



Connected Vehicles in the United States

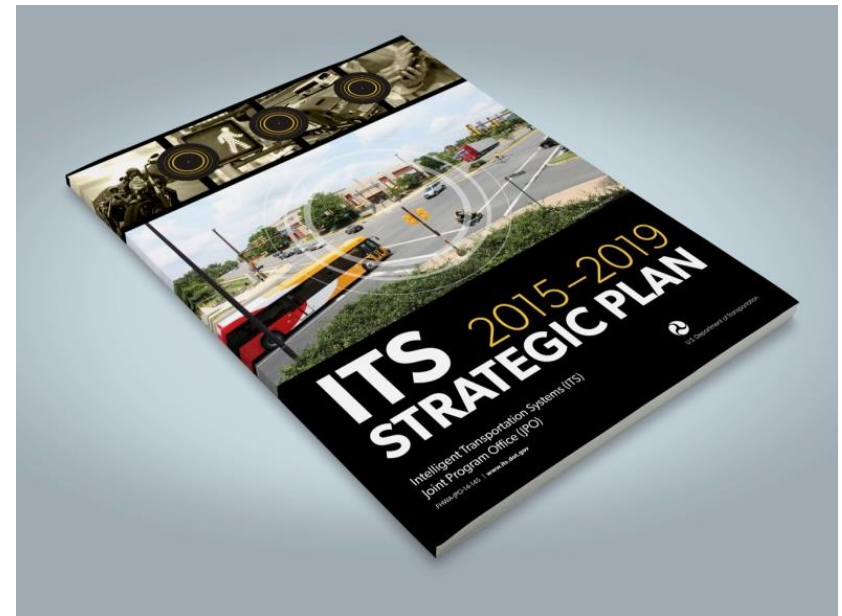
2nd Workshop on Connected and Automated Driving Systems

October 27, 2015

Kevin Dopart, U.S. Department of Transportation

ITS Strategic Plan 2015-19 Strategic Priorities

- **Two Strategic Priorities:**
 - **Realizing Connected Vehicle Implementation** – Builds on the substantial progress made in recent years around design, testing, and planning for connected vehicles to be deployed across the nation.
 - **Advancing Automation** – Shapes the ITS Program around research, development, and adoption of automation related technologies as they emerge.



Major Connected Vehicle Activities Underway

- Connected Vehicle Pilots
- Rulemaking and Guidance
- Connected Automation Research





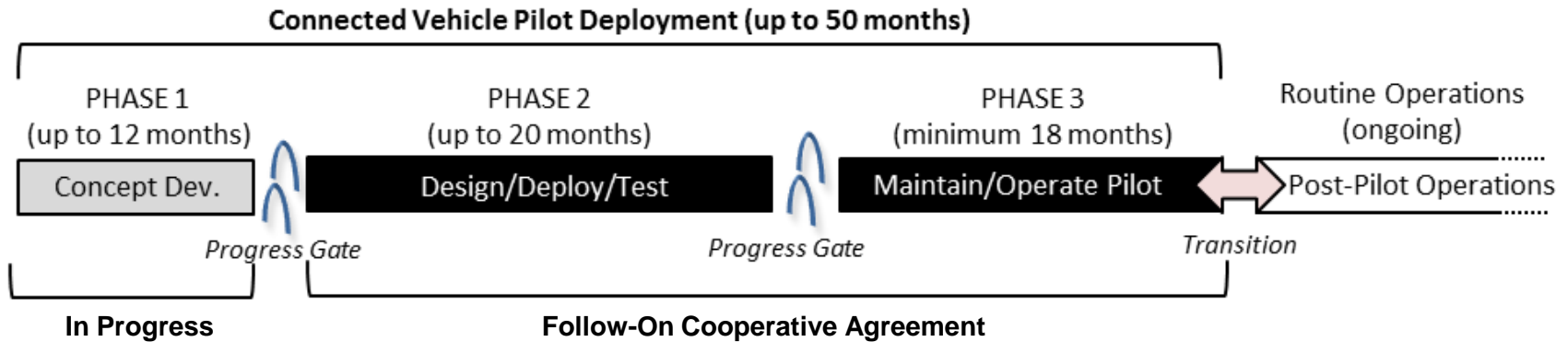
CONNECTED VEHICLE PILOT Deployment Program

