southbound and I-80 Solano.

⁽⁶⁾ ● = Within budget, ● = identified potential risks that may significantly exceed budget if not mitigated, ● = Known impacts to budget - changes forthcoming.

⁽⁷⁾ Cost represents the total for HOV Completion and Conversion to Express Lanes. Other funds committed to the HOV Completion portion include Measure J (\$38.7M) and STIP (\$15.6M).

⁽⁸⁾ Represents completion of HOV lane through Walnut Creek to SR-242 and conversion of existing HOV lane north of SR-242, which were previously listed separately.

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 change to the MTC Express Lanes Program budget in the third quarter of 2019.

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.

Chart #1 shows the median risk exposure for the program-level risks using Monte Carlo analysis. As of September 30, 2019, the risk exposure stands at \$5.5 million, which is higher than the \$4.9 million reported last quarter. This increase is due to the increase in probability and cost impacts of delay in opening the 880 Express Lanes.

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 September 26, 2018, the amount of BATA Express Lane Funds allocated to specific express lanes projects is \$342.3 million, plus program contingency, for a total authorized budget of \$345.2 million.

The current program contingency of \$2.9 million would fall short if the risk exposure of \$5.5 million were to be realized. While there are few individual risks with major cost impacts, there

are many risks with minor cost impacts, resulting in an overall significant risk exposure. Staff remains 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

- The most significant risk affecting cost and schedule relates to toll system delays that impact the opening of I-880. The toll system integrator has been delayed significantly for reasons including challenges coordinating with civil construction, weather, equipment delays, tight labor market affecting hiring of qualified staff, and staff shared with competing projects. Additionally, there will be delays in delivery of toll sign LED inserts, known as “bricks”. The bricks are used to display the toll rates and hence are critical to the operation of the express lanes. MTC is working with the manufacturer to understand the delivery schedule for the remaining bricks, and is developing a mitigation strategy in the event that all of the bricks are not delivered by the time the express lane is ready to open. MTC staff will continue to work with the toll system integrator to mitigate schedule delays.
- MTC staff is working actively to mitigate risks relating to toll system and backhaul conflicts with previously undisclosed Caltrans projects under construction in the

Chart #1: Median Risk Exposure (\$M)

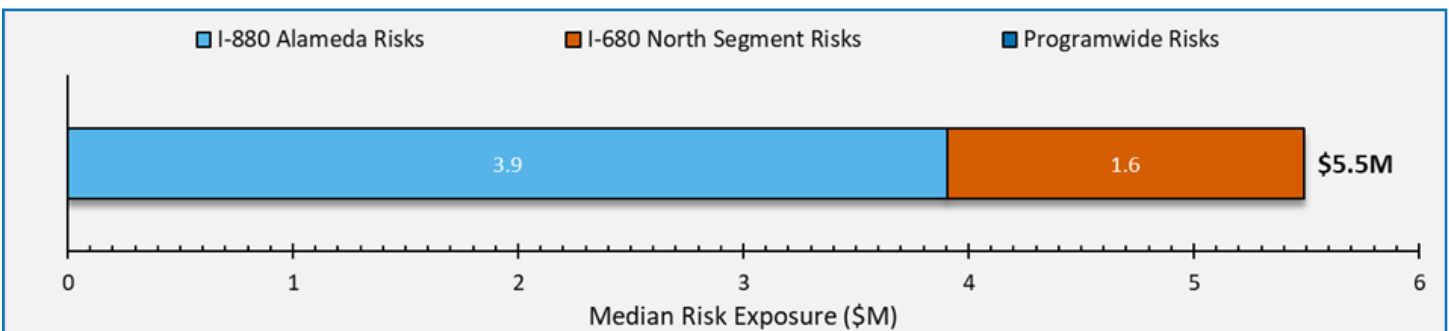


Chart #1 shows the contribution of each project’s risks toward the total program risk exposure. Risk exposure is calculated using Monte Carlo simulation.

corridor. BAIFA has provided field marking services to locate facilities underground for Caltrans. BAIFA is also working with Caltrans to determine mitigation strategies, such as convening workshops to identify conflicts during project design, and providing maps of toll system and backhaul asset locations for future reference. Many of these mitigation strategies have proven successful in identifying project conflicts on the corridor, however, the risk remains significant due to the large number of ongoing projects.

- Another risk previously noted in this report relates to Caltrans requiring BAIFA and other express lanes operators to change the agreed-upon approach to toll segment pricing, affecting the toll system, signage and public information. Staff has coordinated with Caltrans on this issue. BAIFA will move forward with its current design. This risk will be monitored, but is no longer identified as significant for the program at this time.

system integrator executives to communicate the need for additional staff and installation managers. MTC will continue to track the schedules of both corridors, and ensure mitigation measures are in place to reduce schedule impacts.

- An additional risk that could affect schedule relates to a Caltrans-managed safety project in the corridor. Thus far, this risk has been managed well, due in part to the civil contractor holding both contracts and working with sub-contractors to ensure on-going coordination. Additional schedule risks are being monitored, including potential delay to civil contract delivery caused by unanticipated field conditions, contract specifications, weather and PG&E utility connections.
- Risks that could affect cost relate to the potential for change in signage requirements by Caltrans that may apply to express lanes, additional work resulting from unanticipated field conditions encountered during construction, and conflicts between express lane or backhaul equipment and new Caltrans projects. MTC staff continues to coordinate with Caltrans to minimize cost impacts.

I-680 Contra Costa Northern Segment Southbound

- The most significant schedule risk at this time is due to the toll system integrator working in tight sequence on I-880, I-680 North and US-101. MTC has identified a significant concern relating to schedule overlap between the US-101 Southern Segment and the most recent I-680 North schedule. MTC escalated these concerns to toll

Programwide Risks

- There are no programwide risks of major concern at this time.

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

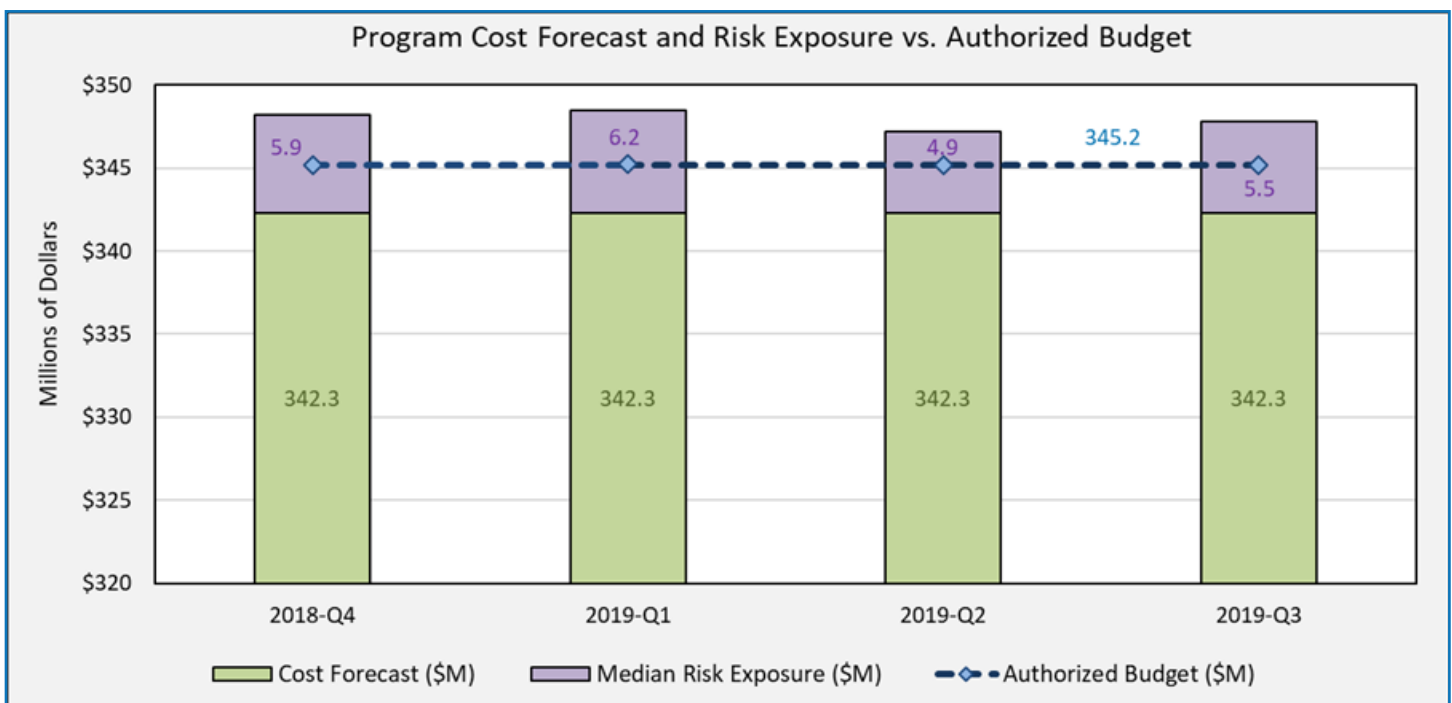


Chart #2 shows the program cost forecast and risk exposure as compared to the authorized program budget.

E. Active Capital Project Summaries

Centralized Functions

Toll System and Program Management, Planning and Regional Coordination

Total Estimated Cost

\$32.4 million for the Centralized Toll System
 \$28.4 million 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 toll setting 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 developed a draft amendment to the BAIFA Toll Facility Ordinance for proposed tolling rules on the I-880 Express Lanes.

Current Program Management Activities

- In partnership with other express lane operators, staff continues to develop a 10-year strategic plan to help prioritize express lanes funding and delivery in the region. This work is being coordinated with MTC's Planning Section to inform Plan Bay Area 2050.
- Staff is implementing the I-880 Stakeholder and Customer Outreach Plan by meeting with stakeholder agencies to discuss project progress and future lane operations, and coordinating with partners on messaging and outreach strategies.
- Staff began to develop materials to educate customers about how the I-880 Express Lanes work. The materials will be the backbone of a Customer Education Campaign starting about 3 months before the lanes open.
- At the October 2019 BAIFA meeting, staff presented proposed tolling rules for the new I-880 Express Lanes that would be amended into BAIFA's Toll Facility Ordinance if adopted, including half-price tolls for 2-person vehicles and clean air vehicles. The presentation initiated a multi-month process to solicit public feedback prior to an adoption vote by BAIFA in early 2020.

Toll System Highlights and Progress

- The toll system integrator contract was awarded in June 2014.
- Buildout of the Regional Operations Center was finished in March 2017.
- The toll system went live to the public on October 9, 2017.
- In December 2018, the toll system integrator contract was extended to June 2023 to include the I-680 Northern Segment. The change removed the I-80 Solano express lanes from the contract. It will be added back when construction funding is secured.
- The I-680 Southern Segment Operations Test concluded in April 2019. Operations testing is a system acceptance test. The Operations & Maintenance (O&M) phase, which includes a one-year warranty period, began in May 2019.
- The toll system integrator and the FasTrak® back office finished testing an updated regional interface control document to enable the two systems to communicate and share FasTrak 6C tag compliant data. The integrator went live with the Host 6C software updates on September 30, 2019.

Current Toll System Activities

- The toll system integrator will update the lane-side equipment software to finalize the 6C enhancements and allow for 6C tag tolling in October 2019.
- The I-680 Southern Segment Operations Test revealed inefficiencies in how the toll system builds tolled trips. Staff determined these inefficiencies are too costly and risky to not address before I-880 opens. As a result, the toll system integrator will build an image review enhancement before I-880 opens, at no cost to BAIFA, to improve data quality and streamline trip building. There will be a cost per image reviewed, but the cost structure incentivizes less image review. The average cost per image is estimated to be 7 cents. BAIFA and the toll system integrator are finalizing negotiations for the image review contract change order.



Close-up of toll system equipment under sign (enforcement beacons, reader antennae and laser trigger)

Photos courtesy of Noah Berger



Overhead hours of operation sign and toll system equipment on the I-680 Express Lanes



Overhead pricing sign on the I-680 Express Lanes

I-880 Alameda (ALA-880)

Oakland to Milpitas

Hegenberger Road/Lewelling Boulevard to Dixon Landing Road

Total Cost Estimate

\$139.1 million

Scheduled Open Date

Summer 2020

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 structures, signs, FasTrak[®] toll tag readers, traffic monitoring video cameras, lighting, a data communications network and California Highway Patrol observation areas. The highway is also being widened in three locations to accommodate merge lanes into and out of the express lanes. 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 pavement resurfacing project, both led by Caltrans. The median barrier reconstruction project installed foundations and other infrastructure required for the express lanes for a large portion of the corridor.

Project Highlights and Progress

- Public open house was held in March 2015.
- Preliminary engineering report and environmental document were completed in October 2016.
- The express lanes civil contractor began construction in September 2017.
- Caltrans approved the toll system design and issued the encroachment permit for the toll system integrator in March 2018.
- MTC's express lanes scope of work delivered through Caltrans' median barrier contract was completed in the second quarter of 2018, including barrier demolition, express lane sign structure foundations and light foundations.
- Caltrans completed its technical review to determine I-880 hours of operation (5am to 8pm, Monday through Friday) and high occupancy vehicle threshold (3 or more persons) in fall 2018.
- Caltrans finalized the design of fiber laterals to connect its freeway management equipment to the communications backhaul in December 2018.
- In March 2019, the civil contractor successfully removed two existing overhead sign bridge structures at the SR-92 interchange and installed two new ones.
- At strategic points in the project timeline, staff performed outreach and education about I-880 design, construction and proposed operations including with members of low-income communities (2012); corridor city staff (2015 & 2019); and corridor elected officials (2017 & 2019).



