



CONNECTED VEHICLE PILOT Deployment Program



Tampa Hillsborough Expressway Authority
(THEA) CV Pilot
Highlights of the Operational Capability Showcase



Bob Frey, Jeff Brown, Ruthie Reyes Burckard

ITS Joint Program Office



TODAY'S AGENDA



- Purpose of this Webinar
 - Provide an overview of THEA's approach to demonstrate operational capability of the deployment.
 - Highlight demonstration and interoperability activities.

- Webinar Content
 - Connected Vehicle Pilot Deployment Program Overview
 - THEA Pilot Operational Capability Showcase Activities
 - Stakeholder Q&A

- Webinar Protocol
 - Please mute your phone during the entire webinar.
 - You are welcome to ask questions via chatbox at the Q&A Section.
 - The webinar recording and the presentation material will be posted on the CV Pilots website.





CONNECTED VEHICLE PILOT DEPLOYMENT PROGRAM

PROGRAM GOALS

Spur Early CV Tech Deployment



Wirelessly Connected Vehicles



Mobile Devices



Infrastructure

Measure Deployment Benefits



Safety



Mobility



Environment

Resolve Deployment Issues



Technical



Institutional



Financial

PILOT SITES



WYDOT

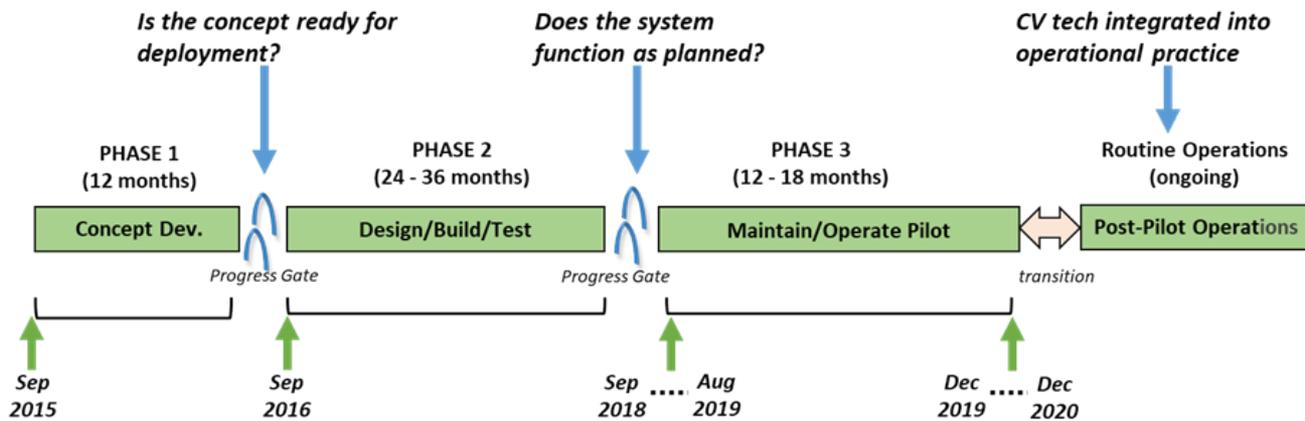


NYCDOT



Tampa (THEA)

