Metropolitan Transportation Commission
Operations Committee

May 8, 2020 **Agenda Item 5a**

Contract Actions – Vehicle Occupancy Verification Pilots

Subject: i. Contract – Phase 1 Smartphone App-based Technology: RideFlag Technologies, Inc. ($313,500)
ii. Contract – Phase 2 Roadside Camera-based Technology: Conduent State & Local Solutions, Inc. ($1,294,800)

Background: MTC's goal is to improve high occupancy vehicle (HOV) lane performance to increase person-throughput on congested bridges and freeways and boost the attractiveness of carpooling and express buses as alternatives to driving alone. A significant number of Bay Area HOV lanes have been consistently degraded, failing to meet federally-required speed standards of 45 mph in recent years, due in part to the use by vehicles not meeting the minimum occupancy requirements. Occupancy enforcement is currently done in person by the California Highway Patrol (CHP). The Operations Committee has acknowledged the challenges CHP faces in performing occupancy enforcement and has directed staff to explore automated options to better enforce vehicle occupancy requirements. Staff is focusing its efforts on bridges and express lanes, since these tolled facilities have license plate cameras and back-office systems in place to identify drivers who are not meeting the occupancy requirements.

While the current shelter-at-home orders have essentially eliminated all traffic congestion on Bay Area bridges and freeways (hence, few carpool violators), traffic levels are expected to gradually increase as the economy recovers. Congestion may even return sooner than expected as people who previously commuted by transit may feel more comfortable driving alone or carpooling instead – at least until they feel safe to return to transit.

To prepare for the inevitable return of congestion and carpool violations, staff is requesting this Committee to award contracts to two vendors to pilot their vehicle occupancy verification technologies. The rest of this memo describes the planned pilots, procurement processes and staff recommendations.

i. Phase 1 Smartphone App-Based Technology

Currently, express lane customers are required to use a switchable toll tag to declare vehicle occupancy, which then determines whether they pay a toll or travel toll-free. This approach relies on them to be truthful when setting their toll tag, and on CHP to catch violators supported by toll system tools.

At the April 2019 Operations Committee meeting, staff reported on plans to move forward with a 3-month pilot to use a smartphone app to verify vehicle occupancy. Pilot participants (volunteers) will be recruited to use an app (or follow the vendor's alternative approach for those without smartphones) and provide feedback. Staff is prepared to adjust the testing timeline and participation requirements based on public health protocols and guidance. Pilot objectives are to assess the functionality and accuracy of the technology, gauge user acceptance and ease of use, assess privacy concerns, inform full deployment costs, and assess future customization opportunities. In January 2020, this Committee approved a consultant contract to perform outreach and evaluation services for the pilot. Now, staff is requesting approval of a contract with a smartphone app vendor.

On November 25, 2019, MTC issued a Request for Proposal (RFP) for a smartphone app vendor to pilot its technology. On January 7, 2020, MTC received proposals from four app vendors: Carma Technology Corporation (Carma), GeoToll, Inc., Rideflag, and XXVI Holdings, Inc. (dba Google LLC (Waze)). MTC determined the Waze proposal was non-responsive, as the firm did not meet the minimum qualifications to be eligible for consideration. A panel comprised of staff from MTC and the California Highway Patrol evaluated the three remaining proposals and invited Carma and Rideflag to participate in discussions on January 30. A Request for Best and Final Offer (BAFO) was issued to Carma and RideFlag. Based on its evaluation of the proposals, in-person and written discussions, and the BAFO, the panel ranked RideFlag the highest.

RideFlag's proposal was determined by the panel to be most advantageous to MTC for its potential to minimize barriers to carpooling, control the ability for someone to deceive the app, and protect personal privacy. Each of these objectives has been prioritized in RideFlag's app design.

- RideFlag's solution is entirely app-based, allowing people without a smartphone to participate in a carpool without obtaining external devices in advance.
- RideFlag's app uses advanced facial image technology to allow a person without a smartphone to participate in a carpool, but can be configured to protect privacy by: automatically deleting captured images after a carpool trip is completed; only tracking smartphone movement within the express lane (optional); and allowing MTC to determine how to use all data.
- RideFlag's app can verify whether the carpool trip meets occupancy requirements by performing random end-of-trip validations, the frequency of which can be configured by MTC. As a result, there can be near certainty about who is violating.