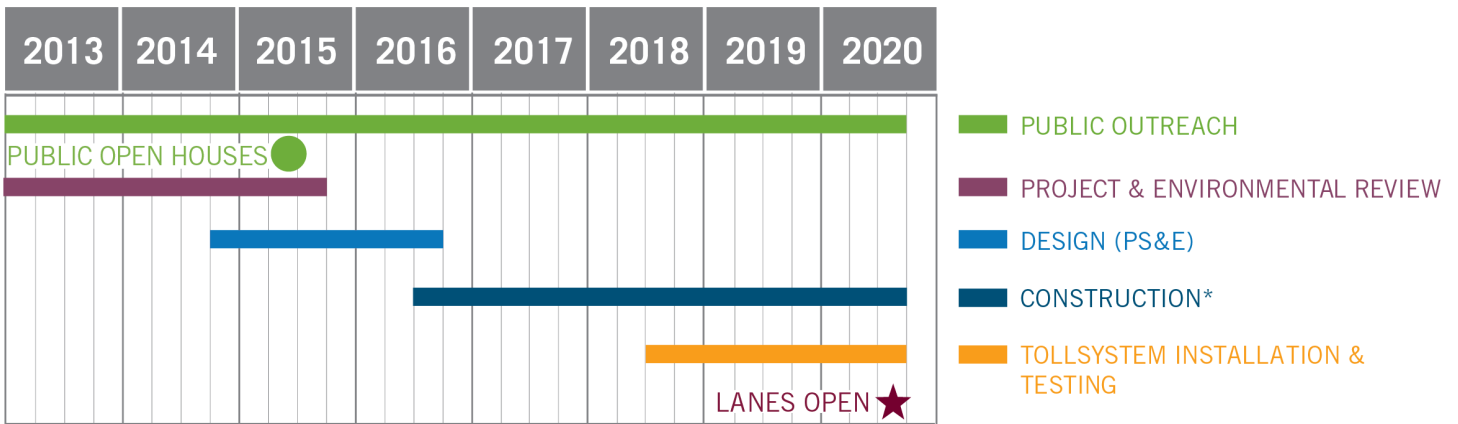
Current Project Activities

- Civil construction work is near complete as of September 2019. Remaining work includes installation of fiber laterals to connect Caltrans’ freeway management equipment to the communications backhaul, which will occur from fall 2019 through spring 2020. All PG&E service connections are installed, with the exception of one at Marina Boulevard. Final pavement striping is planned in spring 2020.
- The toll system integrator will continue installation of roadside cabinets, toll system equipment in the median, variable toll message signs, CCTVs and connections of electrical and fiber conduits from Dixon Landing Road to SR-92, which is 60% complete, and from SR-92 to

Hegenberger Road, which is 10% complete. Toll system equipment installation for the full project is expected to be completed in spring 2020 and will be followed by testing.

- MTC staff is meeting with city staff in the I-880 corridor and with business advocacy groups to review proposed operating policies. MTC staff is following a public process for BAIFA to amend its toll ordinance to include I-880. Staff continues to draft customer education materials about how the lanes will work for a customer education campaign. A separate effort to form 3-person carpools in the I-880 corridor will be spearheaded by MTC’s 511 Carpool Program. Monthly construction notices and ramp closure/ detour notices continue to be sent.

Project Schedule by Phase



Project Cost

Total Cost Estimate ⁽¹⁾	Cost Estimate, Funded Phases ⁽²⁾	Regional Measure 2 Funds (allocated)	Other Funding (allocated)	BAIFA Express Lane Funds ⁽³⁾			Percent Complete ⁽⁴⁾
				July 2018 Amendment	Sept. 2018 Amendment	Expended as of 9/30/19	
139.1	139.1			135.5	139.1	102.6	85%

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

Costs shown in millions of escalated dollars.

⁽¹⁾ Total Cost Estimate represents current estimated cost to complete each project.
⁽²⁾ Cost Estimate, Funded Phases represents current estimated cost to complete phases that are funded for each project.
⁽³⁾ BAIFA Express Lane Funds represent the funds that have been allocated from the BAIFA budget.
⁽⁴⁾ Percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.



Toll system equipment on I-880



Overhead signs, including 'do not cross' message for future access restriction on I-880



Elevated view of enforcement area on I-880 in Fremont

I-680 Northern Segment Southbound (CC-680 North SB)

Martinez to Walnut Creek

Benicia Bridge to Rudgear Road

Total Cost Estimate

\$127.4 million (\$53.6 million to be funded by BAIFA)

Scheduled Open Date

Fall 2021

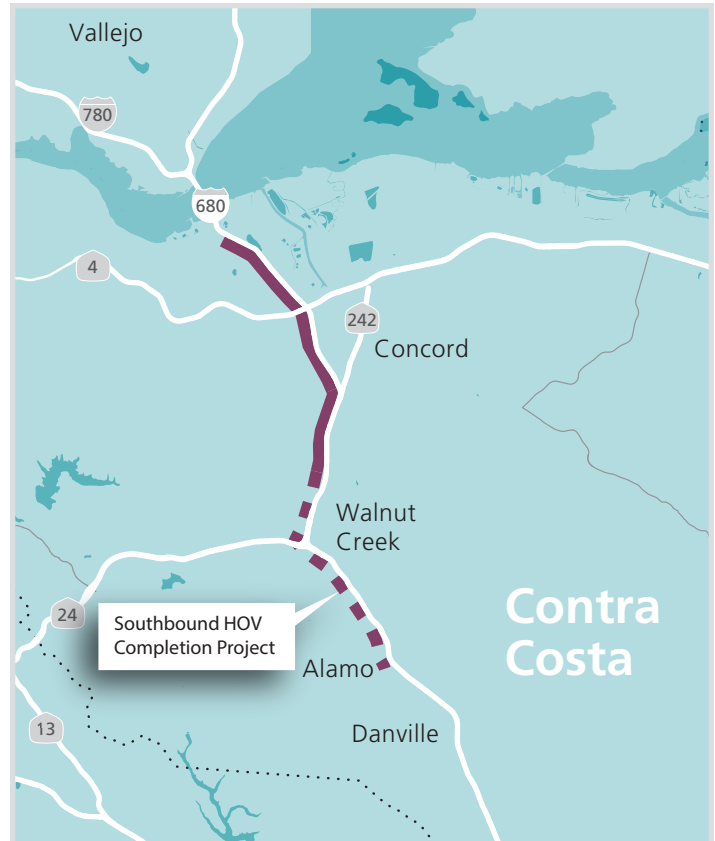
Project Description

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 signed the environmental document in December 2016 and approved the Project Report in August 2017. Caltrans completed a revalidation in September 2017.
- 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.
- All utility relocations were completed as of August 2018.
- Construction started October 1, 2018, and a ground-breaking event was held October 3, 2018.
- In December 2018, the toll system integrator contract was extended to June 2023 to include the I-680 Northern Segment.
- In May 2019, the backhaul contractor successfully rerouted the backhaul fiber between SR-24 and Livorna Road in Walnut Creek to allow for lane widening, and the toll system integrator participated in switching the live toll equipment from the old to the new fiber.
- In June 2019, CCTA and Caltrans executed an amendment to incorporate Caltrans oversight of landscape work and the first year of plant establishment into their cooperative agreement.
- In June 2019, the civil contractor completed construction of the new concrete median barrier on I-680 between the Benicia-Martinez Bridge and SR-242. Temporary railing was removed and traffic was returned to its original configuration. In September 2019, the civil contractor completed barrier removal activities and foundations for new overhead sign structures in the median of I-680 between SR-242 and SR-24.
- In September 2019, BAIFA and Caltrans executed a cooperative agreement for Caltrans oversight of the toll system integrator design and installation.



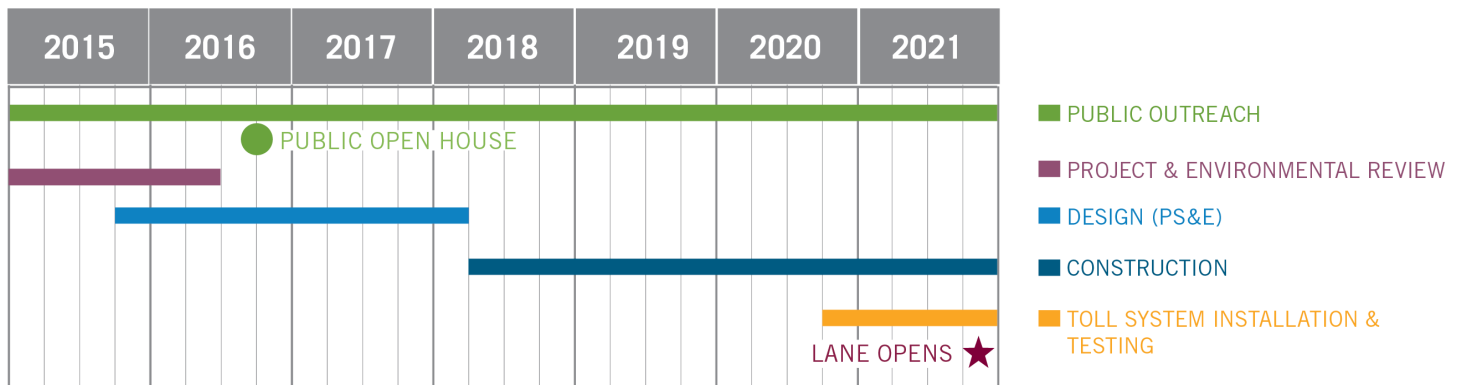
Current Project Activities

- The civil contractor will continue construction of 5 retaining walls along I-680 southbound with anticipated completion in October 2019 of retaining wall no. 1 between Rudgear Road and Livorna Road and retaining wall no. 5 between the I-680 southbound on and off ramps to South Main Street. The civil contractor will also continue with ramp and highway widening at various locations on I-680 southbound between Monument and Olympic Boulevards. Completion of

the new concrete barrier between SR-242 and North Main Street is expected in October 2019. The contractor will then erect new overhead sign structures in various locations throughout the corridor.

- The replacement planting design is being updated based on Caltrans' comments. Final design is expected in October 2019 with work anticipated to start spring 2020.
- Caltrans started its review of the toll system integrator's design package for issuance of an encroachment permit.

Project Schedule by Phase



Project Cost

Total Cost Estimate ⁽¹⁾	Cost Estimate, Funded Phases ⁽²⁾	Regional Measure 2 Funds (allocated)	Other Funding (allocated)	BAIFA Express Lane Funds ⁽³⁾			Percent Complete ⁽⁴⁾
				July 2018 Amendment	Sept. 2018 Amendment	Expended as of 9/30/19	
127.4	127.4	19.4	54.3	51.3	53.6	17.0	40%

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

Costs shown in millions of escalated dollars.

(1) Total Cost Estimate represents current estimated cost to complete each project.
 (2) Cost Estimate, Funded Phases represents current estimated cost to complete phases that are funded for each project.
 (3) BAIFA Express Lane Funds represent the funds that have been allocated from the BAIFA budget.
 (4) Percent complete shown is based on the achievement of major milestones whether those milestones were completed using BAIFA funds or other funds.



Concrete pour for retaining wall no. 1 on I-680 in Alamo/Walnut Creek



Concrete piles for bridge widening on I-680 at South Main Street in Walnut Creek



Rebar placement for bridge widening on I-680 at South Main Street in Walnut Creek

I-80 Solano (SOL-80)

Fairfield to Vacaville

Red Top Road to I-505

Total Cost Estimate

\$228.2 million

Scheduled Open Date

2023, 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.