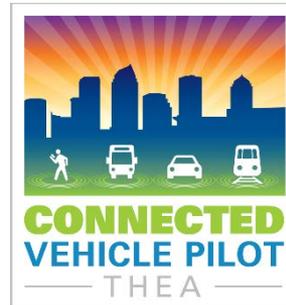
PROGRAM SCHEDULE



Last updated: June 2019



U.S. Department of Transportation

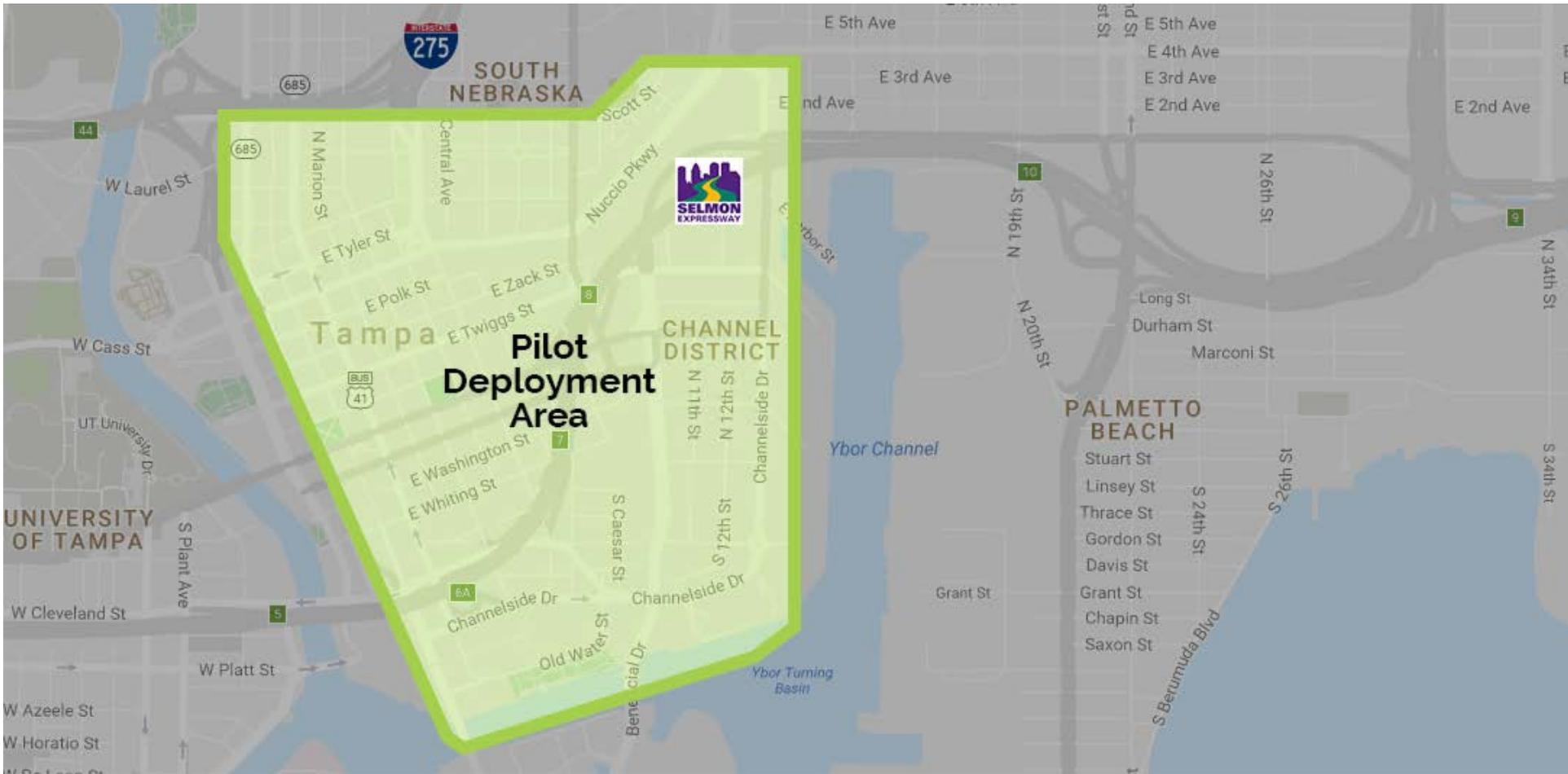


THEA CV Pilot Deployment Overview & Preparation for Showcase

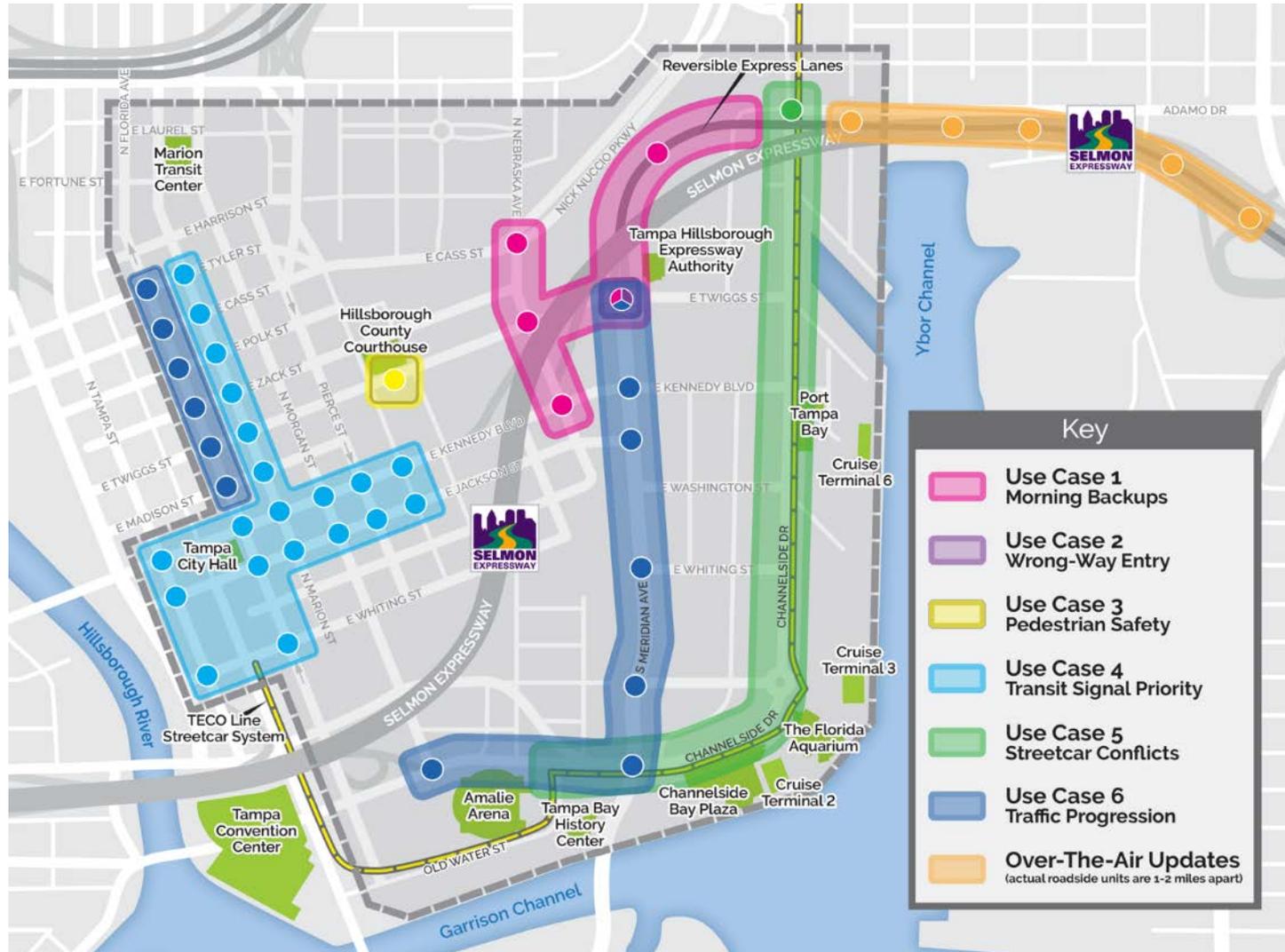
Bob Frey



Deployment Area



Deployment Overview



Participants & Infrastructure



1,000
Cars



8
Streetcars



10