If the pilot is deemed successful by MTC, and subject to Committee approval and future negotiations, staff may recommend a Phase 2 pilot to include integration with MTC's express lanes toll system or the FasTrak® back office system and/or full deployment on express lanes (in coordination with other express lane operators). During the pilots, MTC staff will continue to investigate the policy requirements for fully deploying such a system within the context of state law.

RideFlag is neither a small business nor a disadvantaged business enterprise and has no subcontractors.

ii. Phase 2 Roadside Camera-based Technology

MTC tested three different roadside camera-based systems in Spring 2018 as part of a Phase 1 Pilot (conducted in the northbound I-880 HOV lane near Hayward). The purpose of that Pilot was to verify system accuracy rates and gain a better understanding of the technology and infrastructure requirements.

Based on the direction of this Committee at its November 2018 meeting, MTC is now proceeding with a Phase 2 Pilot, which will procure and deploy a roadside camera-based system in Lane 1 at the San Francisco-Oakland Bay Bridge (SFOBB) toll plaza. Unlike the Phase 1 Pilot, Phase 2 will include integration with the existing toll plaza lane system and existing FasTrak® back office system, such that the camera-based system can assess a vehicle's occupancy during HOV hours and, based on that

occupancy, collect the proper toll amount due for vehicles not meeting the occupancy requirement. The pilot would run for a period of approximately 12 months.

On January 3, 2020, MTC issued an RFP to pre-qualified firms from the 2017 Vehicle Occupancy Detection Services bench to seek a vendor/contractor to deploy its system for the Phase 2 pilot. MTC received two proposals: Conduent State & Local Solutions, Inc. (Conduent) and Indra. A panel comprised of MTC and Caltrans staff evaluated the proposals and invited both vendors to participate in discussions on February 25. Following the discussions, a Request for a BAFO was issued to both firms.

Based on the panel's evaluation of the proposals, the in-person and written discussions, and the BAFO, Conduent's proposal was determined to be most advantageous to MTC for the following reasons:

- Conduent has been operating (or has operated) pilots elsewhere, including a multi-lane deployment in New York (Verrazano-Narrows Bridge) since 2017. MTC's pilot would be similar in scope to that deployment.
- Conduent has over four years of experience conducting manual reviews of vehicle occupancy images, which require additional skills beyond those needed for license plate images.
- Conduent will be providing additional system equipment at no additional cost to MTC to provide redundancies that could improve system accuracy.
- Although not required as part of this vendor's scope of work, Conduent will provide transaction matching services at no additional cost, thus resulting in cost savings to MTC by eliminating the need to pay another contractor for such work. (Vehicle occupancy transactions need to be matched to toll transactions in order to link both systems to the same vehicle/transaction.)

Attachment A includes a summary of Conduent's and its subcontractor's small business enterprise (SBE) and disadvantaged business enterprise (DBE) status.

Although neither project is essential to regulatory, statutory, or legal requirements, both are sequential elements of on-going work that started as early as Spring 2018. Funding for both pilot projects is included in the final adopted FY 2019-20 budget. Subsequent phases of these pilots will be determined based on the outcomes of the initial pilots for which staff is seeking approval. Since pilot timelines are through FY 2020-21, additional funds are not needed until the FY 2021-22 agency budget and beyond. Whenever subsequent pilot phases proceed, MTC will have acquired valuable data from, and experience with, each technology to guide decisions.

Issues: None identified.

Recommendation: i. Staff recommends that the Operations Committee authorize the Executive Director or designee to negotiate and enter into a contract with RideFlag Technologies, Inc. in an amount not to exceed $313,500 to pilot its smartphone app-based technology to verify vehicle occupancy.

ii. Staff recommends that the Operations Committee authorize the Executive Director or designee to negotiate and enter into a contract with Conduent State & Local Solutions, Inc. in an amount not to exceed $1,294,800 to pilot its roadside camera-based technology to verify vehicle occupancy.

Attachments: Attachment A: Conduent State & Local Solutions, Inc. and its Subcontractor's DBE / SBE Status
PowerPoint Presentation: Vehicle Occupancy Verification Pilots

Therese W. McMillan

			DBE* Firm			SBE** Firm		
	Firm Name	Role on Project	Yes	If Yes, List #	No	Yes	If Yes, List #	No
Prime Contractor	Conduent State & Local Solutions, Inc.	Implement, operate and maintain roadside camera-based vehicle occupancy verification system			X			X
Subcontractor	BECI	Maintenance and Electrical	X	33212				X
	Statewide Traffic Safety & Signs	Maintenance of Traffic			X			X
	Structural Consultants LLC	Professional Engineering			X			X

*Denotes certification by the California Unified Certification Program (CUCP).

