

Tolling Technology Pilot Update

December 9, 2025

2025 Transportation Budget Proviso (1/2)

The Commission, in coordination with WSDOT, shall:

conduct a pilot or pilots of advanced tolling technology provided by the private sector. The purpose of this pilot or pilots will be to assess the viability and accuracy of advanced technologies that may reduce the implementation and long-term costs of the toll system or enable more flexible operations. The commission shall retain a separate independent third-party vendor or vendors who can provide expert oversight, guidance, and advisement on the work, including: The pilot design; the evaluation plan; data analysis; and reporting on findings.

2025 Transportation Budget Proviso (2/2)

The final report must, at a minimum:

- outline the **technology tested**;
- provide a comparison of **system performance, operations, costs, and revenue collection efficiencies** between the test system or test systems and the roadway toll system in use today;
- assess the requirements for achieving **compatibility** with the existing back-office system;
- provide a summary of how **lessons learned** from the pilot or pilots were incorporated into the planned procurement of new roadside toll systems; and
- provide **recommendations** on next steps

Final Report Outline

- 1. Background**
- 2. Advanced Toll Technology Global Scan**
- 3. Pilot Design & Operations**
- 4. Analysis & Findings**
- 5. Conclusions & Recommendations**

Background

Section One of Report

Background



Summarizes current state of tolling in Washington



Describes 2024 advanced technology study



Outlines the legislative directive for the pilot

Advanced Toll Technology Global Scan

Section Two of Report

Advanced Toll Technology Global Scan

- **Challenges and Motivations for Innovation**
- **Recent Advances Elsewhere**
- **Future Approaches to Tolling**

Challenges and Motivations for Innovation

- **Motivation: Reduce costs and maximize revenue**
 - Current challenge: State-of-the-practice solutions require gantries, toll tag readers, and license-plate reading cameras (video tolling)
 - Current challenge: Some transactions are unbillable or uncollectable due to unreadable plates and/or out-of-date vehicle registry data
- **Motivation: Enable more flexible tolling deployments**
 - Current challenge: State-of-the-practice solutions are impractical to deploy during construction or on certain facilities that lack space to accommodate equipment

Examples of Recent Technology Tests and Deployments

- **Vehicle occupancy declaration smartphone applications:** tested in San Francisco, operational in Atlanta and Dallas.
- **Smartphone tolling applications:** available commercially nationwide from several providers (relies on plate image processing for vehicle detection).
- **GPS-based smartphone tolling applications:** tested in Dallas and Louisiana.
- **Autonomous (solar, wireless) cameras:** tested in Colorado and Louisiana.
- **Tag-free tolling:** several deployments internationally (New Zealand, Poland, Sweden).
- **GPS on-board-unit-based tolling for trucks:** Numerous countries in Europe.
- **Connected vehicles:** Pilot launching with Volvo and MasterCard in North Carolina.

