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

Bob Frey, Jeff Brown, Ruthie Reyes Burckard
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

- Wirelessly Connected Vehicles
- Mobile Devices
- Infrastructure
- Environment
- Mobility
- Safety

PILOT SITES

- WYDOT
- NYCDOT
- Tampa (THEA)

PROGRAM SCHEDULE

Is the concept ready for deployment?

PHASE 1 (12 months)
- Concept Dev.
- Progress Gate: Sep 2015

Does the system function as planned?

PHASE 2 (24 - 36 months)
- Design/Build/Test
- Progress Gate: Sep 2016

PHASE 3 (12 - 18 months)
- Maintain/Operate Pilot
- Aug 2019

CV tech integrated into operational practice

Routine Operations (ongoing)
- Dec 2019

Post-Pilot Operations
- Dec 2020

Last updated: June 2019
THEA CV Pilot Deployment Overview & Preparation for Showcase

Bob Frey
Deployment Area

Pilot Deployment Area
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

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

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

<table>
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<tr>
<th>APPLICATION</th>
<th>TYPE</th>
<th>INVOLVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Turning Right in Front of Transit Vehicle (VTRFTV)</td>
<td>V2V</td>
<td>Streetcar / Car</td>
</tr>
<tr>
<td>Intersection Movement Assist (IMA)</td>
<td>V2V</td>
<td>Bus / Car</td>
</tr>
<tr>
<td>Pedestrian Collision Warning (PCW)</td>
<td>V2I</td>
<td>Pedestrian / Car / RSU</td>
</tr>
</tbody>
</table>
Preparation – Test Run
“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
Vehicle-to-Vehicle Communication

VEHICLE TURNING RIGHT IN FRONT OF STREETCAR

The streetcar motorman receives a warning that a connected vehicle is entering the track ahead.

If the driver of a connected vehicle attempts to turn right in front of a moving streetcar, the driver receives a warning.

INTERSECTION MOVEMENT ALERT

Drivers of connected cars and buses receive an alert if they are on a potential collision course with a connected vehicle that is approaching the same intersection, even if they cannot see the other vehicle.

Vehicle-to-Infrastructure Communication

PEDESTRIAN COLLISION WARNING

Drivers of connected vehicles receive an alert if they are on a potential collision course with a pedestrian in the crosswalk ahead.

EXPRESSWAY

@TampaDOT
@TampaWhta
#Tampa_Gov
#Tampa_City
#TampaDOT
1. Introduction
THEA Boardroom
8:30 AM

2. Streetcar Safety Demo
Centennial Park Station, E 8th Ave
9:15 AM

3. Bus Safety Demo
Intersection of Meridian Ave & Whiting St
10:15 AM

4. Pedestrian Safety Demo
Twiggs St at Hillsborough County Courthouse
11:15 AM
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

THEA

NYCDOT

BRAKE AHEAD
Demo – Pedestrian Safety
Demo – Pedestrian Safety
Streetcar & Bus Demos

Ruthie Reyes Burckard

HART
HART – About Us

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

Services We Provide

- 10 Streetcars
- 180 HART Buses
- 8 HARTFlex Vans
- 67 HARTPlus Vans
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 – Bus Safety

- Up to 20 min
Please keep your phone muted

Please use chatbox to ask questions

Questions will be answered in the order in which they were received

- 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/](https://www.cvp.nyc/)
- Tampa (THEA): [https://www.tampacvpilot.com/](https://www.tampacvpilot.com/)
- Wyoming DOT: [https://wydotcvp.wyoroad.info/](https://wydotcvp.wyoroad.info/)

Contact for CV Pilots Program:
Kate Hartman, Program Manager
Kate.hartman@dot.gov

Contact for Pilot Sites:
- Kate Hartman, WYDOT Site AOR
  Kate.Hartman@dot.gov
- Jonathan Walker, NYCDOT Site AOR
  Jonathan.b.Walker@dot.gov
- Govind Vadakpat, THEA Site AOR
  G.Vadakpat@dot.gov