



Roger Cohen
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Transportation

The Case for Automated Vehicles:

A Pennsylvania Perspective



May 4, 2017 – Pittsburgh, PA

Overview

- **HAV Basics: The Case for Automation**
- **Pennsylvania Round-up**
- **The ICU: Issues Challenges Uncertainties**



"All these predictions that people made, including myself, going back several years, it turns out we are not there yet."

"It turns out that driving is a very complex activity. In fact, it may be the most complex activity that most adults on the planet engage in."

**Prof. Raj Rajkumar
Carnegie Mellon University**











NASA/JPL-CALTECH/MSSS



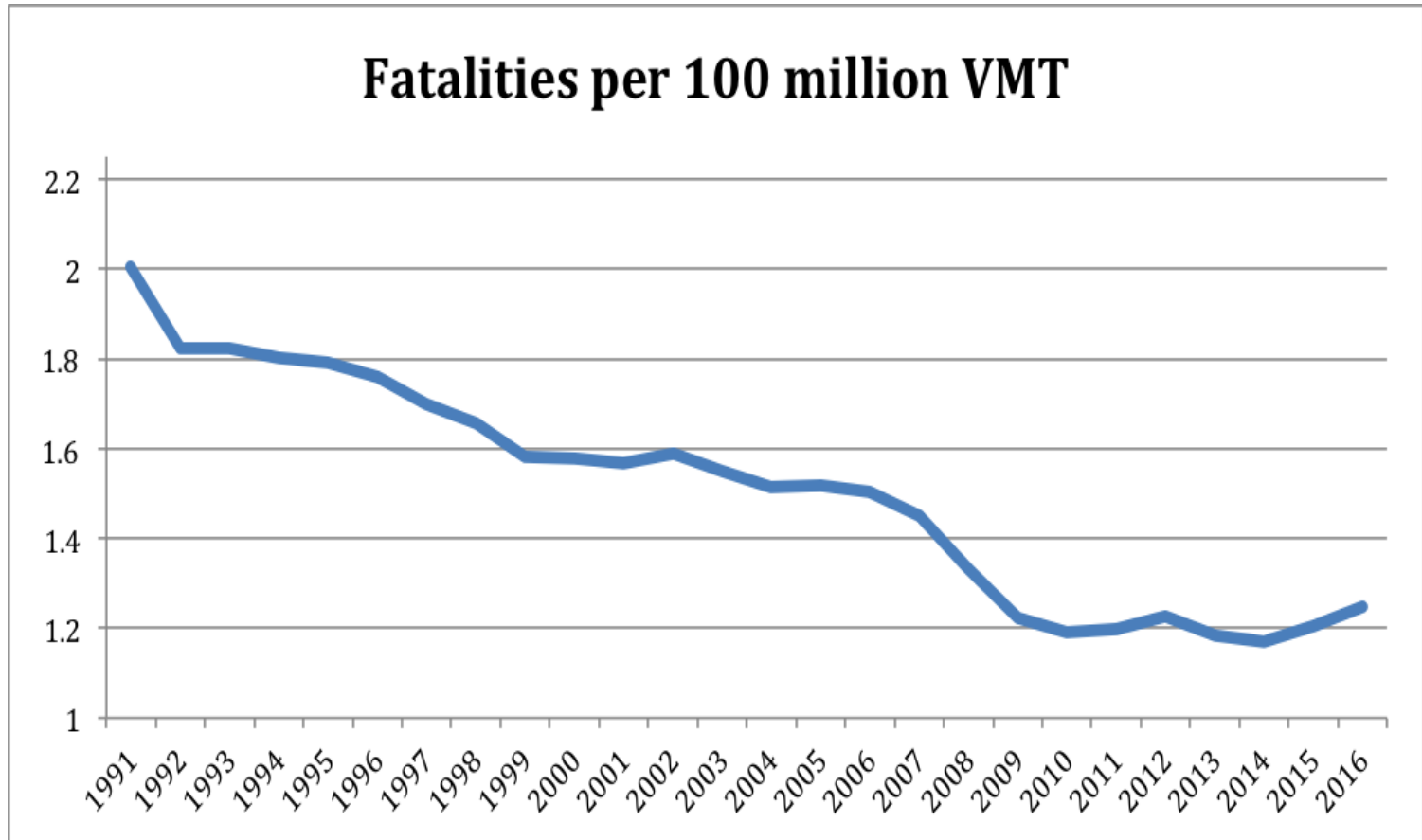
*Does your car know why my
car pulled you over?*