Illustrative Evolution of U.S. Tolling Technology

Objectives

Maintain accuracy

Reduce costs

Increase flexibility

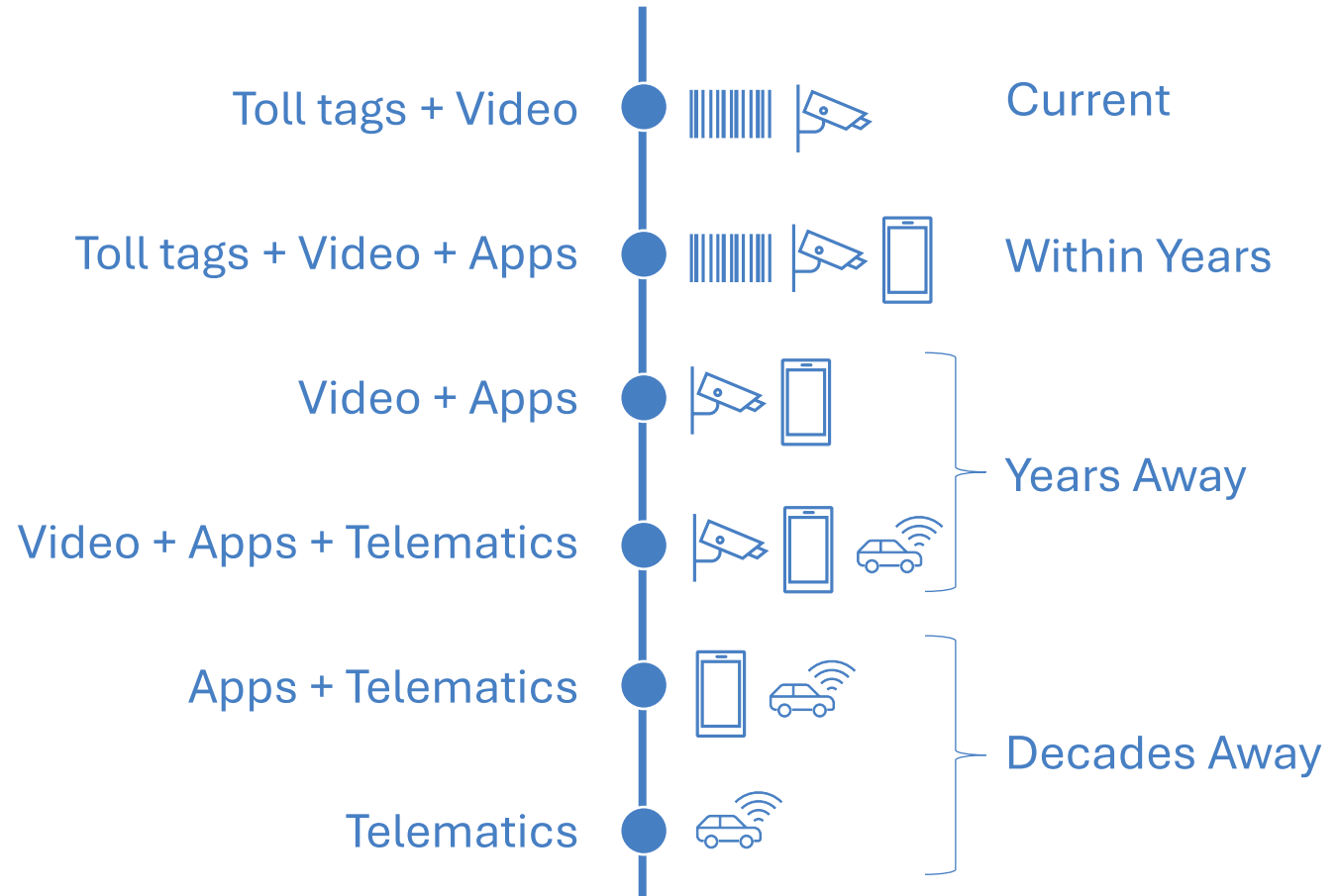
Ingredients

Toll tags

Video

Apps (including GPS tolling)

Connected vehicles



Pilot Design and Operations

Section Three of Report

Overview of Pilot



Two Tolling Configurations

- Single-point tolling
- Segment tolling



Three Key Activities

- Technology set-up
- Pilot operations
- Reporting



Four Key Objectives

- Understand costs and capabilities
- Compare systems and technologies
- Assess system compatibility
- Inform next steps

Pilot Tolling Configurations

Single-point Tolling

 **Where:** SR 520 Bridge

 **Who:** Public-facing


 **Goal:** Test toll collection at an existing toll point

Rates were illustrative and matched current rate schedule

Segment Tolling

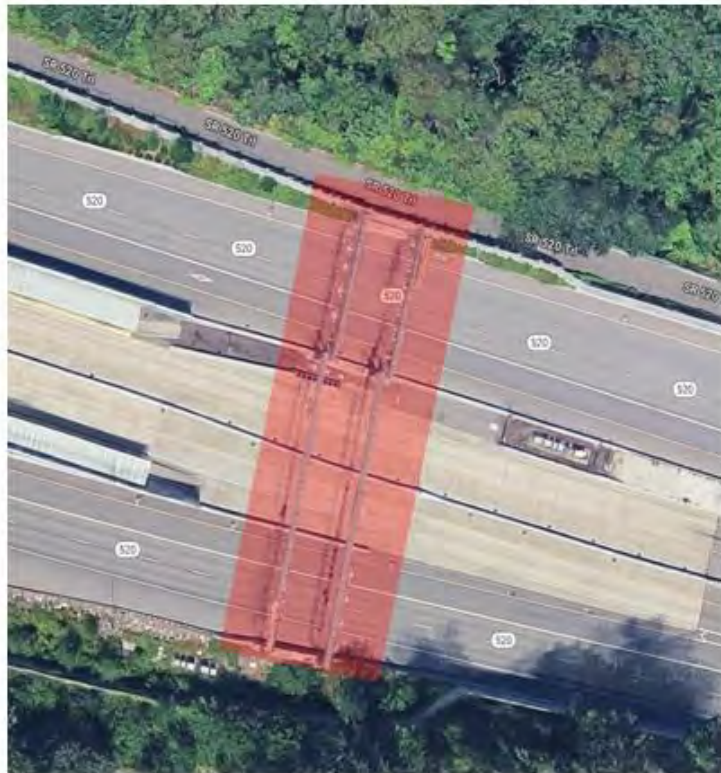
 **Where:** SR 18

 **Who:** Internal testers

 **Goal:** Test toll collection at multiple points to understand flexible toll applications (discrete point or total segment travel)