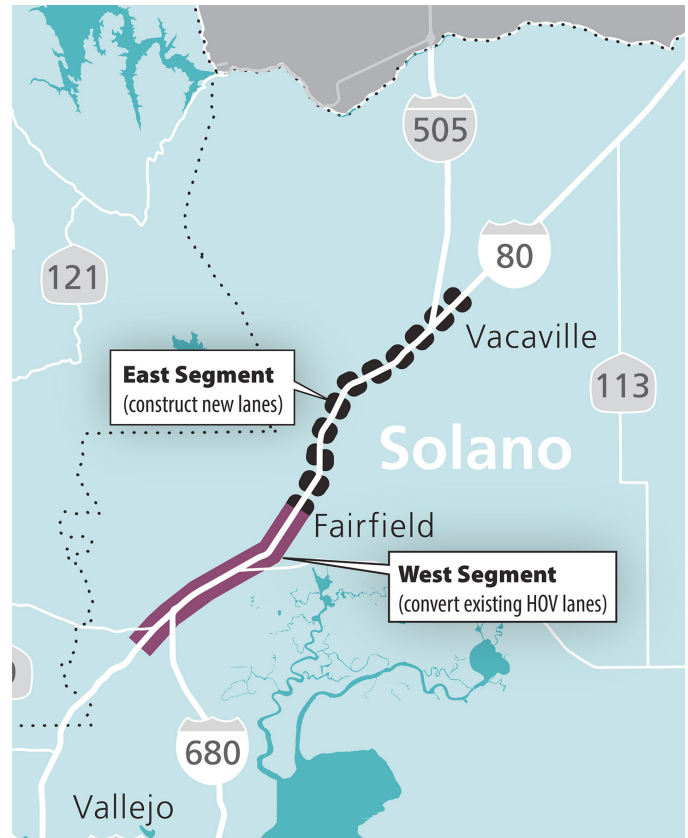
The project will also construct new eastbound and westbound lanes between Air Base Parkway and I-505 in Vacaville. In this section, the highway will be widened along with the installation of express lane striping, signage and equipment. The project will result in 36 miles of express lanes on I-80 in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

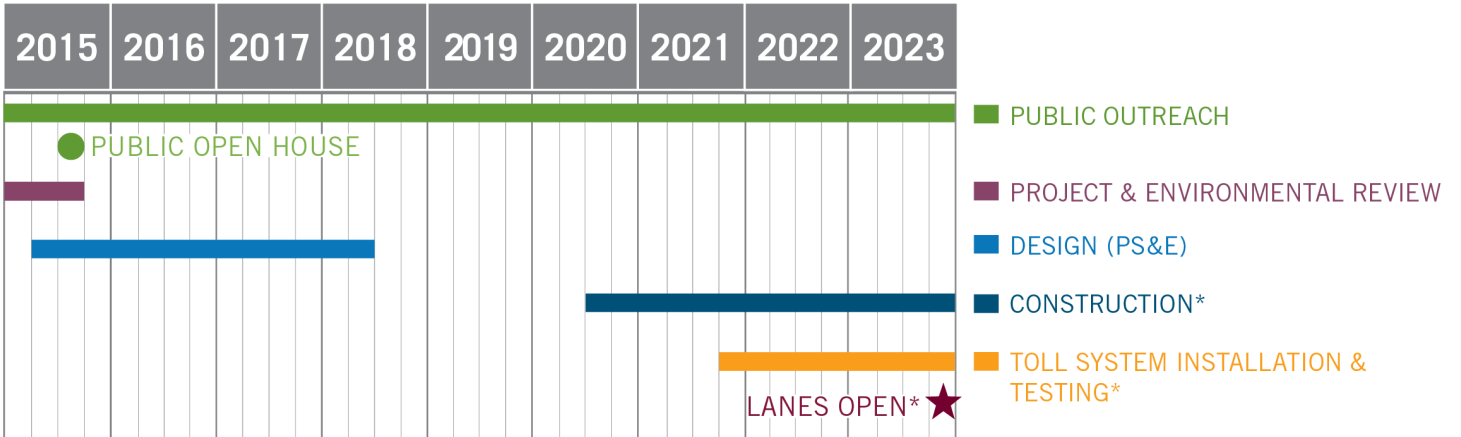
- A public open house was held in August 2015.
- The preliminary engineering report and environmental document were completed in December 2015.
- The final design document was approved by Caltrans in March 2018.
- The project reached the Ready-to-List milestone in April 2018.
- Caltrans submitted this project for a Federal INFRA grant in March 2019. In July 2019, the US Department of Transportation announced that the project was not selected for the grant.



Current Project Activities

- The project is shelf-ready should construction funds become available.
- MTC and STA staff continue to explore other potential funding sources.

Project Schedule by Phase



* Funding for these activities is not yet secured.

Project Cost

Total Cost Estimate ⁽¹⁾	Cost Estimate, Funded Phases ⁽²⁾	Regional Measure 2 Funds (allocated)	Other Funding (allocated)	BAIFA Express Lane Funds ⁽³⁾			Percent Complete ⁽⁴⁾
				July 2018 Amendment	Sept. 2018 Amendment	Expended as of 9/30/19	
228.2	33.3	15.2		19.0	18.1	11.6	20%

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

Costs shown in millions of escalated dollars.

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

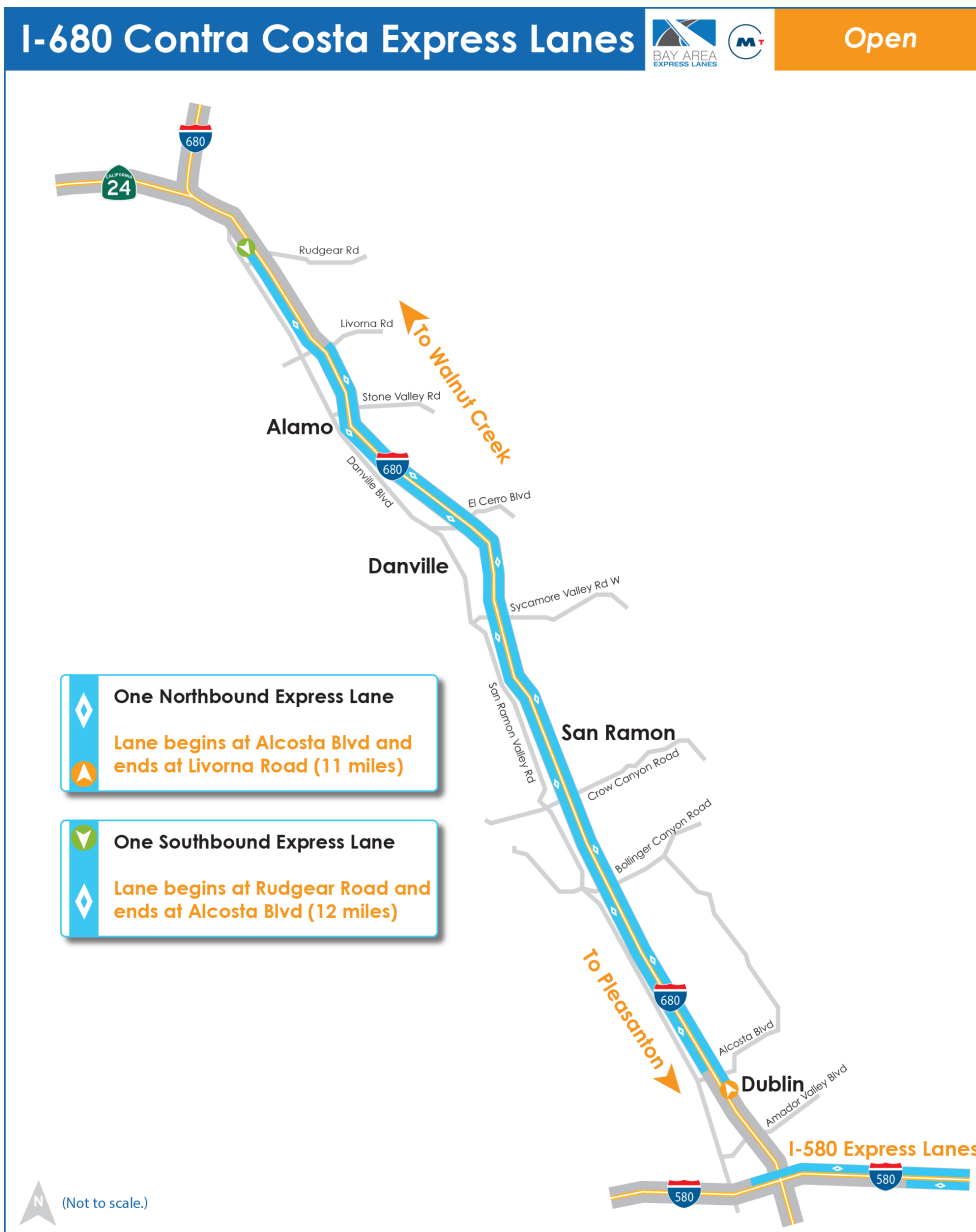
IV. OPERATIONS

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 contractor staff perform public outreach and education, track and report on program performance and analyze traffic, and support operations in other ways as needed. Operating revenue and expenses are reported quarterly to BAIFA.

See **Appendix C** for a summary of this quarter’s 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

APPENDICES

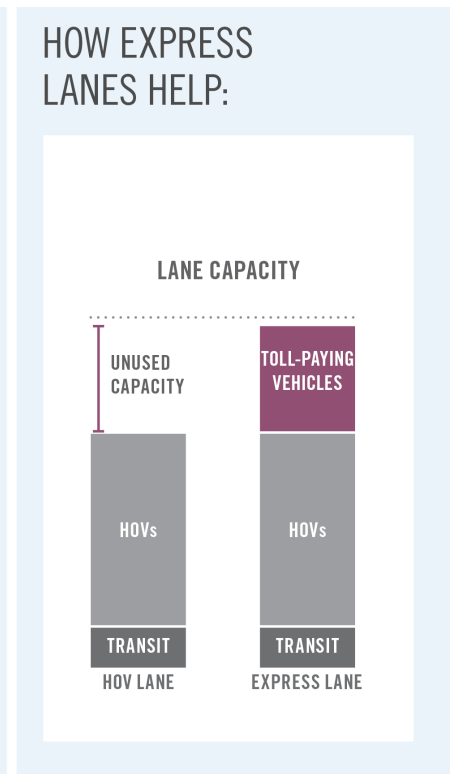
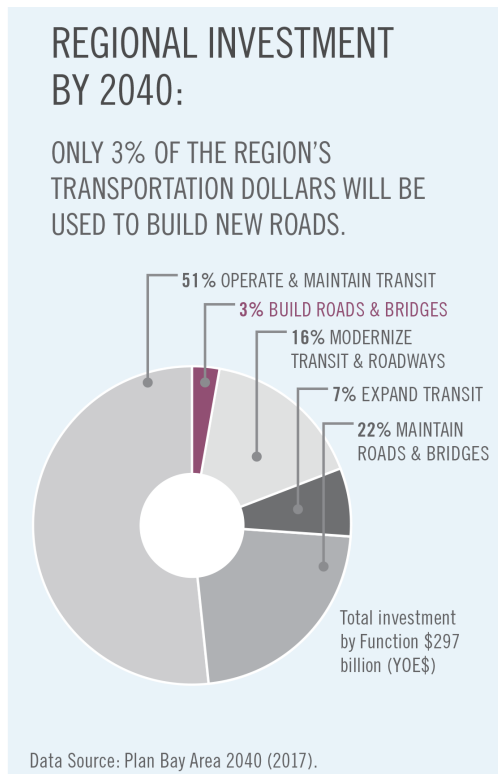
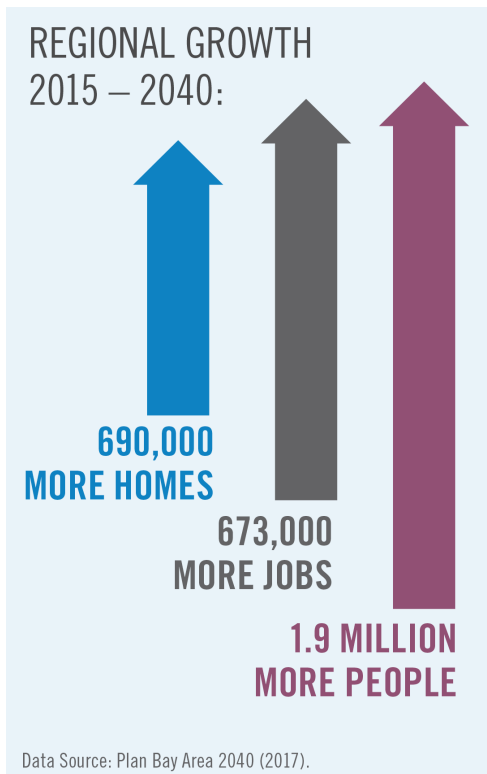
APPENDIX A

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.



2. How Express Lanes Work

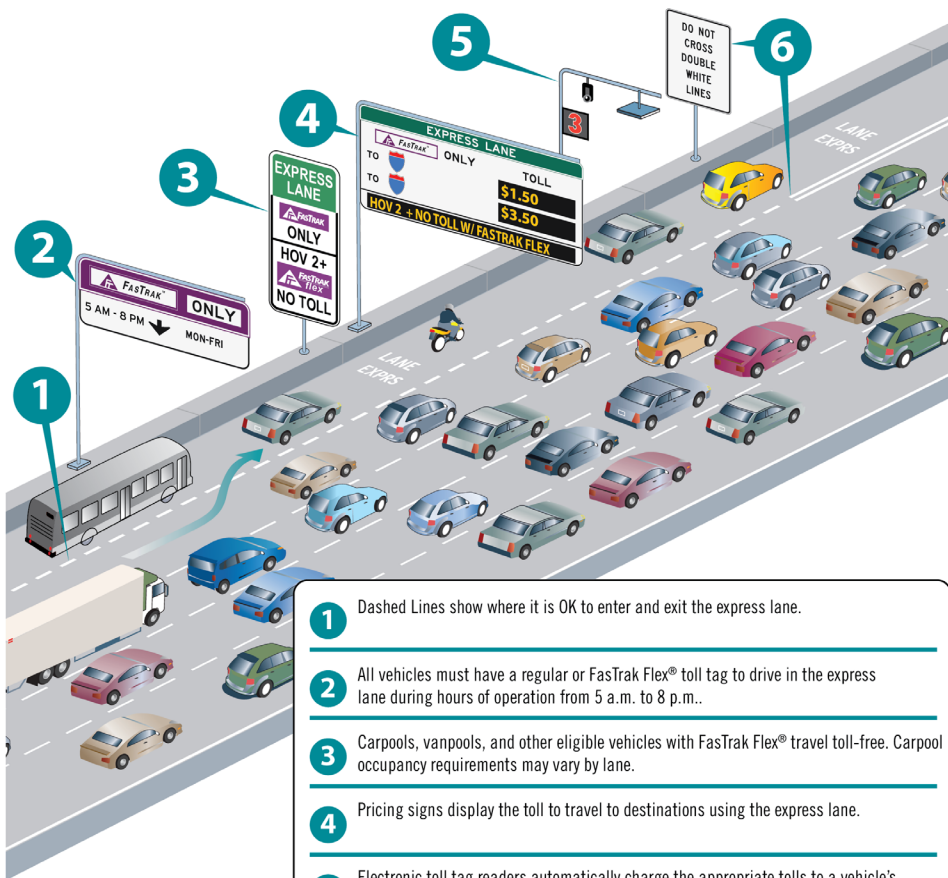
MTC Express Lanes are free to carpoolers, vanpoolers, motorcycles, eligible clean air vehicles and transit buses.