**Denotes certification by the State of California.

REQUEST FOR COMMITTEE APPROVAL

Summary of Proposed Contract

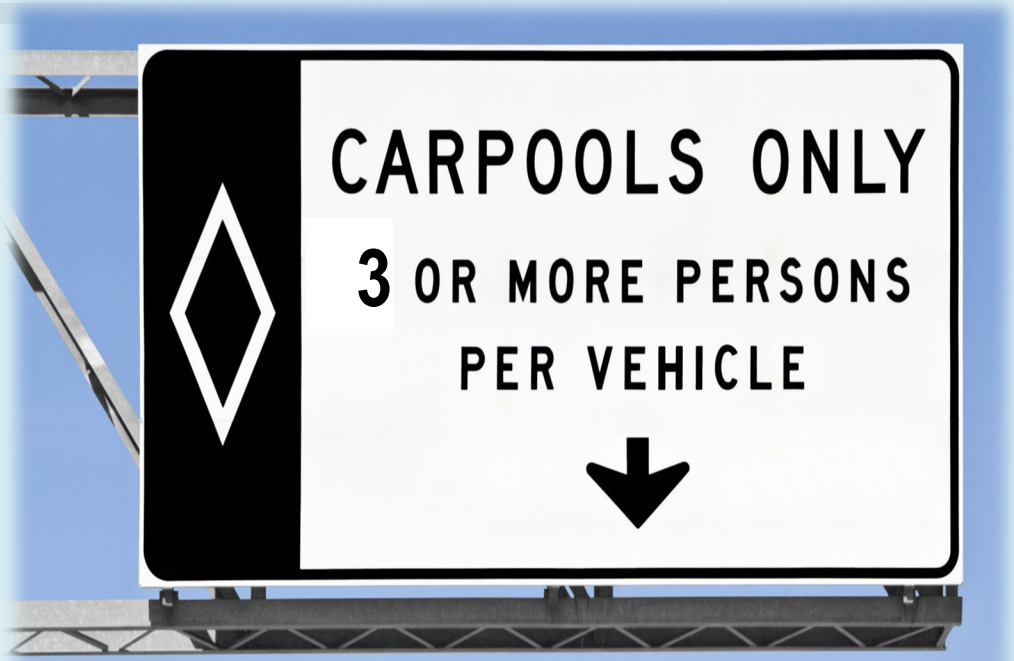
Work Item No.:	6840
Contractor:	RideFlag Technologies, Inc. Mississauga, Ontario, Canada
Work Project Title:	Vehicle Occupancy Verification Pilot – Phase 1 Smartphone App-based Technology
Purpose of Project:	Provide a smartphone app for a three-month pilot of this technology to verify vehicle occupancy.
Brief Scope of Work:	Perform project management; coordinate with MTC's evaluation and outreach consultants; set up and operate the smartphone app for pre-pilot fine-tuning and the full pilot; provide customer support for pilot participants; implement app modifications and customizations, as needed; perform ongoing reporting on pilot progress; and provide data to MTC and its consultants to support pilot evaluation.
Project Cost Not to Exceed:	$313,500
Funding Source:	SAFE and BATA Rehab
Fiscal Impact:	Funding is included in the FY 2019-20 Budget
Motion by Committee:	That the Executive Director or designee is authorized to negotiate and enter into a contract with RideFlag Technologies, Inc. to pilot its smartphone app-based technology to verify vehicle occupancy as described above and in the Operations Committee Summary Sheet dated May 8, 2020 and the Chief Financial Officer is authorized to set aside $313,500 for such contract.
Operations Committee:	_____ Dave Cortese, Chair
Approved:	May 8, 2020