Pilot Tolling Locations

Existing SR 520 Toll Point



*Existing toll point near Evergreen Point Rd
on east end of bridge*

SR 18 Simulated Tolling Segment



Between I-90 and Tiger Mountain Summit

Participant Experience Using the Pilot App

10:42 62%

App Store

Before you drive on the SR 520 Bridge

Here are a few things you need to know.

Continue


•••••

10:42 62%

App Store

1. Check app setup

Open the home screen and ensure that you see "Setup OK" at the top.



If not, just follow the on-screen guidance to correct your app permissions.
Open menu → Privacy → App Permissions for further information.

Continue

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10:42 62%

App Store

2. Add any vehicle you drive on SR 520

1. Open the **Vehicles** screen from the app menu and tap to **Add a Vehicle**
2. Enter the vehicle's license plate and toll tag number (if you have one)
3. Confirm your vehicle's Bluetooth ID (you'll need to be sitting in your vehicle, which has to be turned on).

Continue

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10:42 62%

App Store

3. Just drive!

GoCarma will automatically process a transaction each time you drive across the SR 520 Bridge.



Continue

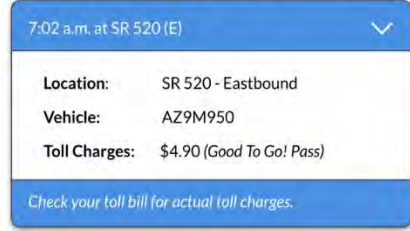
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App Store

4. Check your transaction

When you reach your destination, check your transaction on the home screen.



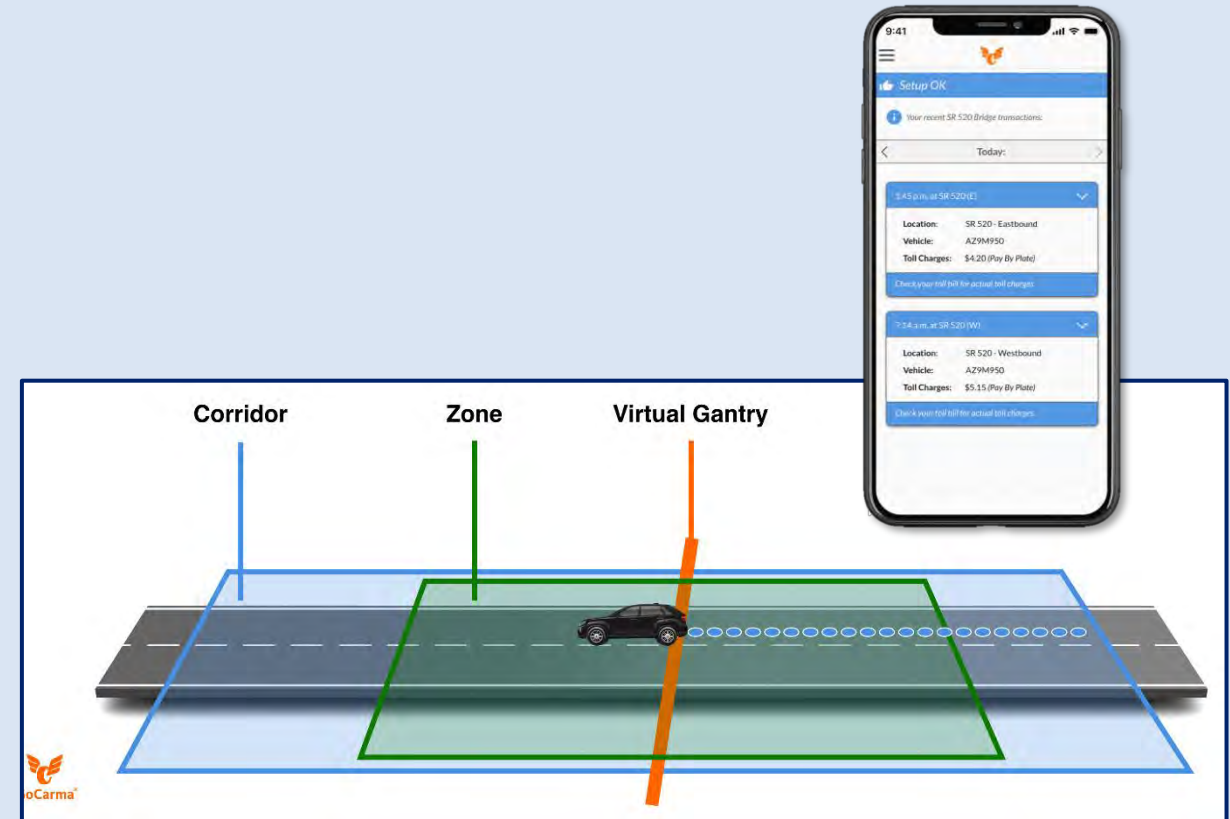
Note: Please allow up to 20 minutes for it to appear.