Solo drivers can choose to pay tolls to use the lanes.

Tolls for solo drivers are collected electronically via FasTrak[®], as on Bay Area toll bridges.

Overhead electronic pricing signs display the current toll rates, which increase as traffic congestion increases and decrease as traffic congestion decreases.

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 from 5 a.m. to 8 p.m..
- 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. Numeric beacons show CHP the number of people in the vehicle for occupancy enforcement.
- 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 prone to excessive weaving or other safety concerns may have access restrictions to control entry and exit at these locations. Signage and lane striping will identify these entry and exit locations. Limiting 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

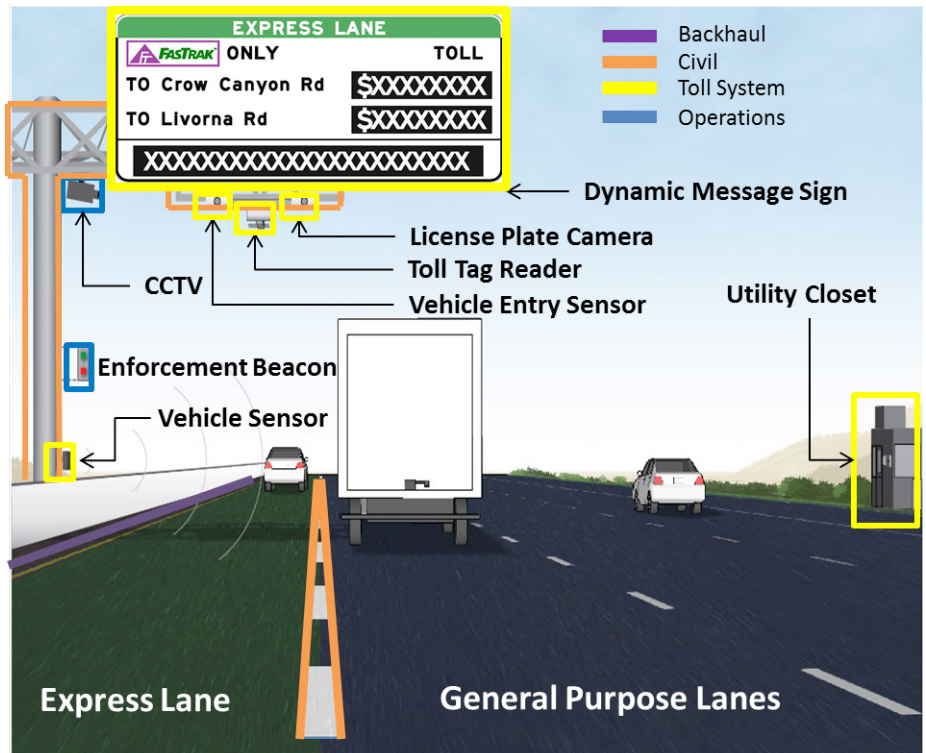
The toll system consists of two components, the in-lane system and the back-end "host" system. The lane system consists of all the equipment on the highway needed to operate the toll system including toll tag readers, cameras and vehicle detection. The host system serves as the brain of the toll system, 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 has been established in the Bay Area Metrocenter building in San Francisco where operators 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.

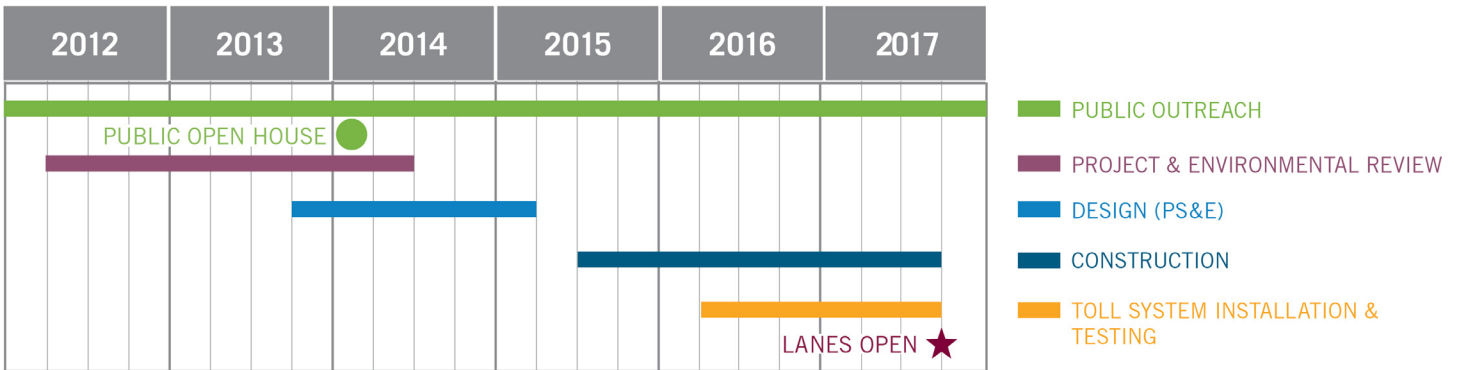


Current Project Activities

- 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.



Project Schedule by Phase



Project Cost

Program Estimate ⁽¹⁾	Cost Forecast ⁽²⁾	Regional Measure 2 Funds (allocated)	BAIFA 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	98%

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) BAIFA Express Lane Funds represent the funds that have been allocated from the BAIFA 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

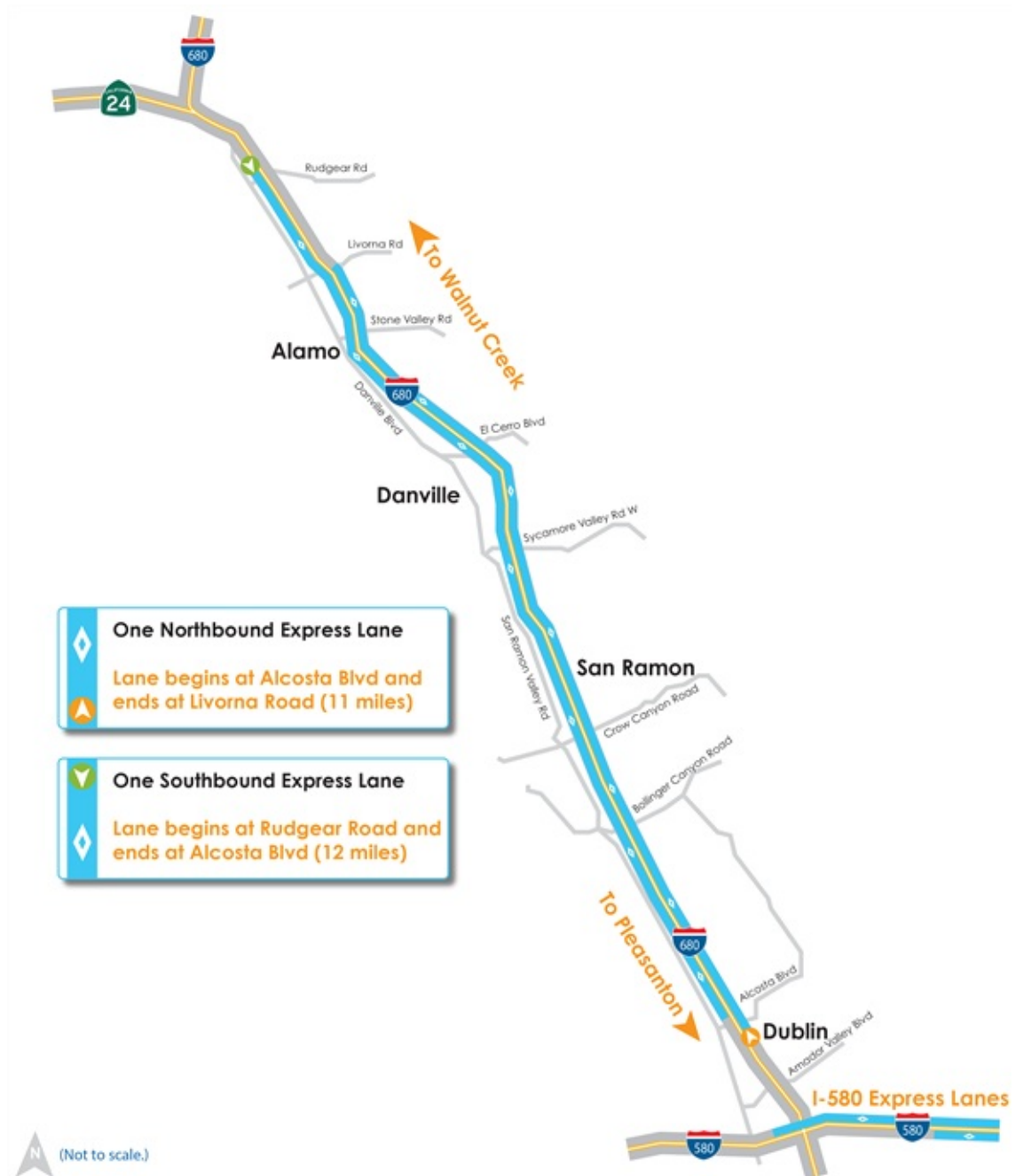
I-680 Contra Costa Express Lanes Operations Report

I-680 Contra Costa Express Lanes Performance 3rd Quarter 2019 - July - September



Rules of the Road

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



Summary of Performance Highlights



- Drivers made 2 million total trips in the express lanes in Q3 2019; similar to the prior quarter (Q2 2019) and the same quarter a year ago (Q3 2018). Average daily express lane trips were 32,600 compared to 32,400 in Q2 2019 and 32,800 in Q3 2018.

- While total trips were similar from prior periods, paid trips in Q3 2019 were 1,103,000, a 5% decline from Q2 2019 which had 1,164,000 paid trips and a 3% decline from Q3 2018, which had 1,135,000 paid trips.

- Peak period express lane speeds were 9 to 13 miles per hour faster than the general purpose lanes. Express lane and general purpose lane speeds were not much different from the prior year.

- While peak hour lane speeds average over 60 mph throughout the corridor, speeds at the most congested locations drop below 45 mph on 55% of the days in the quarter northbound and 48% southbound.

- 41% of trips were by vehicles declared as toll-free. This percentage has been highly consistent in 2019. Toll violators, which are vehicles without FasTrak® accounts, increased slightly in Q3 2019 to 6% of all trips. This could be due to out-of-town summer travelers, although the effect was not observed in Q3 2018.

- Monthly average tolls paid ranged from \$5.20 to \$5.90 in the northbound p.m. peak hour. The monthly average was more volatile in the southbound a.m. peak hour, ranging from \$3.80 to \$5.80. Mid-day (between 10 a.m. and 3 p.m.), the average toll paid was \$1.80 northbound and \$1.00 southbound.



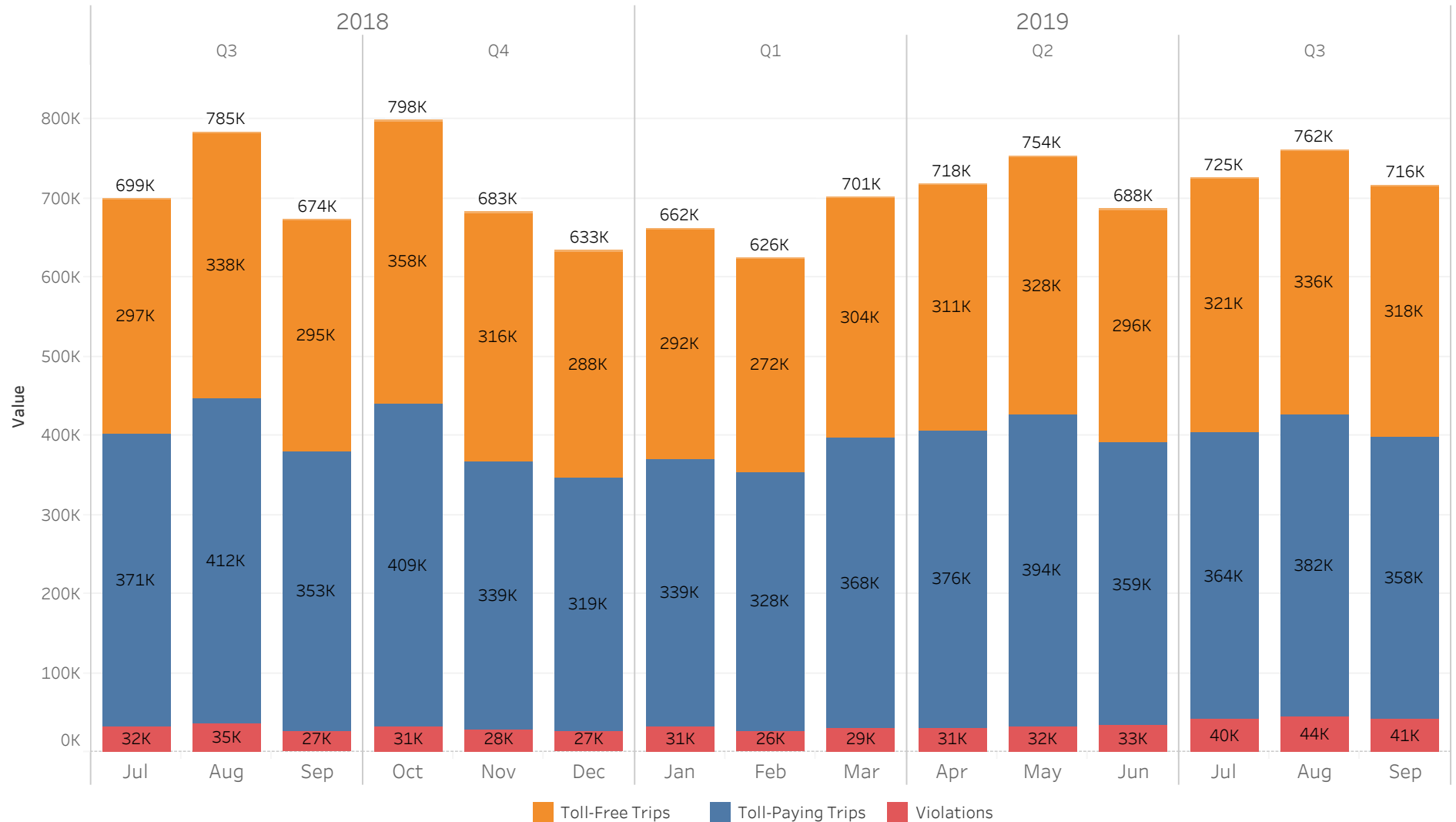
- The highest posted toll to travel the entire corridor during the quarter was \$8.50, the same as last quarter. It was reached in the a.m. and p.m. peak periods in both directions and was paid by just 4% of tolled drivers.