REQUEST FOR COMMITTEE APPROVAL

Summary of Proposed Contract

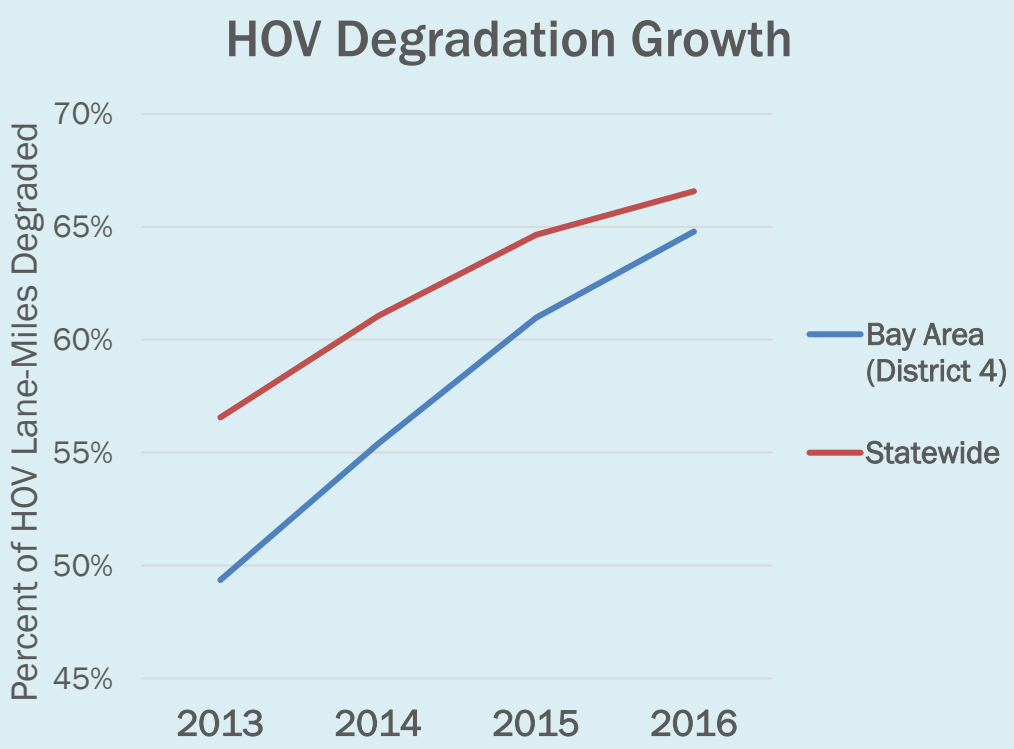
Work Item No.:	6840
Contractor:	Conduent State & Local Solutions, Inc. Germantown, Maryland
Work Project Title:	Vehicle Occupancy Verification Pilot – Phase 2 Roadside Camera-based Technology
Purpose of Project:	Implement and integrate a roadside camera-based system with the existing toll system and FasTrak® back office system for a pilot period of 12 months at the San Francisco-Oakland Bay Bridge to verify vehicle occupancy and collect proper tolls based on the occupancy
Brief Scope of Work:	Develop project documentation; meet physical, functional, operational, and testing requirements; provide transaction matching and occupancy image review services; and perform operations and maintenance services for duration of pilot
Project Cost Not to Exceed:	$1,294,800
Funding Source:	BATA Rehab
Fiscal Impact:	Funding is included in the FY 2019-20 Budget
Motion by Committee:	That the Executive Director or designee is authorized to negotiate and enter into a contract with Conduent State & Local Solutions, Inc. to pilot its roadside camera-based technology to verify vehicle occupancy as described above and in the Operations Committee Summary Sheet dated May 8, 2020 and the Chief Financial Officer is authorized to set aside $1,294,800 for such contract.
Operations Committee:	_____ Dave Cortese, Chair
Approved:	May 8, 2020