Done




•••••

Pilot Participation




- Participants had the option to pair their smartphone to their vehicle via Bluetooth:
 - **With Bluetooth pairing**
Transactions could be reliably linked to a vehicle
 - **Without Bluetooth pairing**
App could misattribute trips when riding in another vehicle
- Participants drove as usual and the app automatically captured transactions
- Participants could check their transactions in the app



SR 520 Pilot Operations

 Participant Recruitment	<ul style="list-style-type: none">• Outreach. Emailed 100,000+ <i>Good To Go!</i> customers.• Interest. 3,400 customers responded to the interest survey.• Invitation. 800 customers were invited to join the pilot.• Enrollment. ~300 participants enrolled.
 Participant Responsibilities	<ul style="list-style-type: none">• Enroll. Download the GoCarma app, agree to pilot participation agreement, set up account.• Participate. Complete a minimum of eight toll transactions on the SR 520 Bridge.• Closeout. Complete a post-pilot survey.
 Support Roles	<ul style="list-style-type: none">• The Commission• CDM Smith• WSDOT• Carma Technologies Corporation

SR 18 Pilot Operations and Data Collection

 Testers	<ul style="list-style-type: none">• Testers identified across consultant team. 4 individuals operating a range of vehicles conducted over 100 test trips.
 Tester Responsibilities	<ul style="list-style-type: none">• Enroll. Download the GoCarma app, agree to pilot participation agreement, set up account.• Drive. Complete a set of prescribed journeys following a script and keep a detailed log of trips.• Closeout. Report the trip log and describe app experiences.
 Support Roles	<ul style="list-style-type: none">• The Commission• CDM Smith• WSDOT• Yates Consulting Group• Carma Technologies Corporation

Pilot Data Collection and Usage

- **Prior to participation:** Participants agreed to user agreements with Carma and with the Commission, allowing Carma to share data with the Commission
- **During the pilot:** The GoCarma app collected location, date, time, and direction of travel to create toll transactions
 - *No location tracking outside the geo-fenced toll zones*
 - *Data not shared with third parties other than the Commission*
 - *Personally identifiable data expire after 60 days*
- **End of pilot:** Driving and survey data anonymized for research purposes only