Buses



46
Roadside
Units

Onboard Equipment



REARVIEW MIRROR

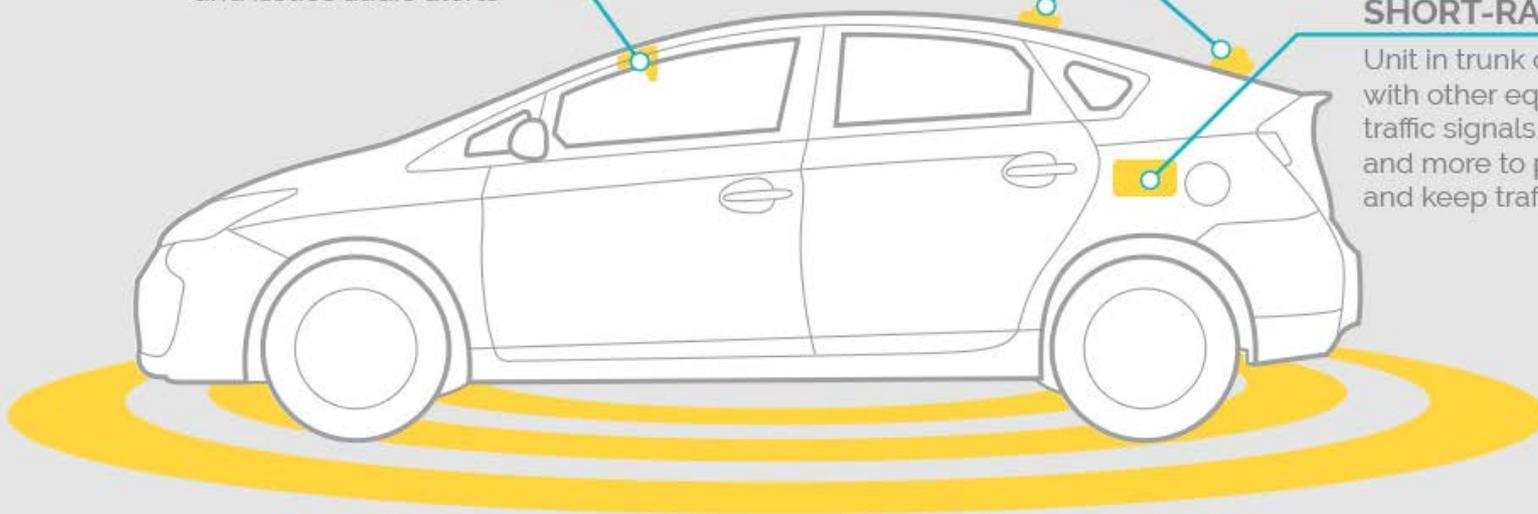
Displays safety messages and issues audio alerts

ANTENNAS

Send and receive data

SHORT-RANGE RADIO

Unit in trunk communicates with other equipped cars, traffic signals, crosswalks and more to prevent crashes and keep traffic moving



(Actual location of equipment may vary.)



