CENTRAL TEXAS REGIONAL
MOBILITY AUTHORITY

February 26, 2020
AGENDA ITEM #14
Roadway Technology Plan

Strategic Plan Relevance:	Deliver Multi-Faceted Mobility Solutions; Explore and Invest in Transformative Technology and Adopt Industry Best Practices; Employ a Collaborative Approach to Implementing Mobility Solutions; Invest in Efforts that Extend Beyond Roadways
Department:	Administration / Operations / Innovation
Contact:	Jeff Dailey, Deputy Executive Director
Associated Costs:	$2,950,000
Funding Source:	FY2020 Operating Budget / Capital Budget MoPac General Fund
Action Requested:	Briefing and Board Discussion

Summary: This item will provide an overview of a plan to deploy next generation technologies on the MoPac Express Lane, 290 Toll, and 45SW Toll which will enable future testing and development of capabilities that will improve incident detection, response times and communications with the traveling public and first responders. The plan is part of an overall larger initiative to modernize the Mobility Authority's toll and roadway technology systems, and to thoughtfully expand the use of technology to maximize road capacity.

Current Action: To develop the Roadway Technology Plan, the Operations Department and the Innovation Team identified and evaluated emerging technologies and used focus groups to determine the type of systems that would be the most beneficial to deploy. The MoPac Express Lane, 290 Toll, and 45SW Toll corridors will not only realize an immediate benefit for current users of our roadways but will also serve as a test bed for the region. The test bed will facilitate collaboration with the private sector on proof of concepts and piloting of new technologies for tolling and roadway communication and capacity enhancement systems.

Roadway Technology Components

The Roadway Technology Plan calls for an initial deployment of key technology on the MoPac Express Lane, 290 Toll, and 45SW Toll corridors. These technologies include:

- *Automated Incident Detection System (AID)* using fixed cameras will be installed on two pilot sections of our roadway, the MoPac Express Lane between RM 2222 and US 183 and the

westbound lanes of 290 Toll. This system will allow the Authority to quickly detect irregularities in roadway conditions such as accidents, stalled/abandoned vehicles, pedestrians, animals or debris. It will also allow the agency to reduce incident detection time by 10-15 minutes. Benefits include reduced traffic congestion due to accidents, life/safety gains quicker response times, as well as being a force multiplier for our Traffic Incident Management System staff by reducing the staffing required to monitor the system and facilitating the ability to monitor our system remotely.

- *Roadside Units (RSUs)* will allow the Authority to receive vehicular data and send traveler information alerts to vehicles. This technology enables the quickly forthcoming "connected vehicles" that can communicate information/data bi-directionally with other vehicles and roadside systems using dedicated short-range communications (DSRC) and other radios within the 5.9 GHz band. These units are relatively low cost when compared to dynamic message sign systems and future-proofed through their high flexibility to communicate with vehicles using a variety of radio/frequency bands. In addition, these units have the potential to be a future toll collection method. The Mobility Authority is committed to exploring this technology and positioning itself to be adaptable to emerging vehicle communication technology.
- *Enhanced Traffic/Information Management Services* that combine a variety of sources of traveler, vehicle and roadway sensor information and then use artificial intelligence and data analytics to predict and identify incidents. These services will integrate seamlessly with our Traffic Incident Management System and communicate traffic conditions in real-time to popular navigation apps, improving routing and travel time estimations.

  This system is expected to benefit our operations and infrastructure plan in the following ways:

  - Systemwide coverage (including frontage roads and cross streets) of traffic sensory data from vehicles, crowd sourcing, and Mobility Authority sensors.
  - Automated alerts and notifications to staff, first responders, and the traveling public regarding problematic areas and incidents. This alternative approach to automatic incident detection will be complementary to the fixed camera-based system.
  - Predictive and historical analytics for crashes and other traffic patterns/issues/incidents, and it leverages artificial intelligence to inform management of resources.
  - Enhancement of the ITS plan development and deployment by improving the Authority's ability to identify high frequency areas of wrong-way driving.
  - Ability to provide interagency operations and collaboration support to central Texas regional partners (TxDOT, City of Austin, others), and leverage their data once deployed.

<u>Testbed and Pilot Projects</u>

Once the elements of the Roadway Technology Plan are in place, we expect to see immediate benefits such as improved incident response and the availability of new/real-time information that can better

inform roadway operations and future investments in roadway technology and other roadway improvements. This plan also establishes a testbed for connected vehicle and connected corridor pilot projects. Since Central Texas is recognized as center for innovation and technology, we expect a high demand to partner and test emerging technology – all of which has the potential to improve mobility and the delivery of services.

Staff plans to engage the Texas A&M Transportation Institute to develop a *Technology Corridor Strategy* which will establish a process to screen, evaluate, prioritize, test and collaborate with regional partners and the private sector. This will be considered by the Board under a separate agenda item.

Cost and Schedule

The table below outlines the corridor, technology, funding sources, and cost of the Roadway Technology Plan.

Roadway and Technology	Funding	Estimated Cost
MoPac Express – RSUs / AID Pilot	MoPac General Fund	$750,000
290 Toll – RSUs / AID Pilot	FY20 Capital Budget	$1,100,000
45SW Toll - RSUs	FY20 Capital Budget	$350,000
Enhanced Traffic/Information Management Services*	FY20 Operating Budget	$750,000
Total		**$2,950,000**

**The estimated cost of the first year is estimated at $300,000 and $225,000 for years 2 and 3 for a total estimated cost of $750,000.*

Assuming the Board's concurrence on the Roadway Technology Plan, procurements will begin in March followed by a series of contract awards for materials, services and construction by May. The projected completion dates are as follows:

- MoPac Express – Late 2020
- 290 Toll – 3rd Quarter 2020
- 45SW Toll – 3rd Quarter 2020

Previous Actions/Brief History of the Project/Program – In January of 2019, staff established a strategy and plan to modernize the Mobility Authority's toll and roadway technology systems. The approved FY 2020 Operating / Capital Budget includes funding for the procurement and modernization of the Mobility Authority's roadway technology.

The Board was also briefed on the roadway technology concepts under consideration during its November 25, 2019 meeting as part of the *MoPac and 183 South Operational and Technology Enhancements Project* item.

Action requested – This is for discussion and direction from the Board as needed.

Financing – Funding for this project would be provided from the approved FY 2020 Operating / Capital Budget and the MoPac General Fund.

Backup Provided: Presentation