Pilot Evaluation Criteria



Accuracy



Compatibility



Flexibility



Cost



User Experience



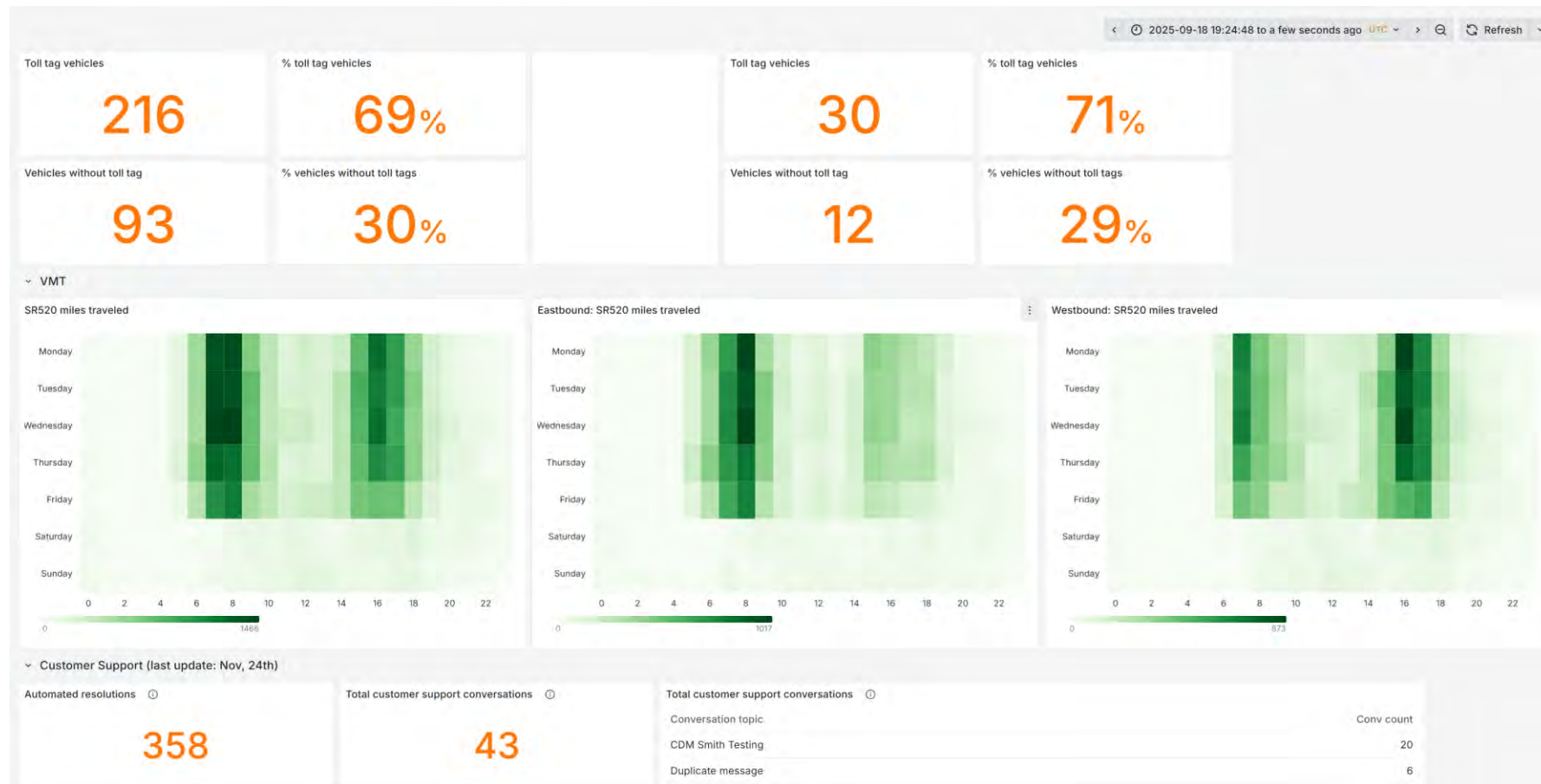
User Acceptance

Analysis & Findings

Section Four of Report

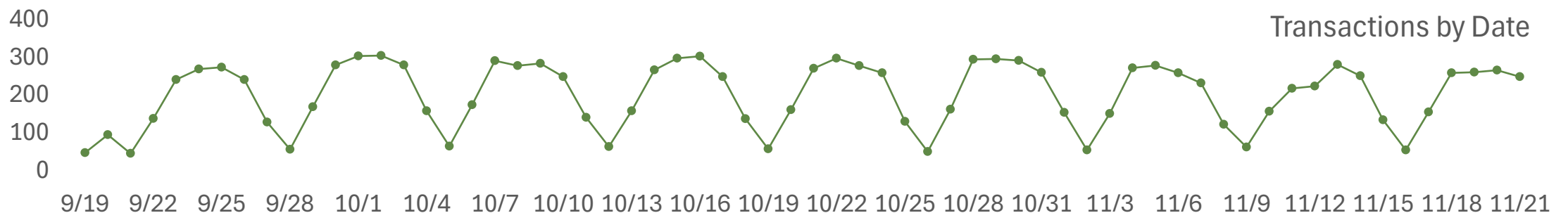
Pilot Performance Monitoring

Live dashboard enabled real-time access to enrollment, transaction, and customer support data:



Preliminary Pilot Statistics

- **Pilot Duration:** 2 months (mid-September to mid-November 2025)
- **Active Participants:** 282 drivers on SR 520 with 351 vehicles registered in GoCarma app
 - 46 percent of participating vehicles connected to the smartphone app via Bluetooth at least once
- **Total Transactions:** The app recorded approximately 13,000 toll transactions during the pilot
 - Transaction volumes were highest midweek (Tuesday through Thursday)
 - 35% of transactions were made while the smartphone was linked to the vehicle's Bluetooth, providing greater assurance that the transaction was for the vehicle registered on the participant's account.
- **Customer Support:** 358 issues resolved automatically, requiring no human conversations
 - 43 cases required employee action to resolve, with an average time to resolution of 5 hours