Connected Vehicle Applications



APPLICATION	DESCRIPTION
End of Ramp Deceleration Warning (ERDW)	Alerts driver approaching curve with speed safety warning
Emergency Electronic Brake Light (EEBL)	Enables broadcast to surrounding vehicles of severe braking
Forward Collision Warning (FCW)	Warns driver of impending collision ahead in same lane
Intersection Movement Assist (IMA)	Indicates unsafe entry into an intersection
Intelligent Traffic Signal System (I-SIG)	Adjusts signal timing for optimal flow along with PED-SIG and TSP
Probe Data Enabled Traffic Monitoring (PDETM)	Uses vehicles as probes to calculate travel times
Transit Signal Priority (TSP)	Allows transit vehicle to request and receive priority at a traffic signal



Connected Vehicle Applications



APPLICATION	DESCRIPTION
Vehicle Turning Right in Front of Transit Vehicle (VTRFTV)	Alerts transit vehicle driver that a car is attempting to turn right in front of the transit vehicle
Wrong Way Entry (WWE)	Warns driver of potential and actual wrong way travel direction
Pedestrian Collision Warning (PCW)	Alerts vehicle to the presence of pedestrian in a crosswalk
Pedestrian Safety	Single pedestrian application
Pedestrian in Crosswalk Vehicle Warning (PED-X)	Calculates the path trajectory of the pedestrian and approaching vehicles and logs an event if a potential conflict is identified
Pedestrian Mobility (PED-SIG)	Gives pedestrians priority with signal phase and timing
Pedestrian Transit Movement Warning (PTMW)	Provides informational warnings to pedestrians that a bus or streetcar is starting up or stopping at an intersection



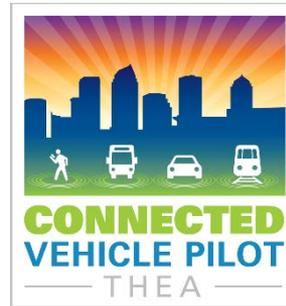


Applications Selected for Demo

APPLICATION	TYPE	INVOLVED
Vehicle Turning Right in Front of Transit Vehicle (VTRFTV)	V2V	Streetcar / Car
Intersection Movement Assist (IMA)	V2V	Bus / Car
Pedestrian Collision Warning (PCW)	V2I	Pedestrian / Car / RSU

Preparation – Test Run





Operational Capability Showcase November 29, 2018

Jeff Brown



Requirements



“A media event to show the capabilities, intent, and value of the deployment”

“... include an interoperability activity, wherein one or more in-vehicle or mobile device from a different CV Pilot Deployment site is shown to be interacting successfully with the local deployment”

Showcase plan available at https://www.its.dot.gov/pilots/phase3_technical.htm



Media Coverage



Stakeholder Education



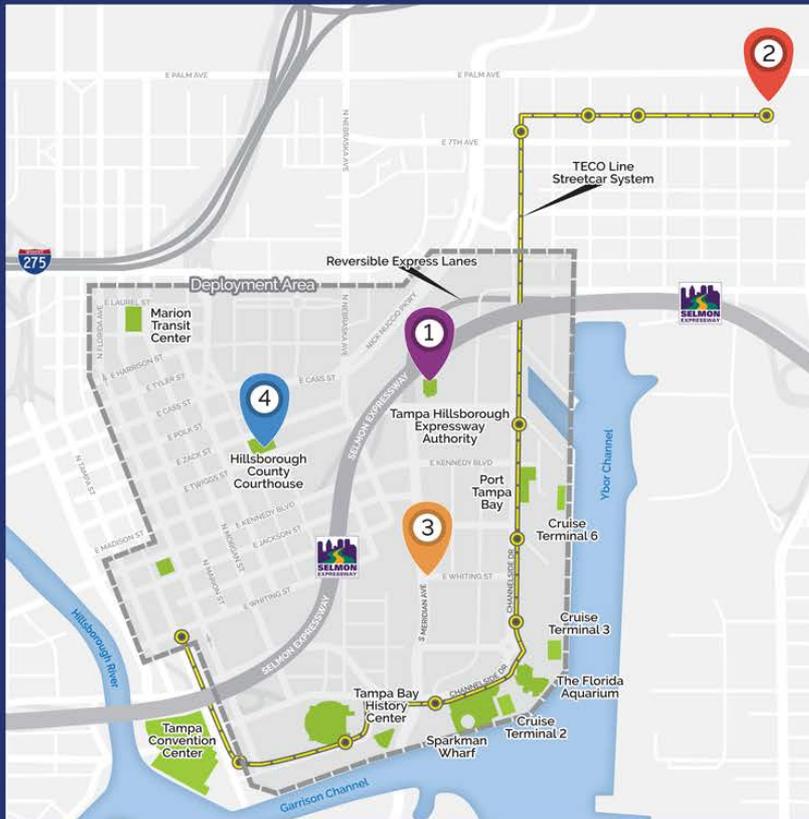
Vehicle-to-Vehicle Communication



Schedule



TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY CONNECTED VEHICLE PILOT SHOWCASE



SCHEDULE

**8:30
AM**

1. Introduction
THEA Boardroom

**9:15
AM**

2. Streetcar Safety Demo
Centennial Park Station,
E 8th Ave

**10:15
AM**

3. Bus Safety Demo
Intersection of
Meridian Ave & Whiting St

**11:15
AM**

4. Pedestrian Safety Demo
Twiggs St at Hillsborough
County Courthouse

Opening Remarks



Welcome

Joe Waggoner (THEA)

Introduction

Bob Frey (THEA)

Transit Perspective

Ruthie Reyes Burckard (HART)