US DOT Projections: 2045



- **70-M more Americans**
- **Equal to NY, Texas, Florida
COMBINED**
- **45% more freight**

Traffic Deaths are Rising



HAV Benefits

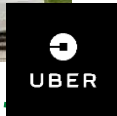
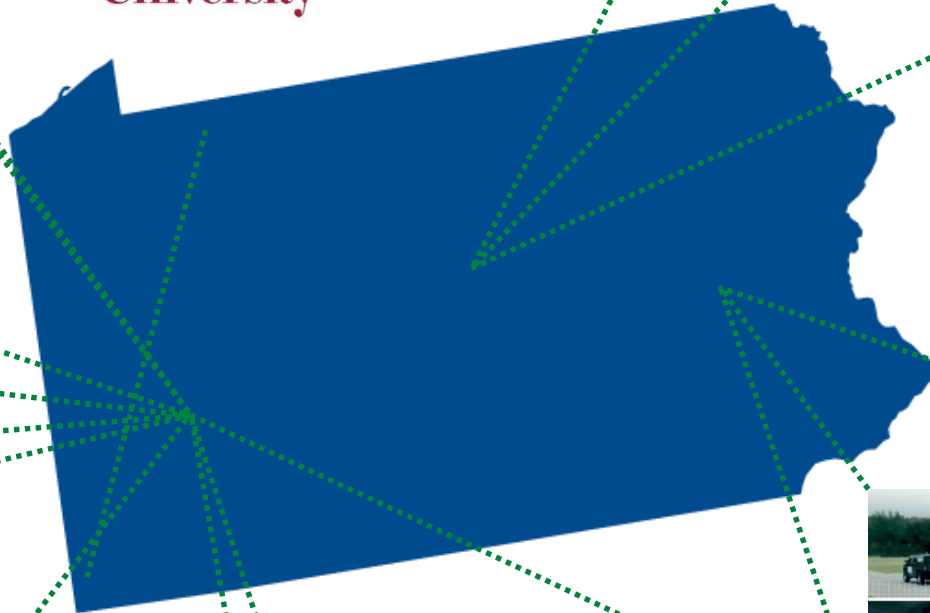
- **Safety, Safety, Safety**
- **Mobility**
- **Congestion Relief**
- **Emissions Reduction**
- **Economic Development**
- **Lifestyle Enhancement**



AVs in Pennsylvania



Carnegie
Mellon
University



DELPHI

ARGO AI



Royal
TRUCK & EQUIPMENT, INC.

Universities in PA

Carnegie Mellon University



- Birthplace of “self-driving” vehicles
- Mobility 21 – National University Transportation Center
- National Robotics Engineering Center

Penn State University



- Partnership with Volvo Trucking
- US DOT AV Proving Ground
- Focus on connected and automated fleet testing

University of Pennsylvania



- Analyzing human factors in an AV environment
- Implications of AVs on various industries
- Developing driver's license tests for automated vehicles

AV Policy Task Force



- Government -

- PennDOT • PTC
- DCED • PSP
- Insurance • FHWA
- City of Pittsburgh



- Advocacy -

- AAA
- ATA
- PMTA
- Trial Lawyers
- PA Insurance Federation



- Academia -

- CMU
- U Penn
- Penn State



- Industry -

- Uber
- SAE
- GM
- Global Automakers



Pennsylvania Autonomous
Vehicle Testing Policy:
**Final Draft Report of the
Autonomous Vehicle Policy
Task Force**

November 2, 2016



Legislation

Preparing for the Future

SB 427

Amending Title 75 (Vehicles) of the Pennsylvania Consolidated Statutes, in operation of vehicles, providing for highly automated vehicles and truck platoon testing, under PennDOT's auspices.