- Average tolls paid in Q3 2019 were similar to Q3 2018 in the both directions. The greatest change was a \$0.70 drop in the northbound p.m. peak hour.

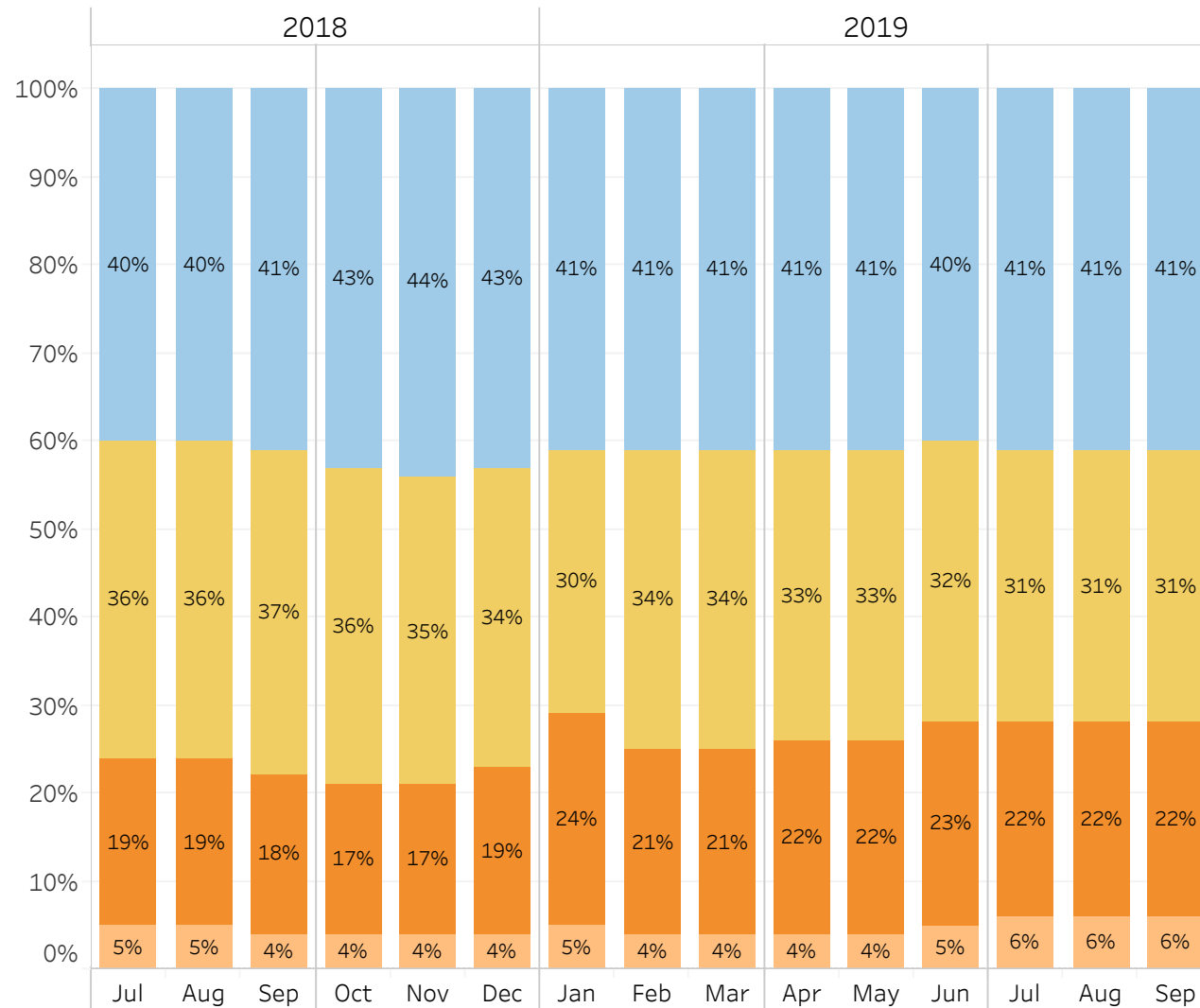
- CHP filled 89% of requested enforcement hours and made about 1,600 enforcement contacts in Q3 2019, down from 91% of requested hours and 1,800 enforcement contacts in Q3 2018.

Express Lane Trips

Over 16.6 million express lane trips have been taken since the I-680 Contra Costa express lanes opened in October 2017. In Q3 2019, 2 million trips were taken, about the same as in Q3 2018. Toll paying trips fell 3% and toll-free trips rose 2% from the same quarter last year. Average daily trips (ADT) for the quarter was 32,600 compared to 36,800 in Q2 2018. ADT since opening is 32,600.



Express Lane Trip Types



- The share of toll-free trips taken in carpools, clean air vehicles, etc. has held steady at 41% since January 2019. This is a very slight increase from Q3 2018.

- In the last 15 months, the share of tolled trips ranged from 52% to 56% of all trips, and was 54% in Q3 2019.

- The share of vehicles without a FasTrak® toll tag or account (toll violators) increased in Q3 2019 to 6%. This is likely due to out of region visitors in summer months.

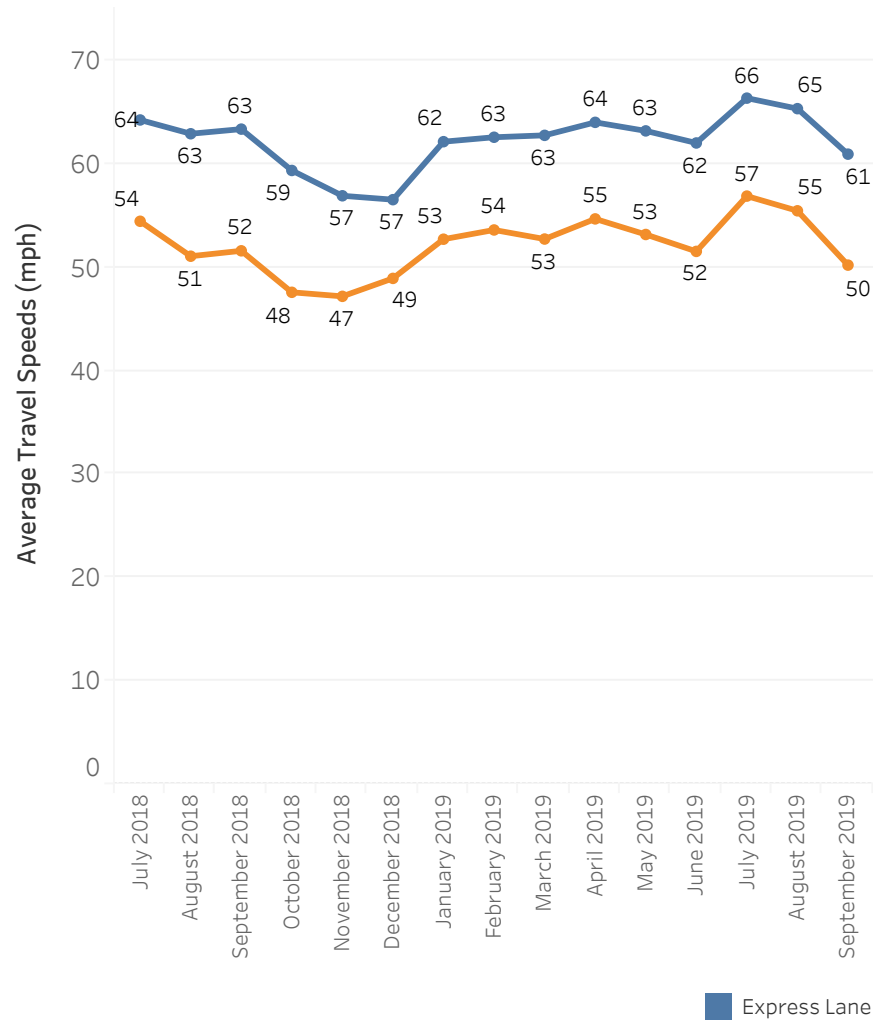
- High-Occupant Vehicle (HOV2+)
- Single-Occupant Vehicle (SOV)
- No Toll Tag (matched to FasTrak® account)
- No Toll Tag (no FasTrak® account)

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

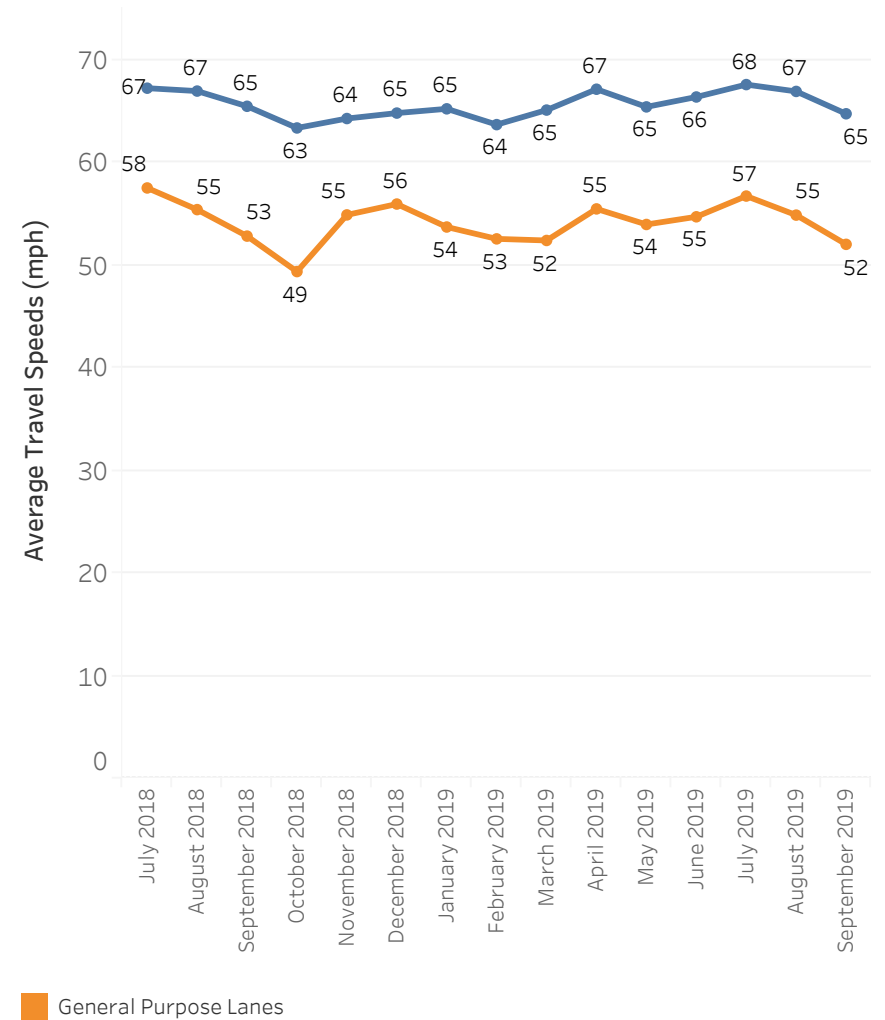
Peak Hour Average Corridor Traffic Speeds

Average corridor speeds in the northbound and southbound express lanes ranged from 9 to 13 miles per hour faster than speeds in the general purpose lanes. The northbound express lane and general purpose lane corridor speed averages were slightly higher from a year ago (Q3 2018) in July and August, but slightly lower in September. Southbound, speeds were similar from a year ago.