Federal Perspective

James Christian (FHWA)

Interoperability

Govind Vadakpat (USDOT)

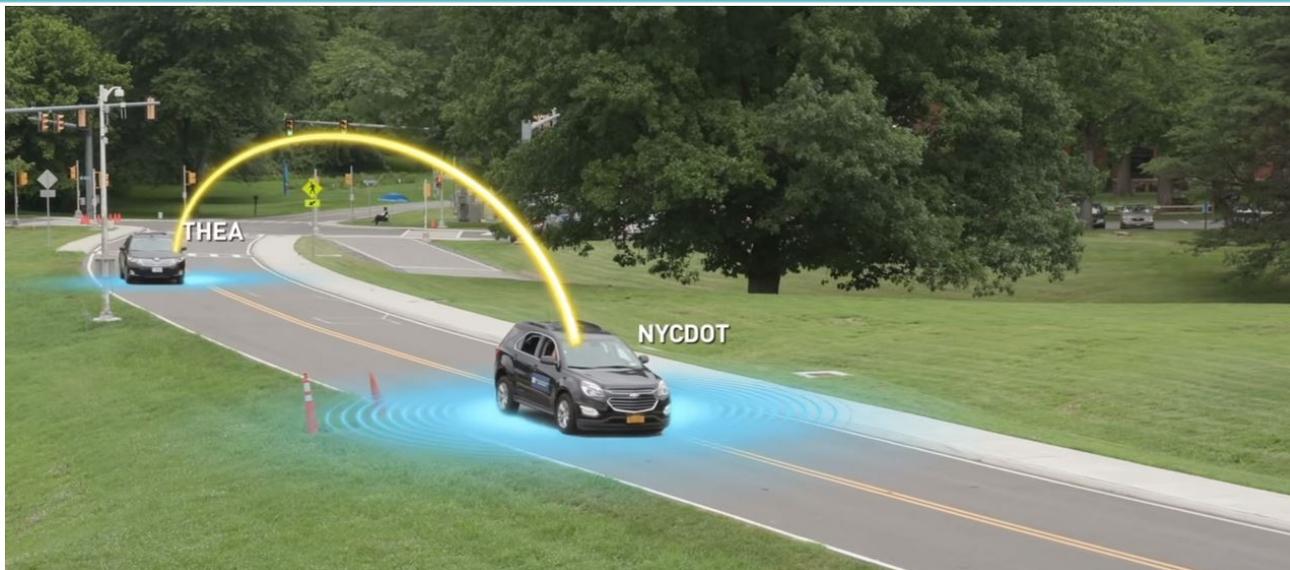


Interoperability Video

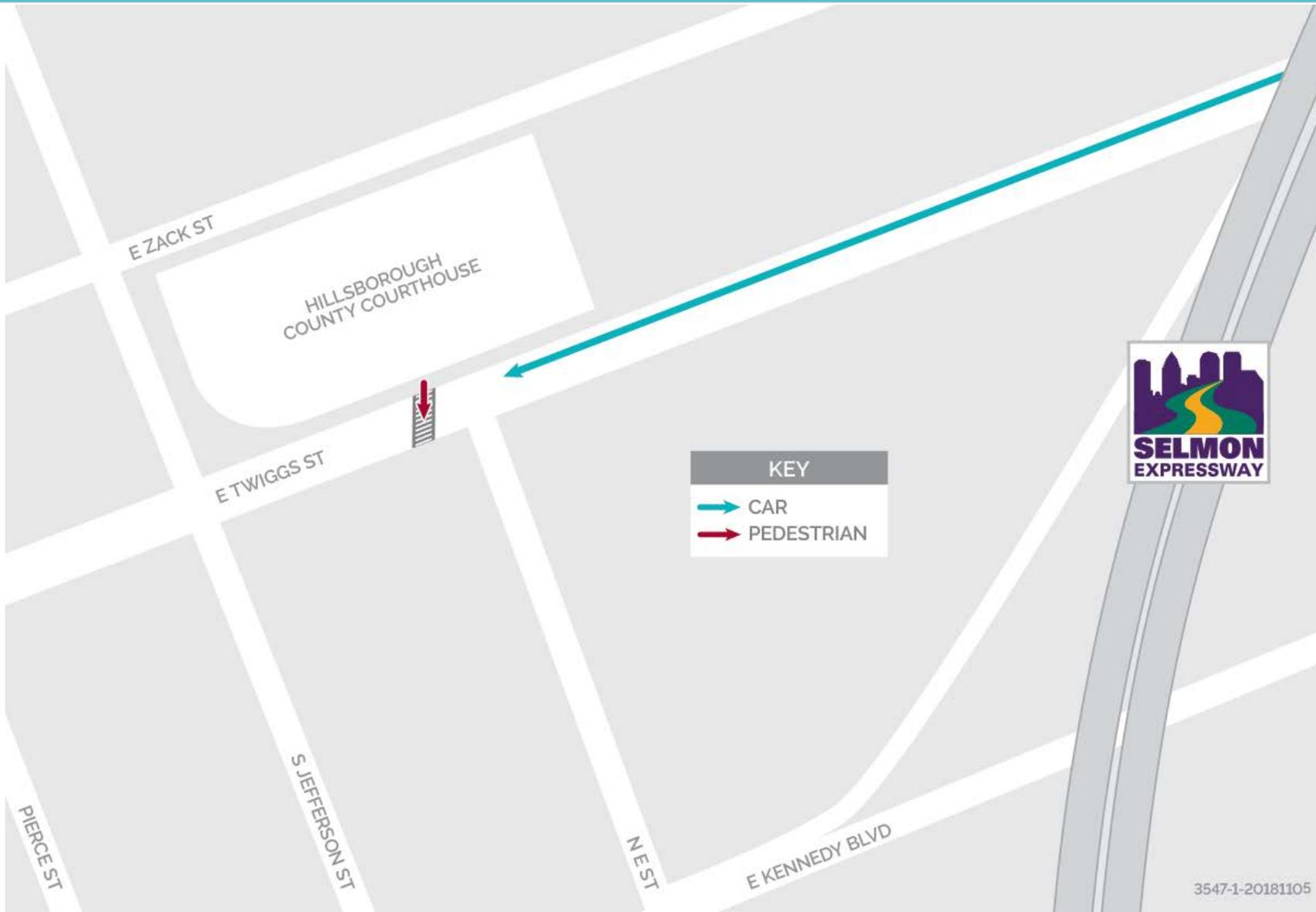


Interoperability video available at <https://www.its.dot.gov/interoperabilityvideo/index.htm>