Introduced: February 24, 2017



Rafferty



Browne



Vulakovich



Sabatina



Blake



Brewster



Costa



Fontana



Leach

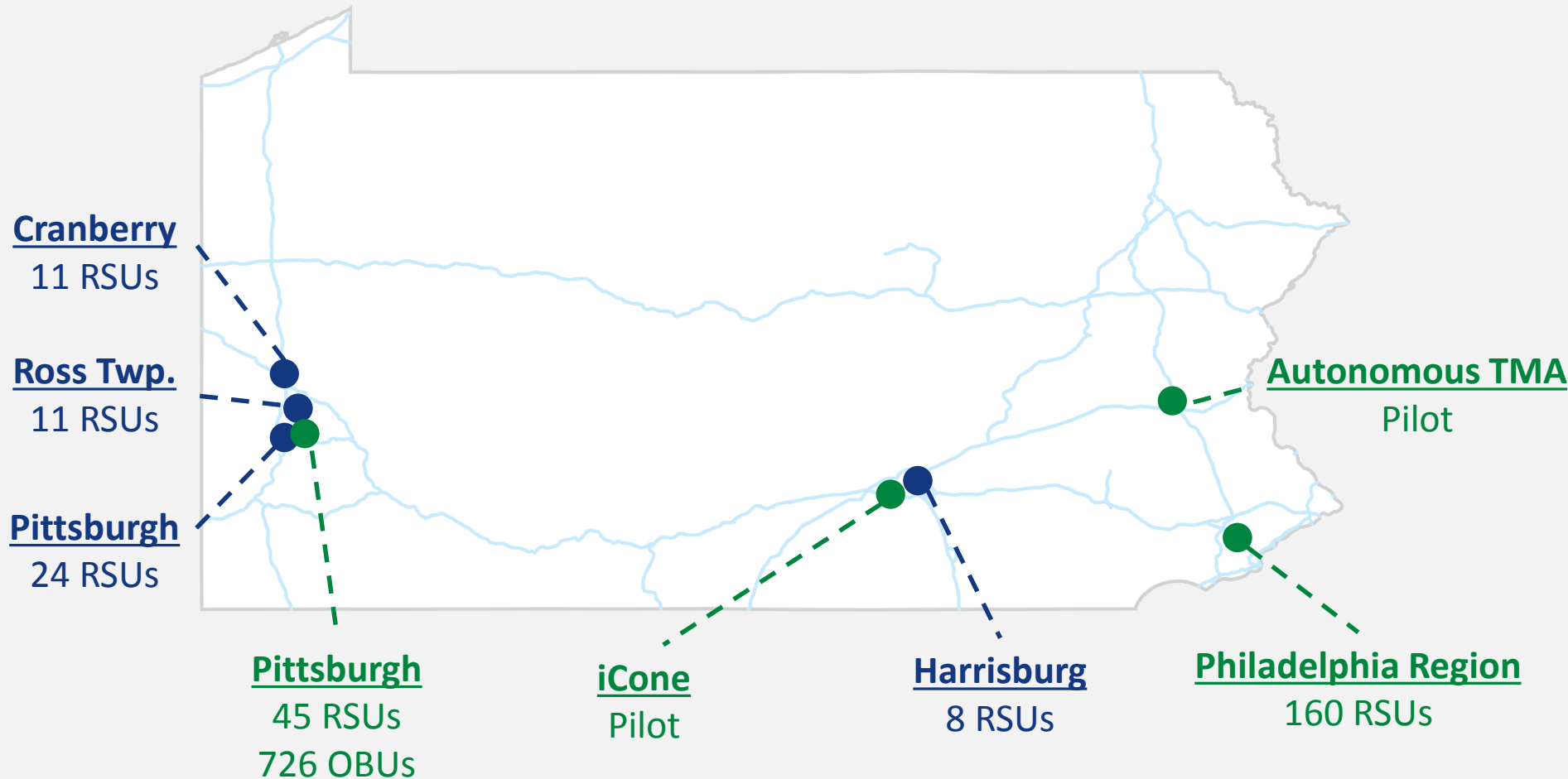


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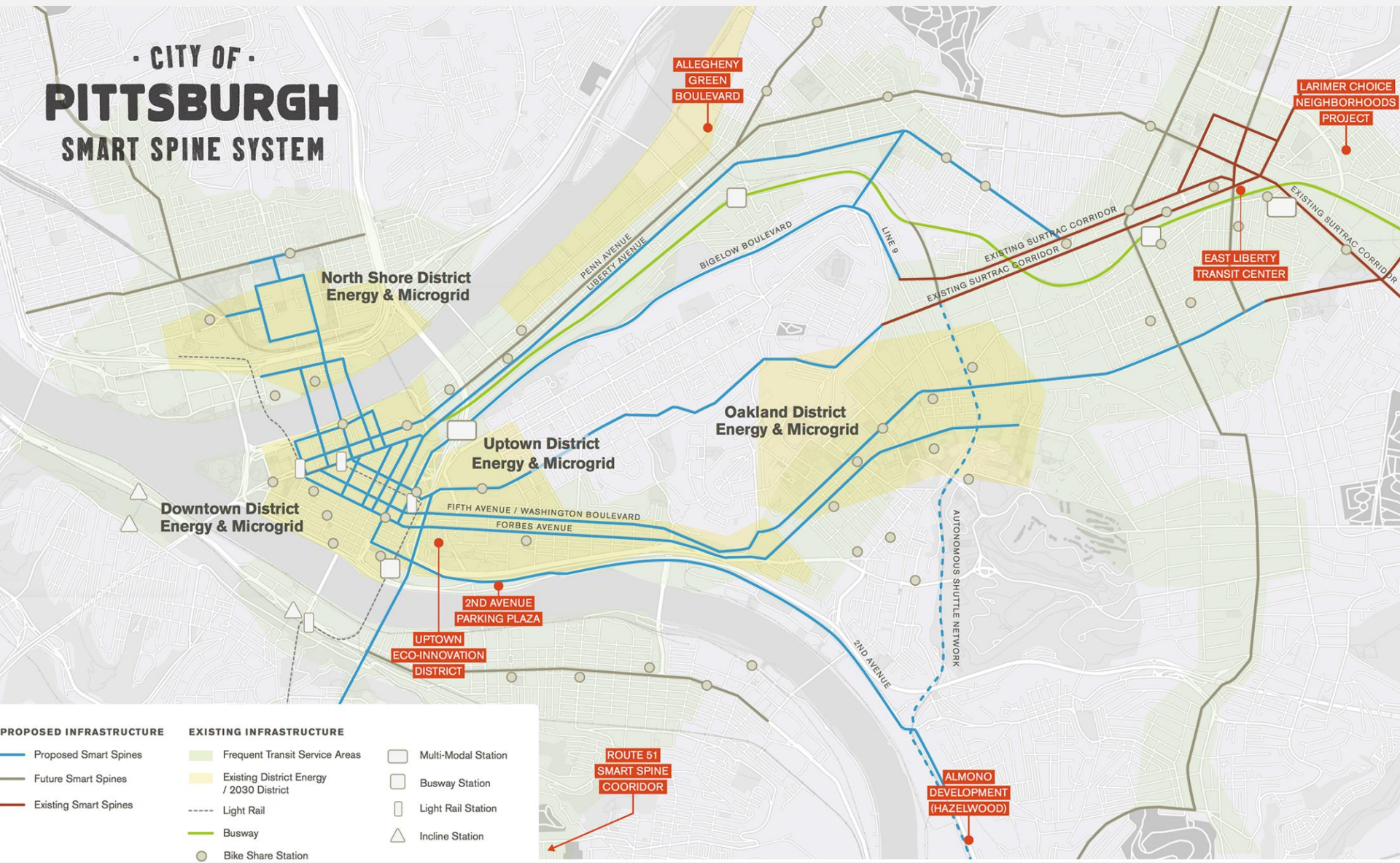
V2I Deployments

CURRENT

PLANNED



• CITY OF • PITTSBURGHSMART SPINE SYSTEM



PROPOSED INFRASTRUCTURE

- Proposed Smart Spines
- Future Smart Spines
- Existing Smart Spines

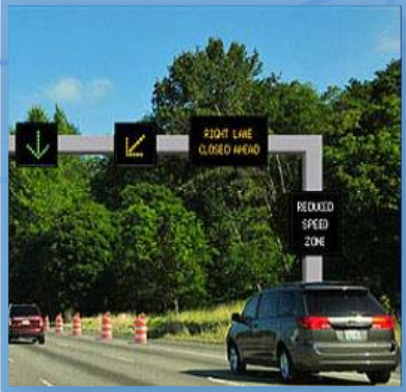
EXISTING INFRASTRUCTURE

- Frequent Transit Service Areas
- Existing District Energy / 2030 District
- Light Rail
- Busway
- Bike Share Station