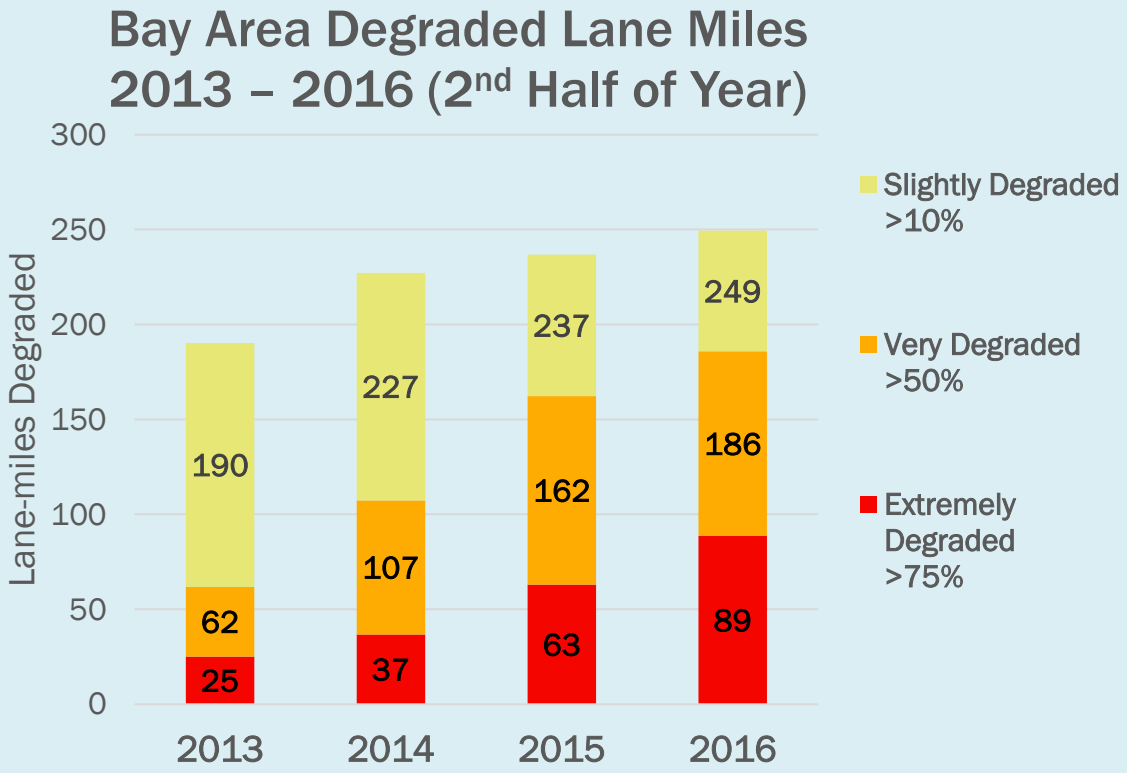
Vehicle Occupancy Verification Pilots



MTC Operations Committee
May 8, 2020

Bay Area HOV Degradation in Recent Years





Federal Standard: maintain an average speed of 45 mph at least 90 percent of the time during the peak hour over a consecutive 180-day period.

2016 v 2013:

- Total degraded miles increased by 49 miles (+31%)
- "Very" degraded miles increased by 124 miles (+200%)