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



ITS Joint Program Office

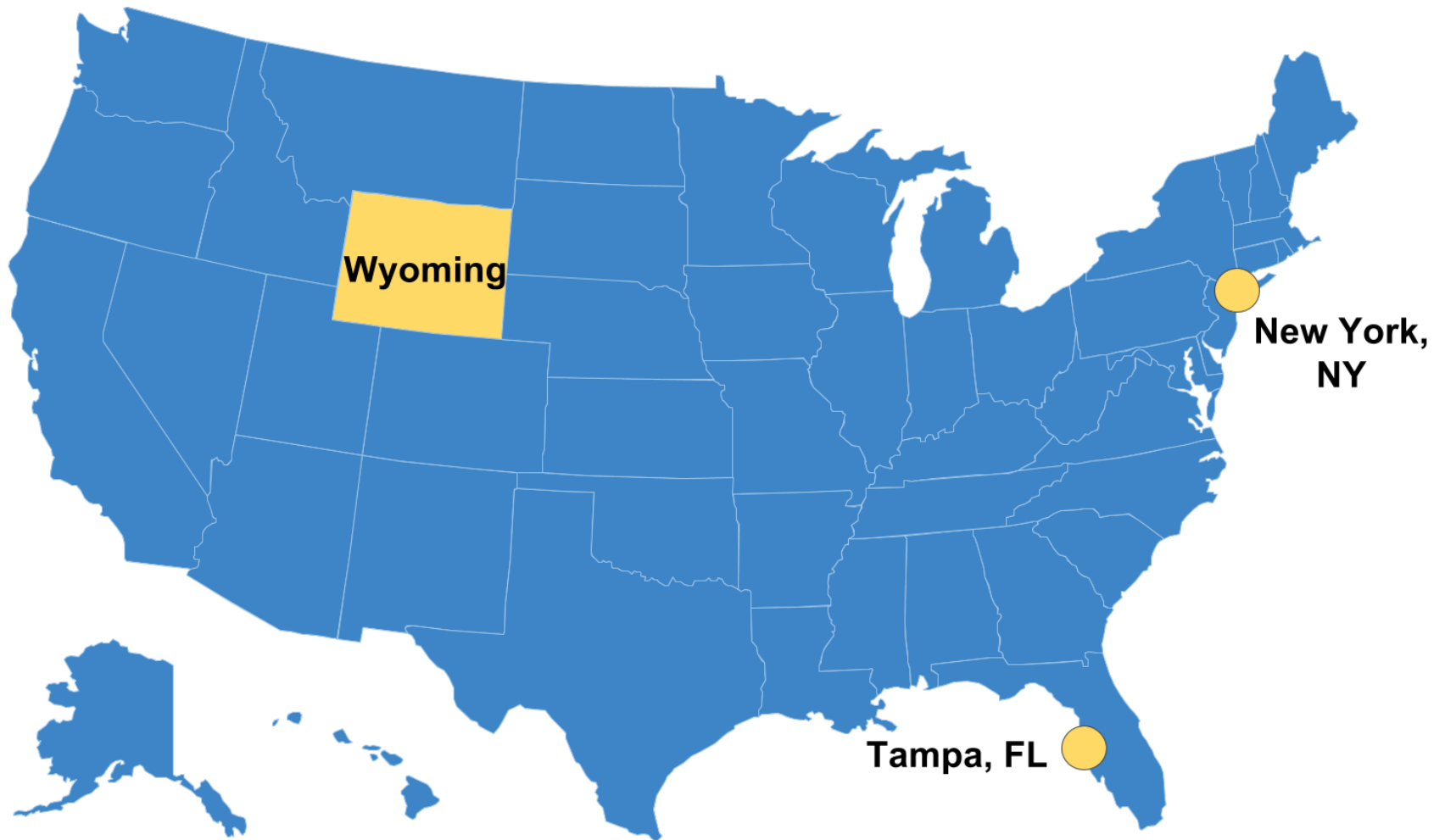
Three Pilots Awarded Phase 1 Contracts



- Tampa, Florida
- New York City, New York
- State of Wyoming



Connected Vehicle Pilot Locations



Tampa, Florida



- Who
 - Tampa Hillsborough Expressway Authority, City of Tampa, Hillsborough Regional Transit Authority, Florida DOT
- Where
 - Expressway and downtown streets
- Why
 - Peak-hour congestion mitigation; pedestrian & bicycle safety; emissions reduction



New York City

- Who
 - New York City DOT
- What
 - 10,000 city-owned and commercial vehicles; downtown streets and expressway segment
- Why
 - Speed harmonization, intersection safety, pedestrian safety, work zone safety



Wyoming

- Who
 - Wyoming DOT, ICF International
- What
 - Commercial freight movement on I-80 highway corridor
- Why
 - Adverse weather incident reduction through advisories, spot warnings, and road treatment
 - Speed harmonization; traveler information



RULEMAKING AND GUIDANCE



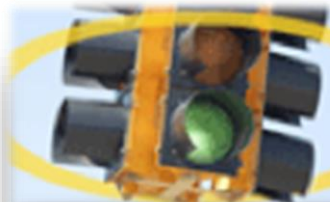
USDOT/NHTSA Decision on V2V

- NHTSA published the Advance Notice of Proposed Rulemaking on V2V technology for light vehicles; along with the “Vehicle-to-Vehicle Communications: Readiness of V2V Technology for Application” report
- Primary purpose is to enable collision warnings to drivers
- Based on several years of research including the safety pilot model deployment in Ann Arbor, Michigan
- Security and privacy protections built in:
 - No exchanging or recording of personal information
 - No tracking of vehicle movements
- Notice of Proposed Rulemaking (NPRM) expected to be issued in 2016



2015 FHWA Guidance Will Help Communities Prepare for Connected Vehicles

- The FHWA is developing policy positions, guidance, guidelines, whitepapers, and practitioner tools to promote the smooth deployment of V2I technology by transportation system owners/ operators.
- The FHWA will issue initial guidance in late 2015. This initial guidance is intended to assist in planning for future investments and deployment of V2I systems.
- The guidance does not impose any new requirements on local governments.
- This work will be harmonized with related efforts by other USDOT modal agencies.
- Subsequent guidance updates will also incorporate ITS research findings.