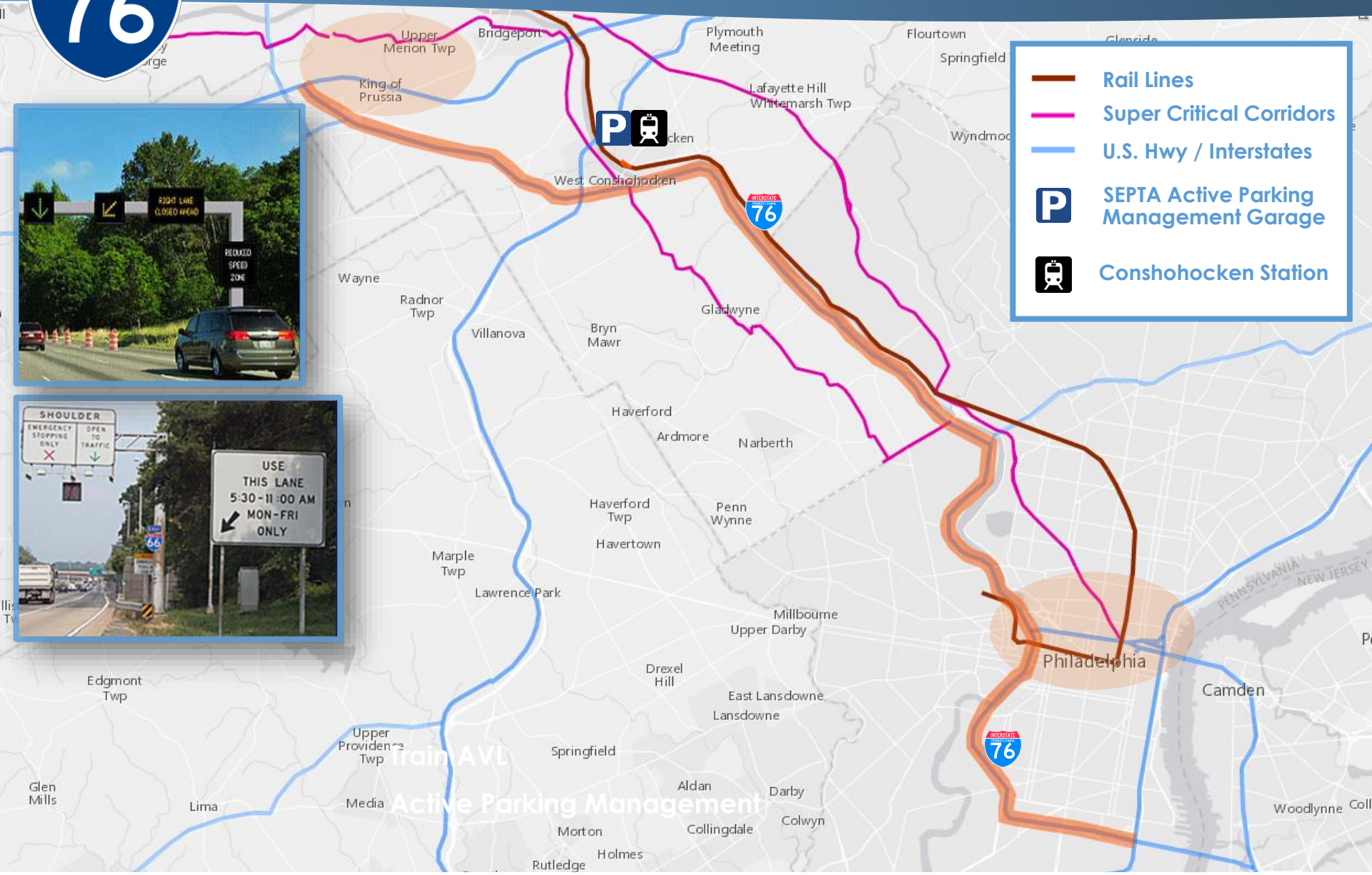
- Multi-Modal Station
- Busway Station
- Light Rail Station
- Incline Station



Active Corridor Management Project



- Rail Lines
- Super Critical Corridors
- U.S. Hwy / Interstates
- SEPTA Active Parking Management Garage
- Conshohocken Station





Autonomous Shuttle



PennState

Harrisburg International
Airport-Olmsted Field



Smart Belt Coalition



Attributes:

4 Distinct Seasons

Urban & Rural Roadways

Multi-jurisdictions

Priorities:

Freight

Work Zones

Traffic Incident Mgmt.

Public Outreach

Speaking Engagements



- Speaking Engagements in 2016:

- Interviews: 20
- Regional: 15
- Statewide: 12
- National: 9
- International: 2

Harrisburg HAV Demonstration



- Legislature and key transportation officials
 - 50+ riders
 - Governor Tom Wolf
- 1.6 km loop on public roads
- Broad media coverage

Pennsylvania HAV Summit



- Inaugural Summit - Fall 2017
- Two Focus Areas
 - Local Governments
 - Workforce Development
- Outcomes will tie into CV/AV Strategic Plan

LIVE



Issues *and*

Challenges *and*

Uncertainties

... oh my!



- ***Fleets***
- ***Workforce impacts***
- ***Business models***
- ***Transit impacts***
- ***Land-use & travel patterns***
- ***Autonomy vs connectivity***
- ***Funding***
- ***Maintenance***
- ***Data ownership/privacy***
- ***Cybersecurity***
- ***Ethics***
- ***Human/machine interface***



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Learn more....
www.penndot.gov