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

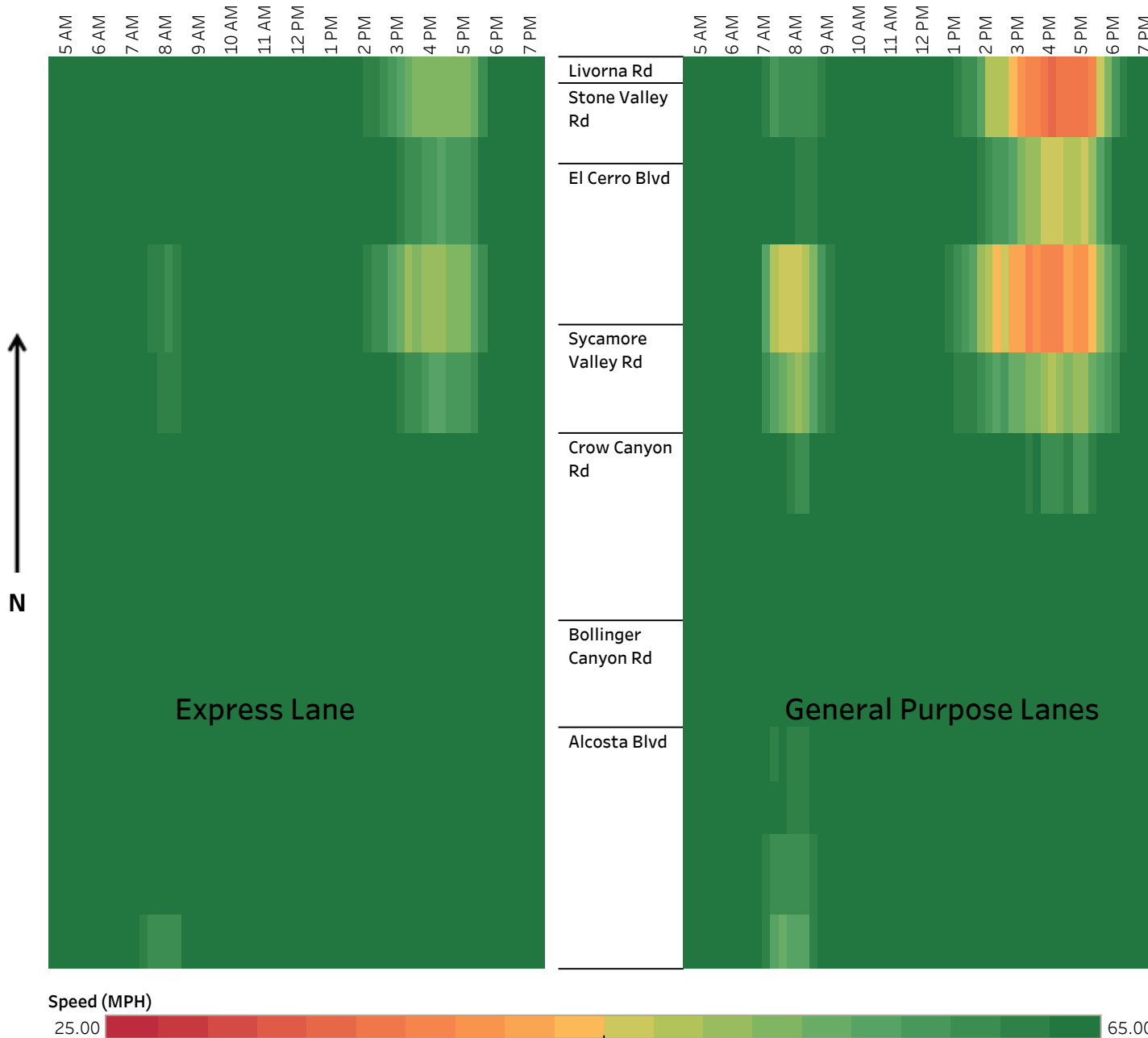


Southbound A.M. Peak Hour (8 - 9am)



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 Speeds by Location & Time

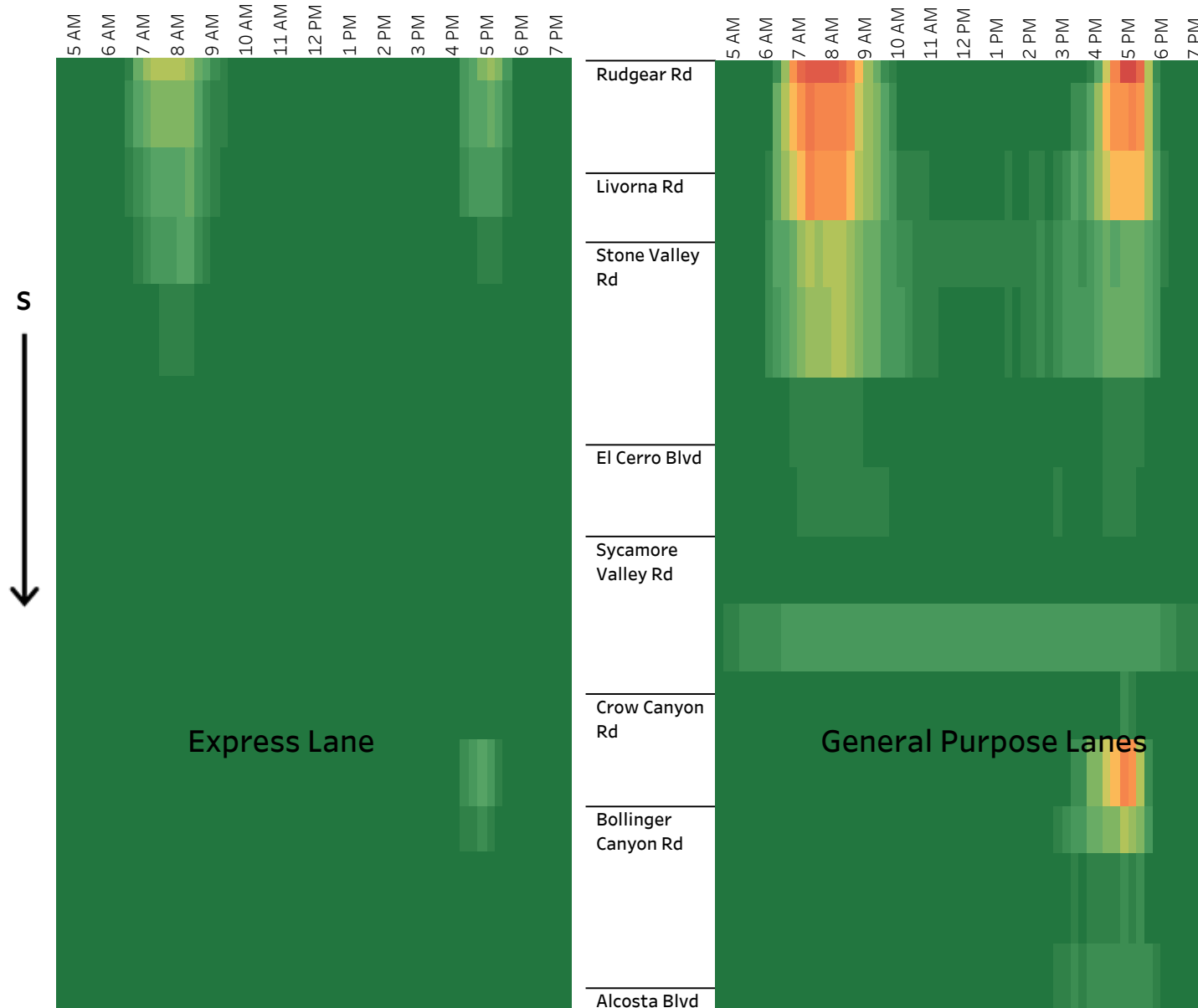


Congestion originating north of the express lane regularly caused slowdowns in the general purpose lanes in the p.m. peak.

In peak hour congestion, express lane users traveled 9 to 11 mph faster than general purpose lane users in Q3 2019.

Traffic flowed well in all lanes between 9 a.m. and 2 p.m.

Southbound Speeds by Location & Time

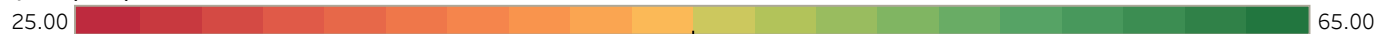


Slowdowns occurred in the general purpose lanes between Rudgear Rd. and El Cerro Blvd. in the a.m. and p.m. peak periods and between Crow Canyon Rd. and Bollinger Canyon Rd. in the p.m. peak.

In Q3 2019, express lane users traveled faster during these slowdowns than general purpose lane users by an average of 11 to 13 mph.

Traffic flowed well in all lanes between 10 a.m. and 4 p.m.

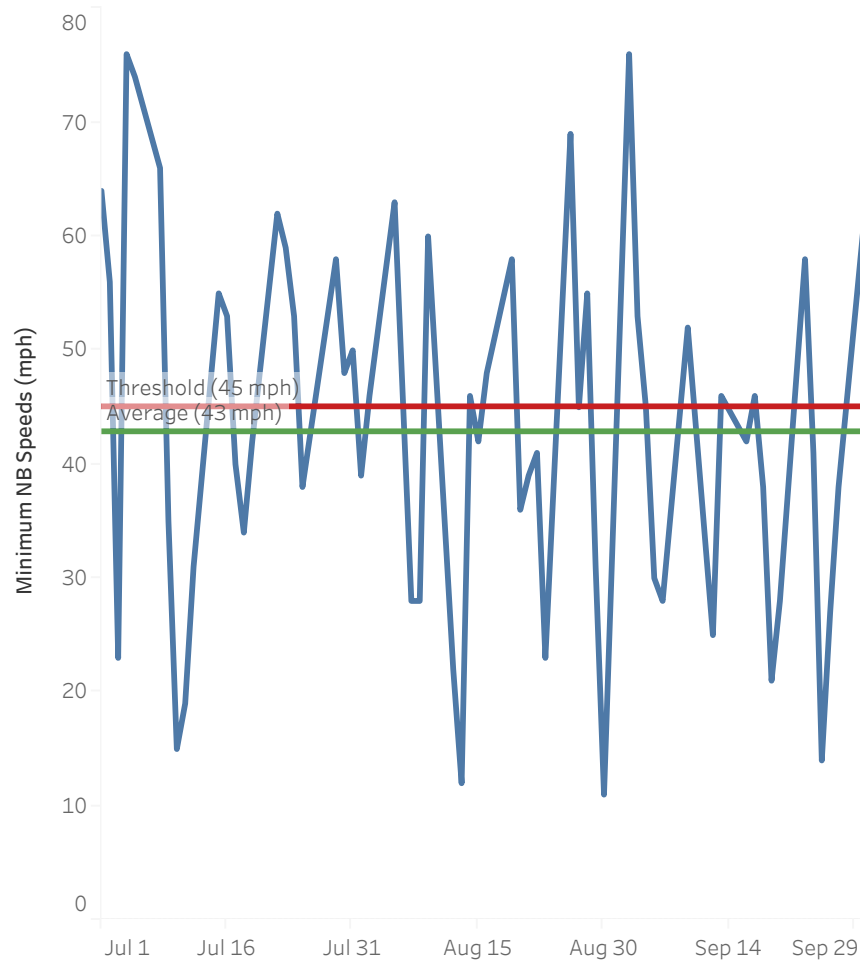
Speed (MPH)



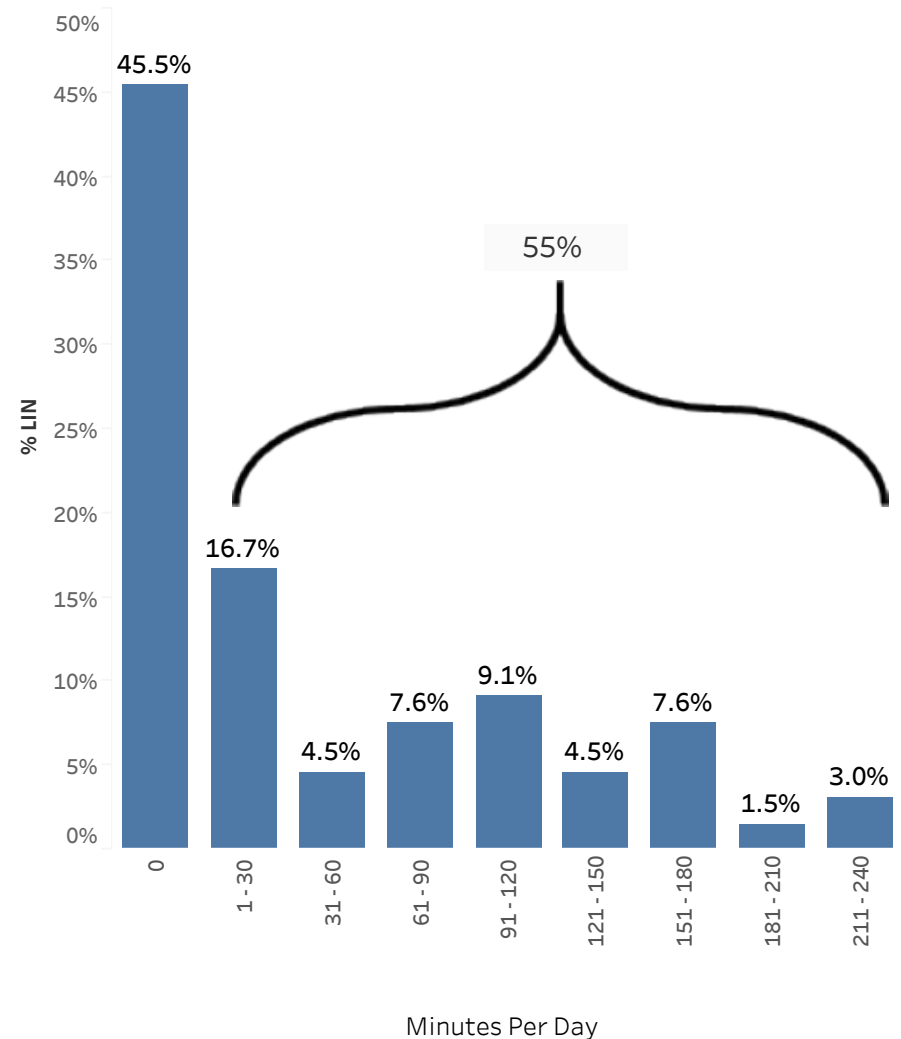
Lowest NB Exp Lane Speed - near El Cerro

While corridor-wide express lane speeds average over 60 mph, speeds often drop below 45 mph northbound between Sycamore Valley Rd. and El Cerro Blvd. The lowest speed at this location averaged 43 mph in the quarter. At this location, speeds fell below 45 mph on 55% of days in the quarter; on 21% of the days the speed decline lasted 1 to 60 minutes and on 17% of the days the speed decline lasted 61 to 120 minutes. 17% of the days experienced the slow speeds for more than 2 hours.