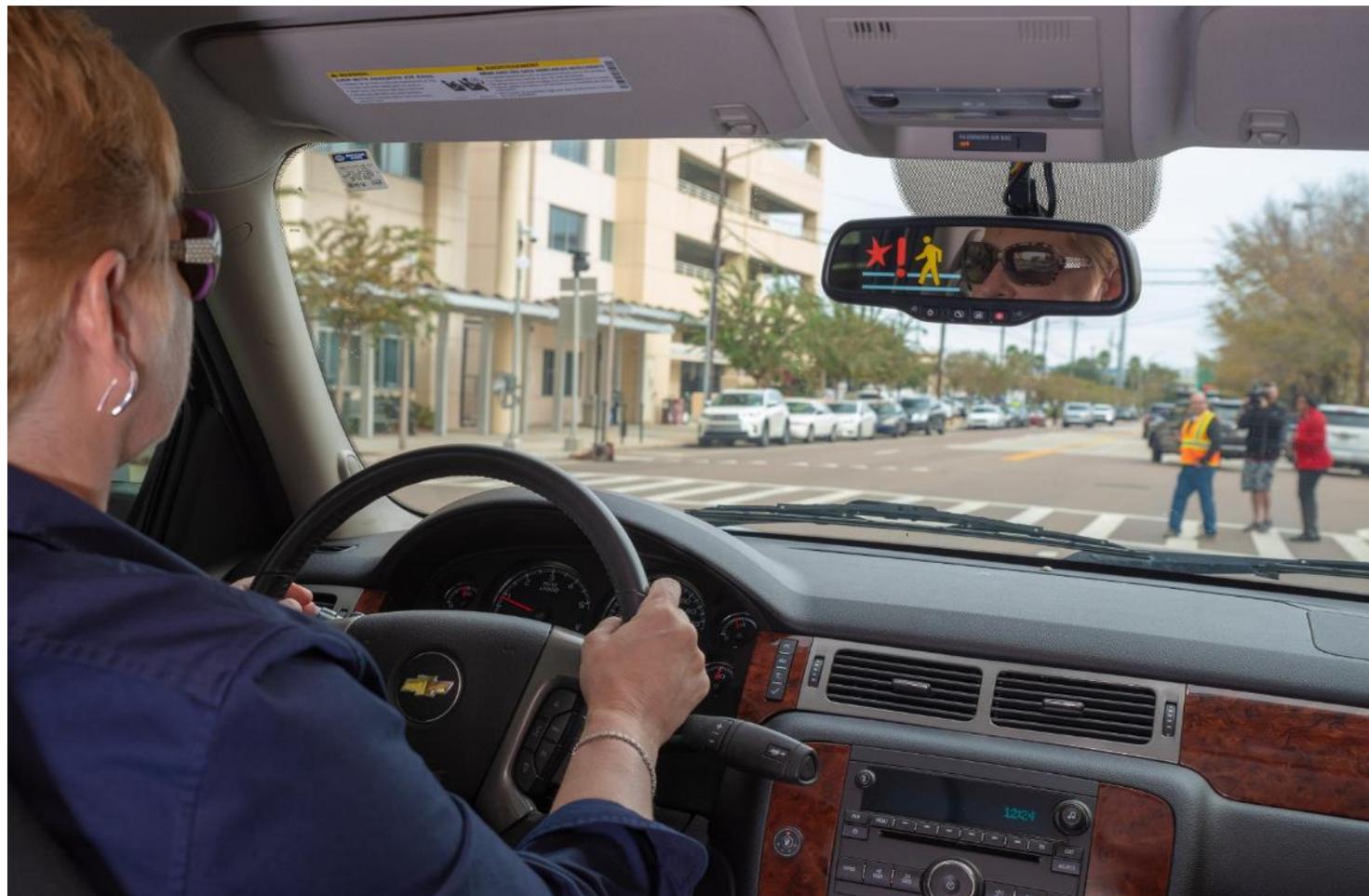
Interoperability Video

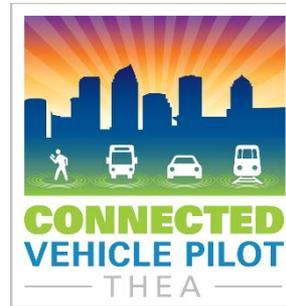


Demo – Pedestrian Safety



Demo – Pedestrian Safety





Streetcar & Bus Demos

Ruthie Reyes Burckard



HART – About Us



HART operates fixed-route local and express bus service and paratransit van service, and manages the TECO Line Streetcar System.

10 Streetcars