Preliminary Key Findings from Research & Testing: Customer Perspective

- **The smartphone tolling app earned high customer satisfaction and acceptance (85%).**
- **Among pilot participants, there is broad support for offering a smartphone tolling app as an additional option for tolling customers (76%).**
- **The app was successfully utilized to deliver direct communications with participants.**
- **Some customers encountered technical issues.**
 - A few customers encountered lags between toll events and transactions resulting in incorrect toll rates.
 - For participants without Bluetooth pairing, some toll transactions attributed to other vehicles were recorded.
 - Some customers commented about excessive battery drain possibly caused by the app.
 - Interviews with community-based organizations revealed concerns about accessibility of smartphone apps.
- **Some customers expressed privacy concerns.**
 - The app asked users to enable location at all times to detect entrance into toll zones when the app is closed.
 - Interviews with community-based organizations reiterated sensitivity around location-based apps.

Preliminary Key Findings from Research & Testing: System Perspective

- **Smartphone tolling application configured, tested, and launched in weeks.**
- **Smartphone tolling application offered 100% uptime during pilot.**
- **Smartphone tolling application performed with high accuracy.**
 - When the app was connected to a vehicle via Bluetooth, **99.97%** of transactions matched *Good To Go!* transactions on SR 520.
 - When the app was not connected to a vehicle via Bluetooth, **65%** of transactions matched *Good To Go!* transactions on SR 520.
 - Overall, the **75%** of app transactions matched *Good To Go!* transactions on SR 520.
- **Integration of smartphone tolling apps with the existing back-office system is possible and requires one-time effort and cost for WSDOT to design (system logic updates), develop, and test.**

Preliminary Key Findings from Research & Testing: SR 18 Segment Tolling Pilot

- **Feedback confirms similar levels of understanding, usability, and performance for SR 18 testers as for SR 520 participants.**
- **Preliminary analysis of SR 18 trip data suggests equally high accuracy for segment tolling transactions on SR 18 as for SR 520.**

Remaining Analysis

- **Detailed accuracy analysis of SR 18 trips.**
- **Detailed analysis of anomalies including transactions recorded by the app but not recorded by *Good To Go!***

Conclusions & Recommendations

Section Five of Report

Preliminary Conclusions from Research and Testing

- **Several existing commercial applications for vehicle occupancy declaration show promise for improving Express Toll Lane operations.**
- **Smartphone tolling can complement but not replace today's roadside technologies for existing toll points.**
- **When connected to vehicle Bluetooth (which can be required for app users), smartphone tolling in conjunction with video tolling shows promise for improving accuracy of non-tag transactions and supporting flexible tolling policies.**
Note: video tolling must comply with Washington law including prohibition on capturing images of vehicle occupants.
- **Deployment of advanced technology (beyond toll tags and video tolling) for revenue operations elsewhere is insufficient to operationalize in Washington without further testing and analysis.**
- **While the Commission's test of innovative technology was an important step, more work must be done to fully test and assess a complete system that can operate with less equipment in the field.**

DRAFT Recommendations for Consideration

- **Preserve existing roadside tolling approaches at existing toll locations.**
- **To prepare for future tolled facilities, pilot innovative tolling approaches:**
 - Test occupancy declaration smartphone applications to improve ETL operations.
 - Working collaboratively, WSDOT and WSTC should implement a pilot(s) in a new location(s) to test a small-scale toll system that is “infrastructure light” and utilizes innovative technology such as smartphone tolling along with necessary roadside equipment, to further inform the use-case around broader deployment of tolling technology in the future.
 - In future testing, include analysis of implications of advanced technologies for underserved communities.
- **Future roadside tolling contracts should enable and support the advancement of innovation that will evolve the state’s roadside tolling system.**
- **Longer-term, cultivate a marketplace to evolve tolling solutions with emerging technology and business models.**
 - Define procedures for contracting, certifying, and accepting data from third parties.
 - Develop commercial terms for third-party providers.

Commission Action

- **Provide feedback on content**
- **Provide input and direction on draft recommendations**
- **Delegate to Chair and Vice Chair to finalize report**

Questions & Discussion

Thank You

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