Lowest Daily NB Speeds between Sycamore Valley Rd. and El Cerro Blvd. (mph)



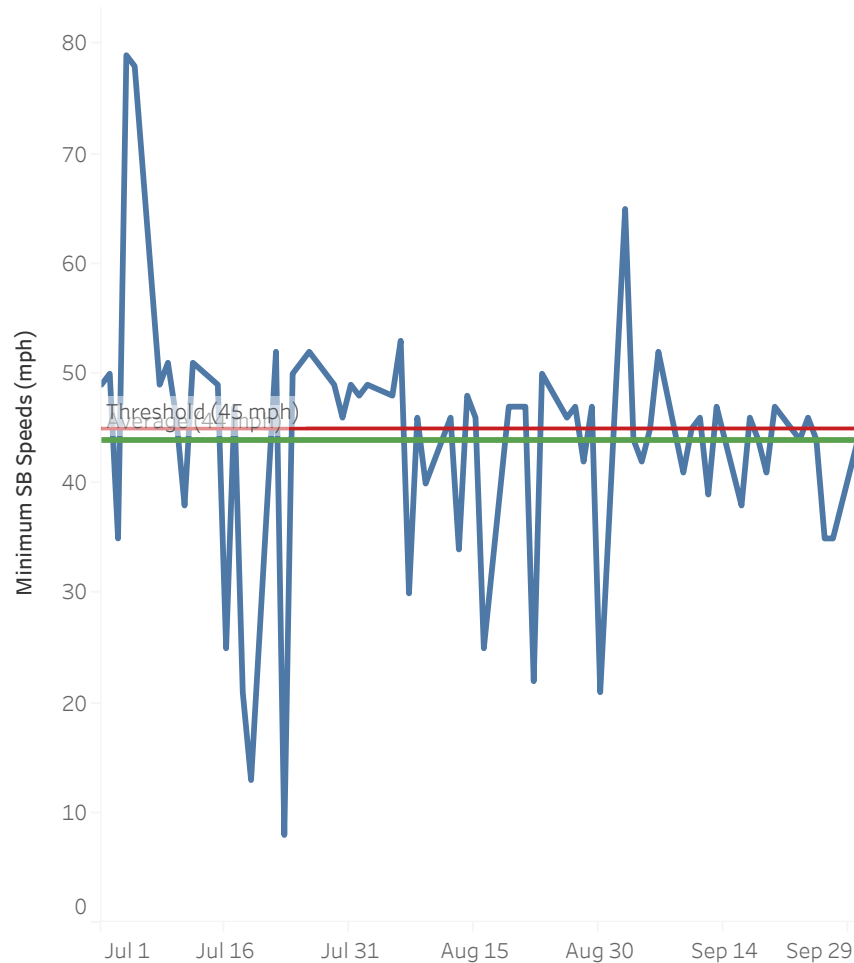
% of days with speeds under 45 mph by duration (minutes per day) between Sycamore Valley Rd. and El Cerro Blvd. NB



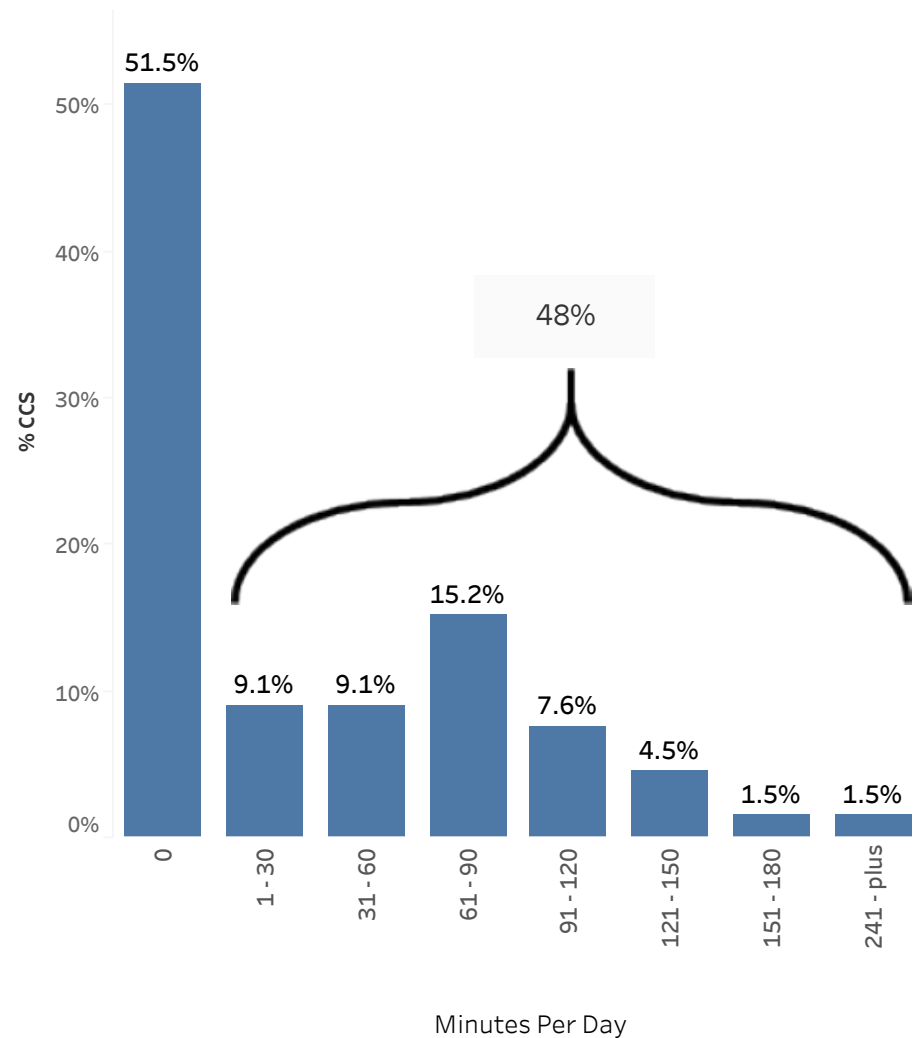
Lowest SB Exp Lane Speed - near Livorna

While corridor-wide express lane speeds average over 60 mph, speeds sometimes drop below 45 mph southbound between Rudgear Rd. and Livorna Rd. The lowest daily speeds observed at this location averaged 44 mph and fell below 45 mph on 48% of the days in the quarter. Speeds fell below 45 mph for 1 to 60 minutes on 18% of the days and for 61 - 120 minutes on 23% of the days. 7% of the days experienced the slow speeds for more than two hours.

Lowest Daily SB Speeds between Rudgear Rd. and Livorna Rd. (mph)

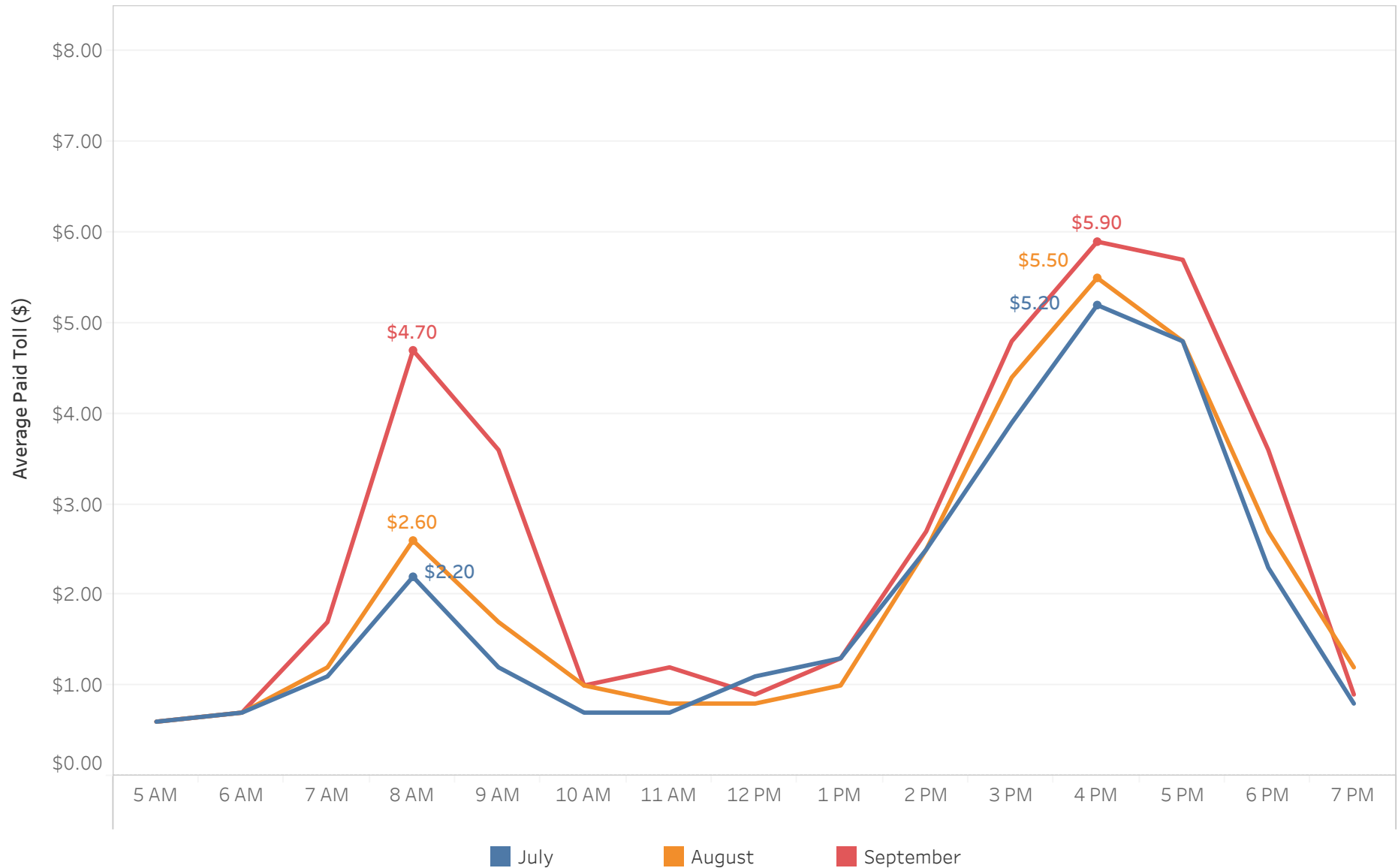


% of days with speeds under 45 mph by duration (minutes per day) between Rudgear Rd. and Livorna Rd. SB



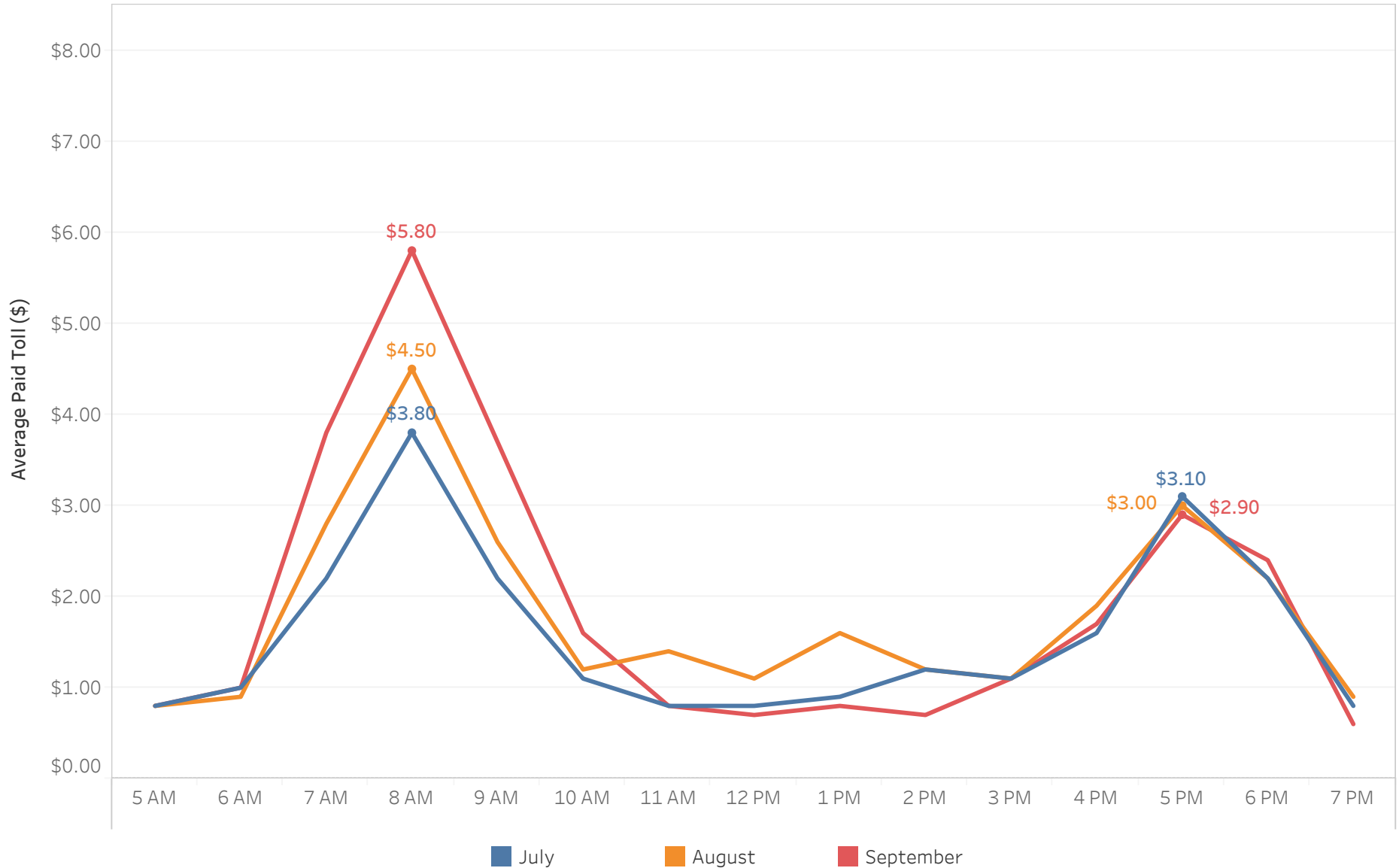
Northbound Tolls

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. Mid-day, when northbound traffic flowed well between 9 a.m. and 2 p.m., the average northbound toll paid was \$1.40.