Help develop the FHWA's
2015 Guidance for
Connected Vehicles.
Add your comment.



CONNECTED AUTOMATION



Example Systems at Each Automation Level

Level	Example Systems	Driver Roles
1	Adaptive Cruise Control OR Lane Keeping Assistance	Must drive <u>other</u> functions and monitor driving environment
2	Adaptive Cruise Control AND Lane Keeping Assistance Traffic Jam Assist	Must monitor driving environment (system nags driver to try to ensure it)
3	Traffic Jam Pilot Automated parking Highway Autopilot	May read a book, text, or web surf, but be prepared to intervene when needed
4a	Closed campus driverless shuttle Valet parking in garage 'Fully automated' in certain conditions	May sleep, and system can revert to minimum risk condition if needed
4b	Automated taxi Car-share repositioning system	No driver needed

Example Systems at Each Automation Level

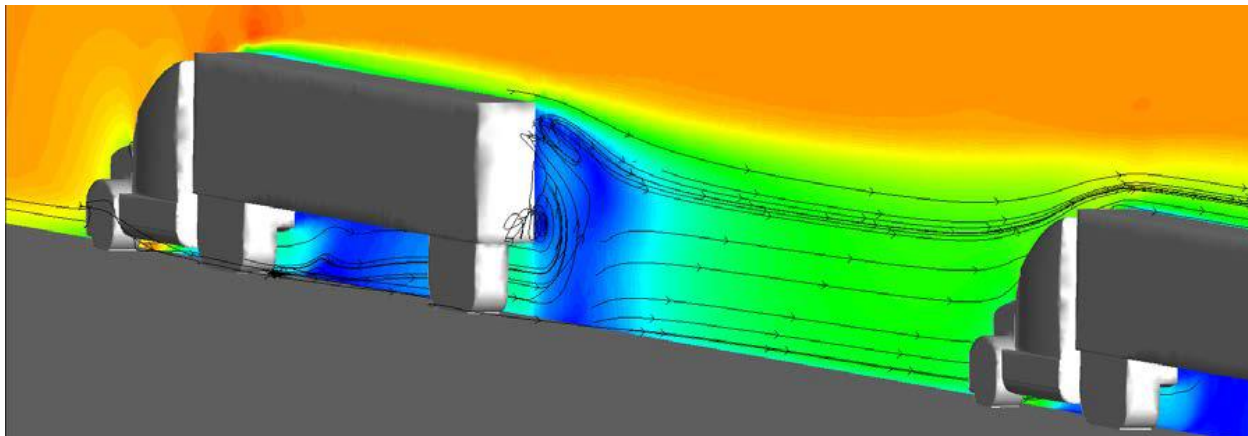
Level	Example Systems	Driver Roles
1	Adaptive Cruise Control OR Lane Keeping Assistance	Must drive <u>other</u> functions and monitor driving environment
2	Adaptive Cruise Control AND Lane Keeping Assistance Traffic Jam Assist	Must monitor driving environment (system nags driver to try to ensure it)
3	Traffic Jam Pilot Automated parking Highway Autopilot	May read a book, text, or web surf, but be prepared to intervene when needed
4a	Closed campus driverless shuttles Valet parking in garage 'Fully automated' in certain conditions	May sleep and system can revert to minimum risk condition if needed
4b	Automated taxi Car-share repositioning system	No driver needed

Connected automation R&D underway at USDOT



Current L1 Connected Automation R&D

- Cooperative Adaptive Cruise Control development with OEMs
- Truck Platooning (2 projects)
- Freeway Speed Harmonization
- Lane Change/Merge
- Eco-Approach and Departure from Signals
- CACC Human Factors in Driving Simulator



For More Information

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AMERICANS WITH DISABILITIES ACT

Current Research

- + Strategic Plan 2015-2019
- + Safety
- + Mobility
- + Environment
- + Road Weather
- + Policy
- + Connected Vehicle Technology
- + Intermodal Research
- + Exploratory
- + ITS Cross-Cutting Support
- + Success Stories

All Research >>

Spotlight

September 8, 2015
USDOT Releases Dedicated Short Range Communications (DSRC) Spectrum Sharing Test Plan ... [Read more](#)

August 18, 2015
Report from the 2015 Automated Vehicles Symposium (AVS 2015) in Ann Arbor, Michigan ... [Read more](#)

July 14, 2015
Release 2.2 of the Research Data Exchange and New Connected Vehicle Data Sets Are Now Available. ... [Read more](#)

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Connected Vehicle Basics

CV Pilots Deployment Project

Planning for the Future of ITS

ITS 2015-2019 STRATEGIC PLAN

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