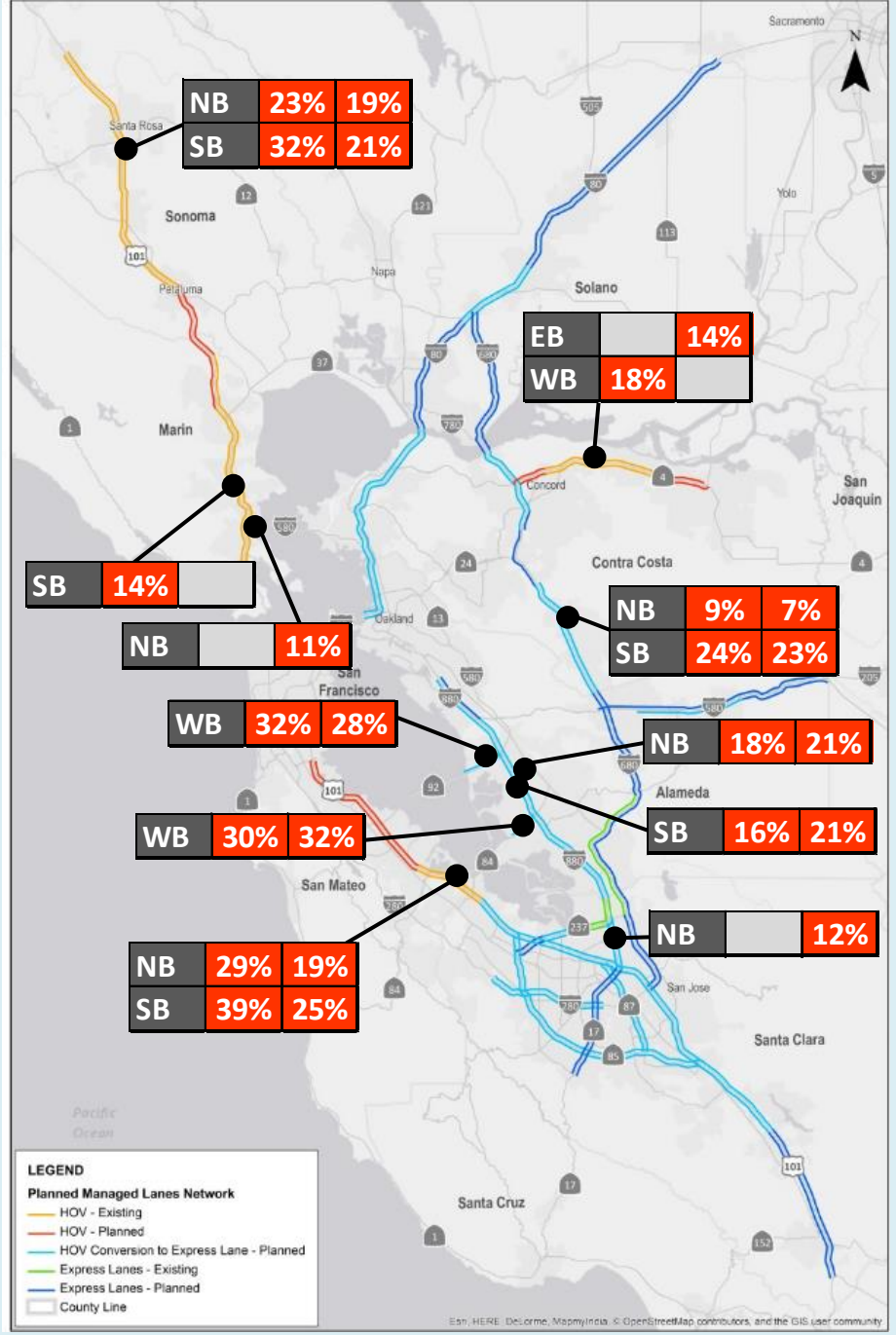
How to Address Degradation:
Enforce Violations

HOV Lane Violation Rates

- AM peak period average: 24%
  (range: 9% to 39%)

- PM peak period average: 19%
  (range: 7% to 32%)

Legend	AM 6-9 AM	PM 3-7 PM
NB	23%	19%
SB	32%	21%



Source: MTC (2015)

How to Enforce Violations:

Vehicle Occupancy Verification Technology

Smartphone App-based System

Roadside Camera-based System

Smartphone App-based System – Phase 1 Pilot

Purpose:

- Assess functionality and accuracy
- Gauge user experience
- Explore privacy issues
- Inform deployment costs

Overview:

- I-680 Contra Costa express lanes corridor
- 500+ volunteer participants
- Verify vehicle occupancy
- No toll system or FasTrak® integration
- Operate for 3 months
- Collect data by survey & focus groups

Roadside Camera-based System – Phase 2 Pilot

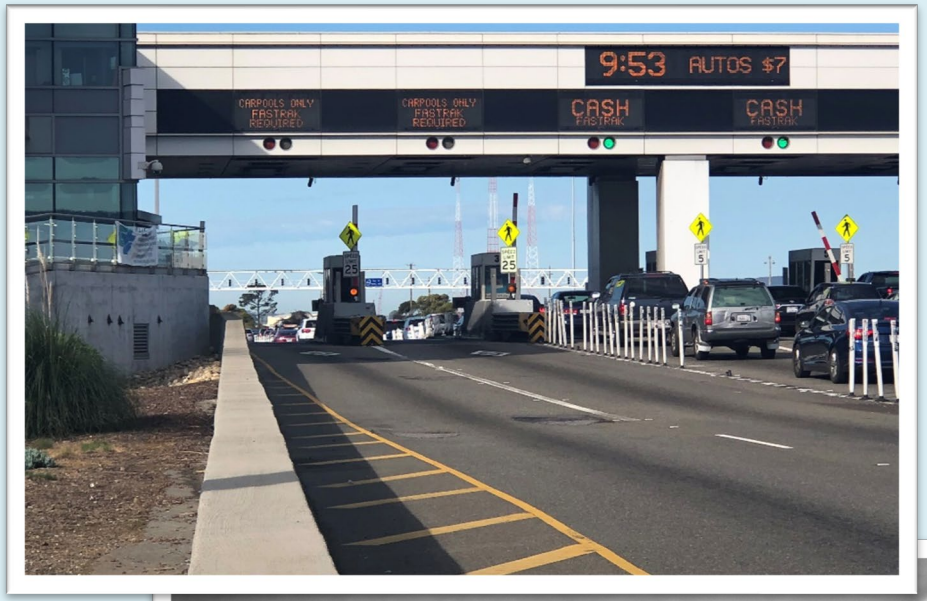
Purpose:

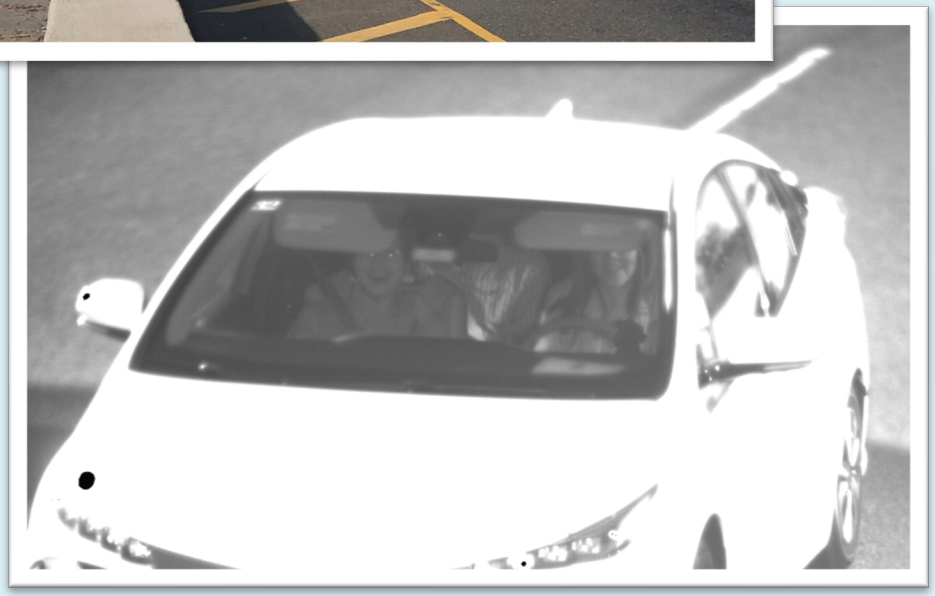
- Use technology to assess vehicle occupancy to determine compliance with HOV lane requirements

Overview:

- Phase 1 Pilot:
  - ✓ Completed in Spring 2018 on I-880 in Hayward

- Phase 2 Pilot
  - ✓ SFOBB Toll Plaza (HOV Lane 1)
  - ✓ Integrate with existing systems (toll plaza and FasTrak® back office)
  - ✓ Detect vehicle occupancy during HOV hours
  - ✓ Issue toll violation notices to violators
  - ✓ Operate pilot for approximately 12 months





Preliminary Pilot Schedules

		Year 2020			Year 2021				Year 2022			
		Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
	Phase 1 Pilot: Smartphone App-based Technology Project											
1	Operations Committee approval for provisional contract	★										
2	Design and development											
3	Pre-pilot (internal MTC soft launch)											
4	Recruitment/outreach											
5	Pilot deployment and operations											
6	Evaluation											
	Phase 2 Pilot: Roadside Camera-based Technology Project											
1	Operations Committee approval for provisional contract	★										
2	Design and development											
3	Construction											
4	Implementation, fine tuning, testing											
5	Operations and Maintenance											
6	Evaluation											

Contract Approval Requests

Smartphone App-based System:

Contract: RideFlag Technologies, Inc. ($313,500)

- Services to include:
  - ✓ Set-up & Implementation
  - ✓ Internal Pre-Pilot & Refinements
  - ✓ Operations & Reporting (3 months)
  - ✓ Customer Support
  - ✓ Evaluation Review

Roadside Camera-based System:

Contract: Conduent State & Local Solutions, Inc. ($1,294,800)

- Services to include:
  - ✓ System Design & Permitting
  - ✓ Equipment Installation
  - ✓ Implementation, Fine-tuning, & Testing
  - ✓ Transaction Matching & Image Reviews
  - ✓ Operations & Maintenance (12 months)