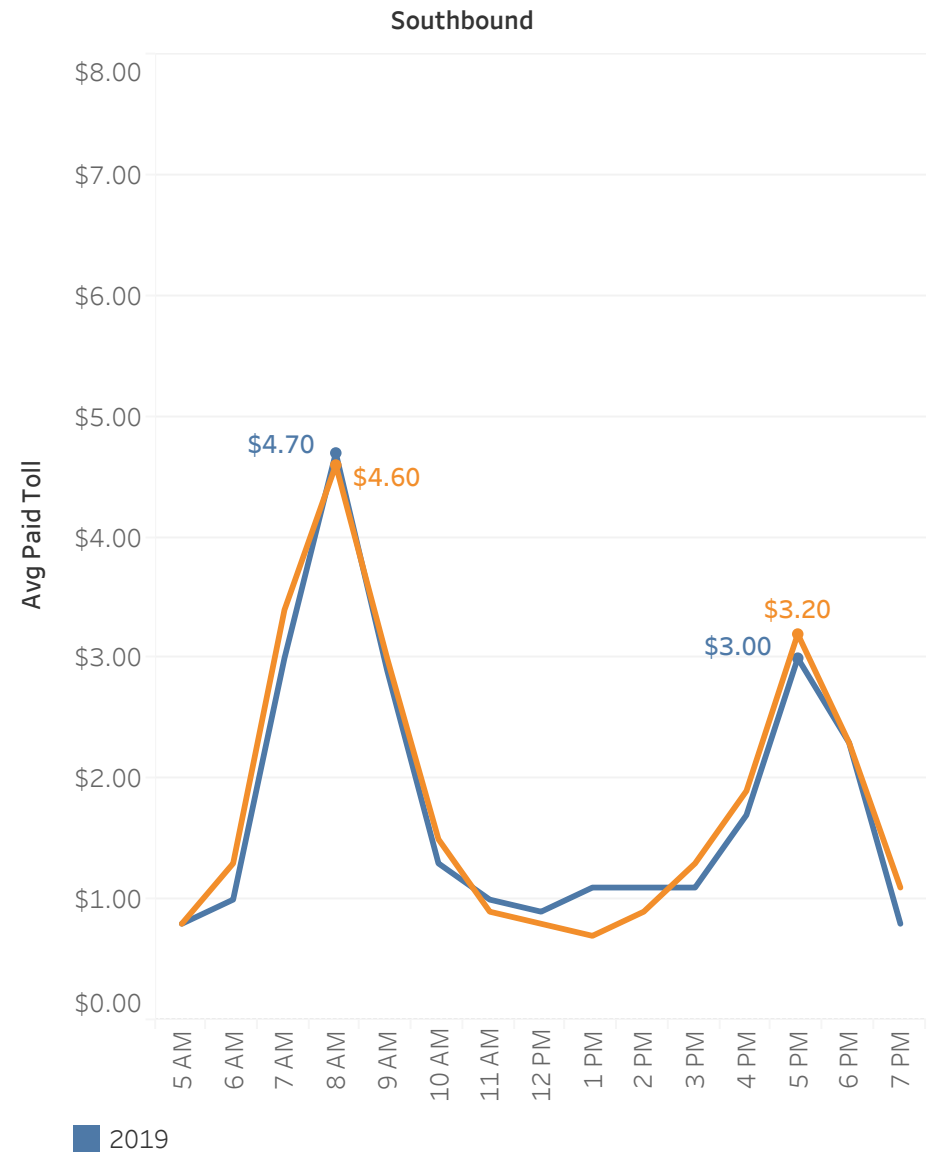
Southbound Tolls

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 \$8.50. Mid-day, when southbound traffic flowed well between 10 a.m. and 4 p.m., the average southbound toll paid was \$1.20.

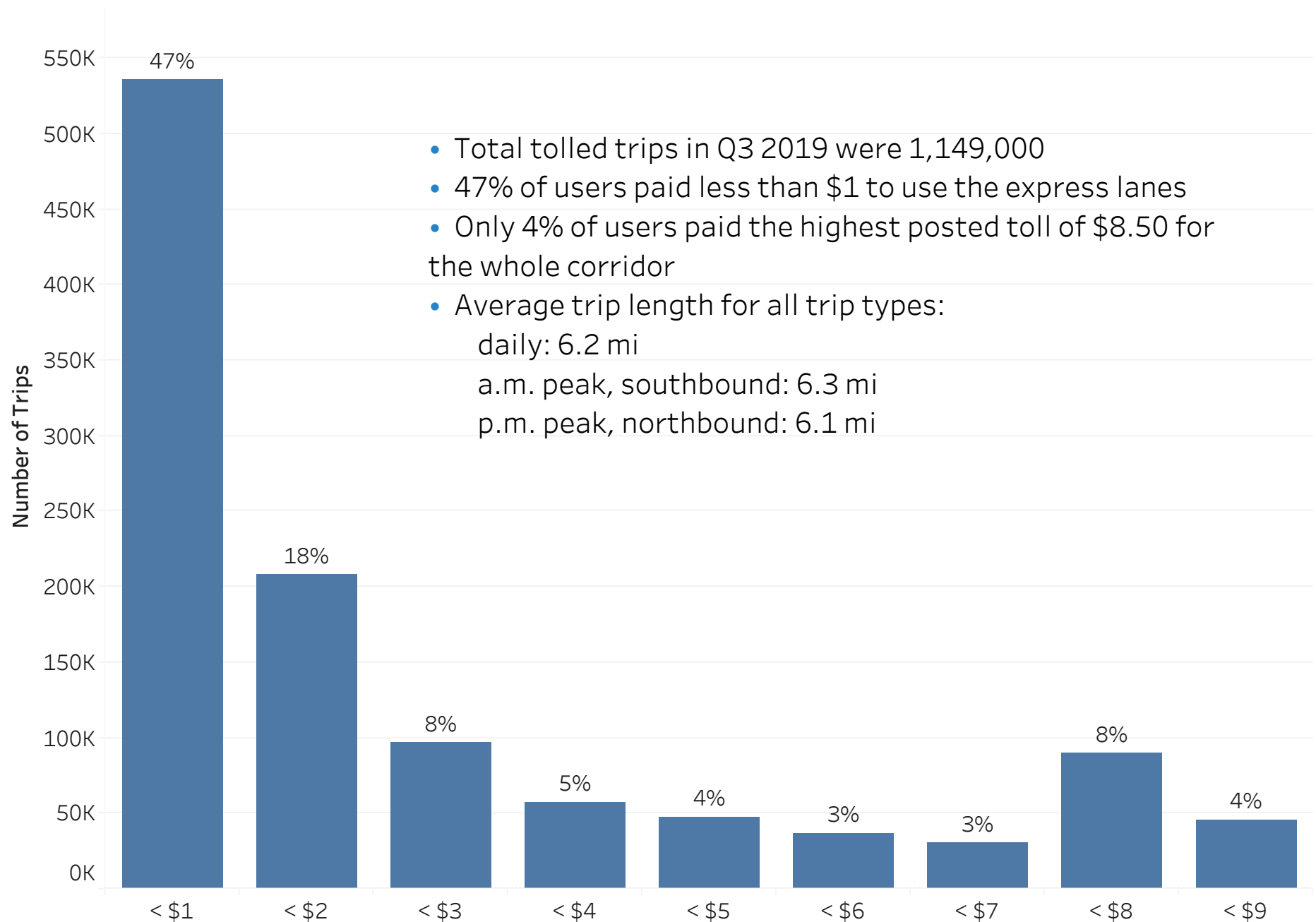


Average Tolls Paid

Average tolls paid were similar between Q3 2018 and Q3 2019. In the northbound lanes, the p.m. peak average toll paid fell \$0.70.



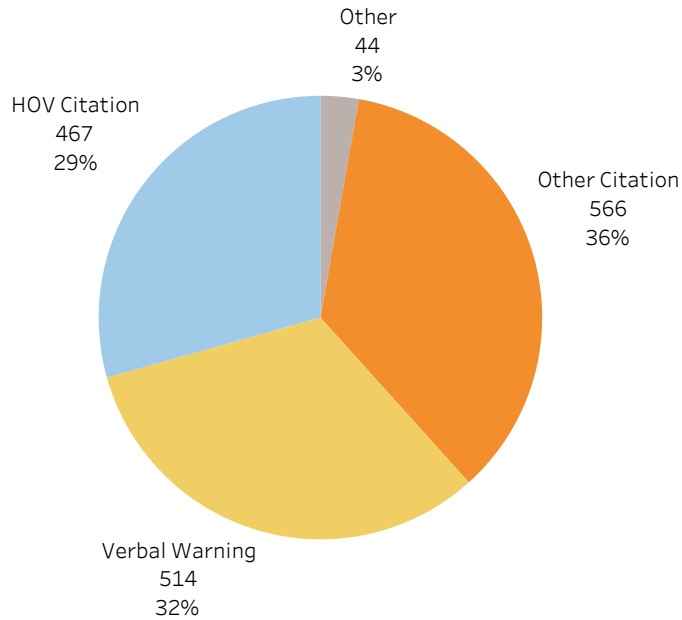
Toll Distribution



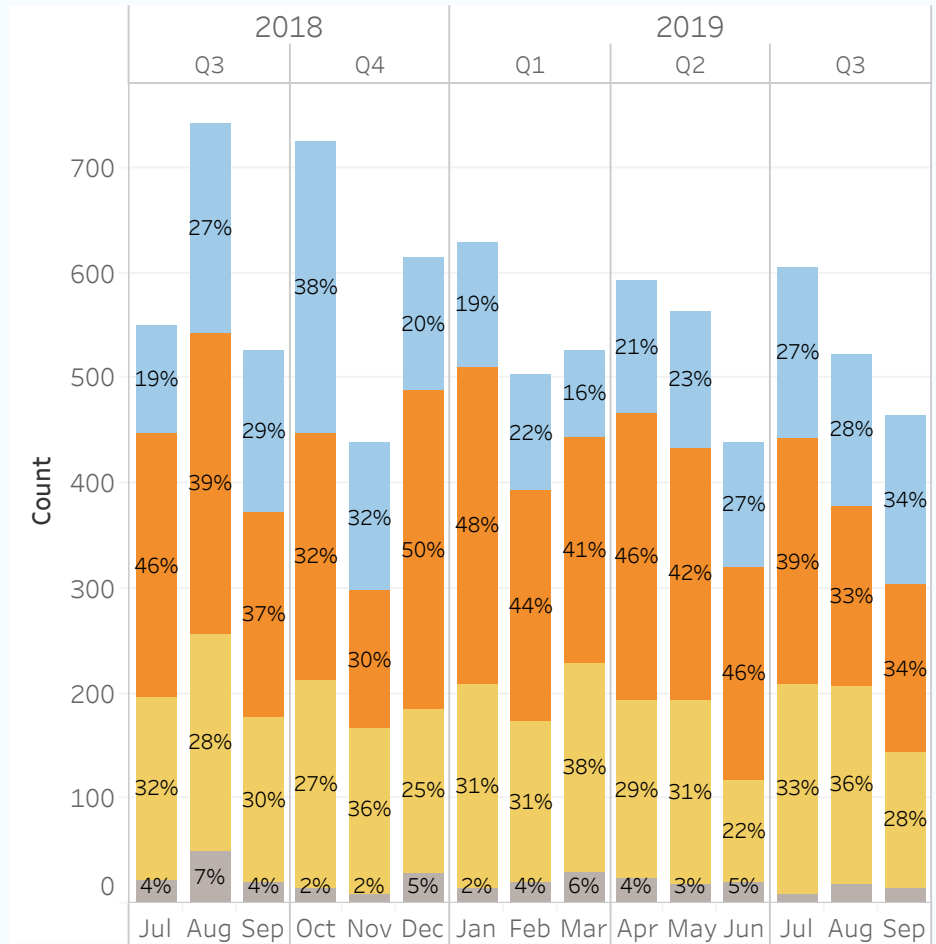
CHP Enforcement

CHP made about 1,600 enforcement contacts in Q3 2019, 29% of which resulted in citations for HOV occupancy violations. CHP filled 89% of requested enforcement hours, down slightly from 91% of requested hours and 1,800 enforcement contacts in Q2 2018.

Total Enforcement Contacts
(July - September 2019)



Total Enforcement Contacts



■ HOV Citation
 ■ Other Citation
 ■ Verbal Warning
 ■ Other

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