180 HART Buses

8 HARTFlex Vans

67 HARTPlus Vans

Services We Provide



HART – About Us

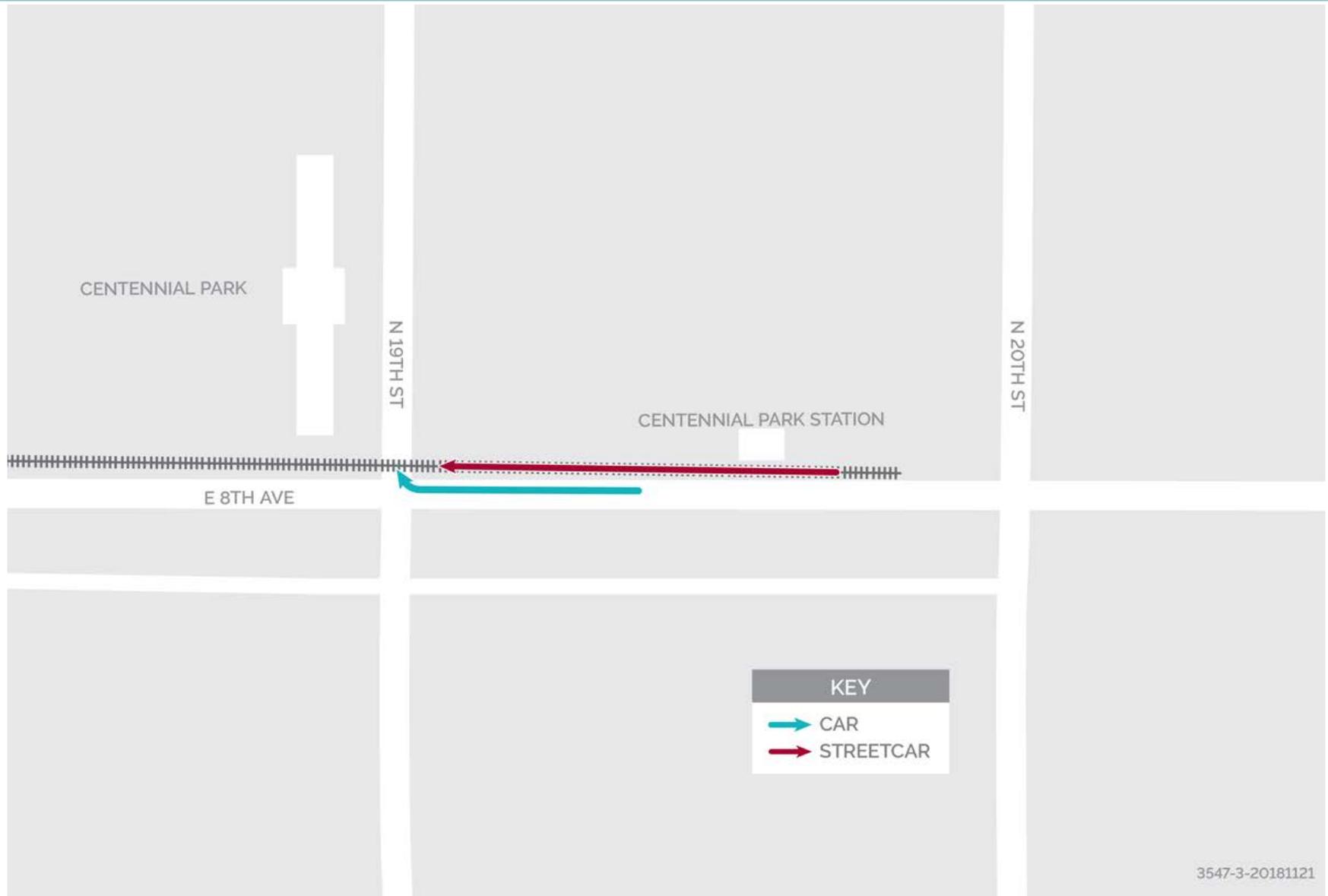


By the Numbers

- **Bus and Van**
 - **Ridership:** 34,000 daily trips
 - **Routes:** 34
 - **Bus stops:** 2,205
- **TECO Line Streetcar**
 - **Ridership:** 2,300 daily trips
 - **Streetcar stations:** 11
 - **System length:** 2.7 miles



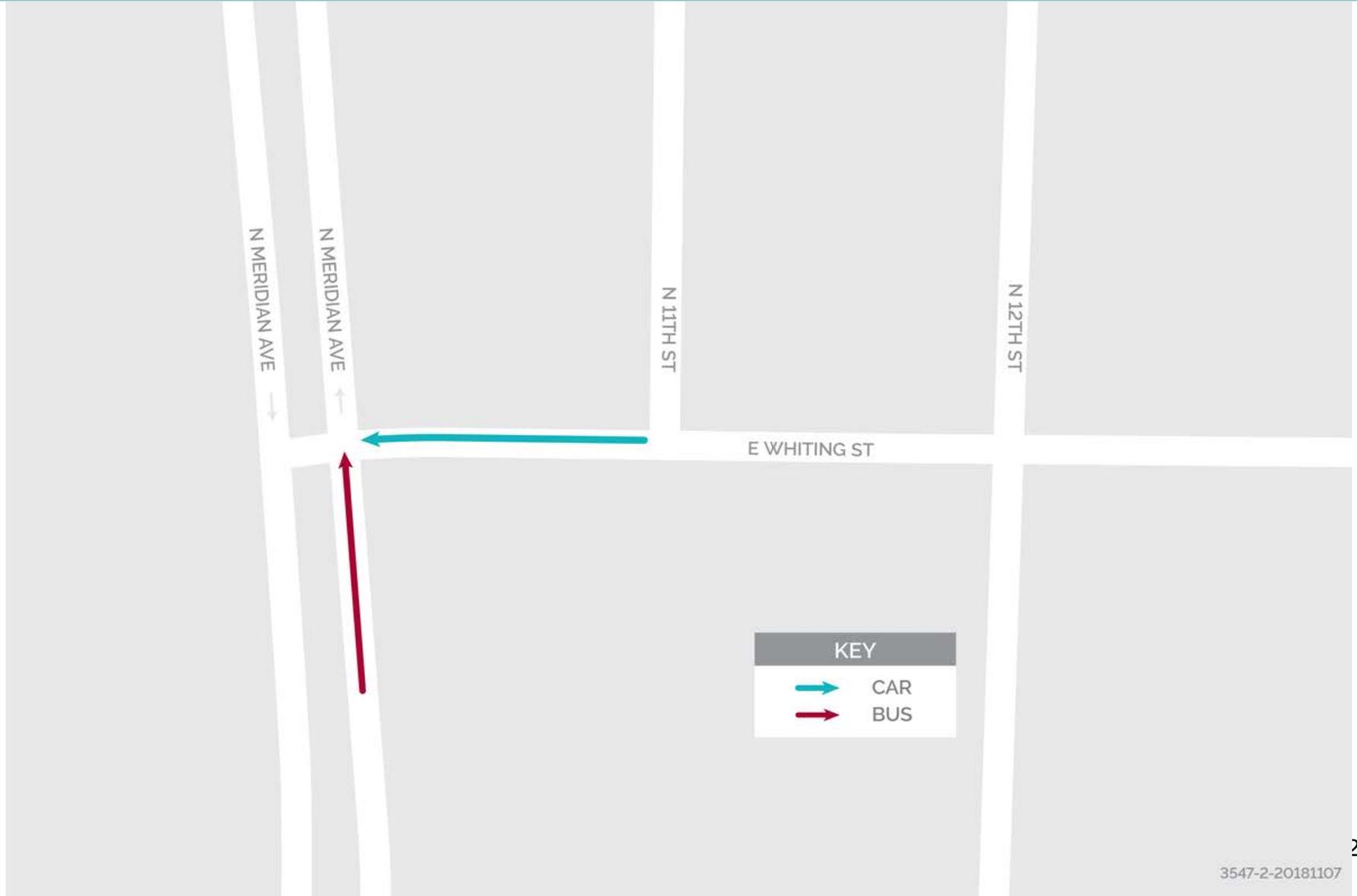
Demo – Streetcar Safety



Demo – Streetcar Safety



Demo – Bus Safety



Demo – Bus Safety



STAKEHOLDER Q&A



- Please keep your phone muted
- Please use chatbox to ask questions
- Questions will be answered in the order in which they were received

STAY CONNECTED



Join us for *Using Connected Vehicle Technologies to Solve Real-World Operational Problems Series at*

<https://www.its.dot.gov/pilots/>

- Discover more about the CV Pilot Sites
- Learn the Essential Steps to CV Deployment
- Engage in Technical Discussion

Visit the Pilot Site Websites for more Information:

- NYCDOT Pilot: <https://www.cvp.nyc/>
- Tampa (THEA): <https://www.tampacvpilot.com/>
- Wyoming DOT: <https://wydotcvp.wyoroad.info/>

Contact for CV Pilots Program:

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