



CONNECTED VEHICLE PILOT Deployment Program



PROGRAM GOALS



CONNECTED VEHICLE APPLICATIONS



- The USDOT has made a significant investment in foundational research and initial development of connected vehicle applications
 - Concepts of Operations
 - System Requirements
 - Prototype Design and Testing
 - Prototype Impacts Assessment
 - Analytics, Modeling and Simulation to Assess Potential Long-Term Impacts

- Not all CV Application efforts are in the same state of maturity, few are complete
 - But a large number of application development efforts across multiple programs will be substantively complete in late 2014



CONNECTED VEHICLE APPLICATIONS

V2I Safety

Red Light Violation Warning
Curve Speed Warning
Stop Sign Gap Assist
Spot Weather Impact Warning
Reduced Speed/Work Zone Warning
Pedestrian in Signalized Crosswalk Warning (Transit)

V2V Safety

Emergency Electronic Brake Lights (EEBL)
Forward Collision Warning (FCW)
Intersection Movement Assist (IMA)
Left Turn Assist (LTA)
Blind Spot/Lane Change Warning (BSW/LCW)
Do Not Pass Warning (DNPW)
Vehicle Turning Right in Front of Bus Warning (Transit)

Agency Data

Probe-based Pavement Maintenance
Probe-enabled Traffic Monitoring
Vehicle Classification-based Traffic Studies
CV-enabled Turning Movement & Intersection Analysis
CV-enabled Origin-Destination Studies
Work Zone Traveler Information

Environment

Eco-Approach and Departure at Signalized Intersections
Eco-Traffic Signal Timing
Eco-Traffic Signal Priority
Connected Eco-Driving
Wireless Inductive/Resonance Charging
Eco-Lanes Management
Eco-Speed Harmonization
Eco-Cooperative Adaptive Cruise Control
Eco-Traveler Information
Eco-Ramp Metering
Low Emissions Zone Management
AFV Charging / Fueling Information
Eco-Smart Parking
Dynamic Eco-Routing (light vehicle, transit, freight)
Eco-ICM Decision Support System

Road Weather

Motorist Advisories and Warnings (MAW)
Enhanced MDSS
Vehicle Data Translator (VDT)
Weather Response Traffic Information (WxTINFO)

Mobility

Advanced Traveler Information System
Intelligent Traffic Signal System (I-SIG)
Signal Priority (transit, freight)
Mobile Accessible Pedestrian Signal System (PED-SIG)
Emergency Vehicle Preemption (PREEMPT)
Dynamic Speed Harmonization (SPD-HARM)
Queue Warning (Q-WARN)
Cooperative Adaptive Cruise Control (CACC)
Incident Scene Pre-Arrival Staging
Guidance for Emergency Responders (RESP-STG)
Incident Scene Work Zone Alerts for Drivers and Workers (INC-ZONE)
Emergency Communications and Evacuation (EVAC)
Connection Protection (T-CONNECT)
Dynamic Transit Operations (T-DISP)
Dynamic Ridesharing (D-RIDE)
Freight-Specific Dynamic Travel Planning and Performance
Drayage Optimization

Smart Roadside

Wireless Inspection
Smart Truck Parking



PILOT DEPLOYMENT PROCESS

- **Pilot Deployment Concept Development Process**
 - Identify Local Needs
 - Set Performance Goals
 - Select CV Applications That Work Together Meet Those Goals

- **USDOT Sample Pilot Concepts from Hypothetical Locations**
 - Hypothetical, but realistic examples of localities applying the pilot deployment concept development process



SAMPLE DEPLOYMENT CONCEPT – Downtown Sunnyside

~ Improving Congestion in an Urban Arterial Network ~

Improve Transit Reliability

- Connection Protection
- Transit Signal Priority

Improve Pedestrian Safety

- Mobile Accessible Pedestrian Signal System
- Pedestrian in Signalized Crosswalk Warning
- Intersection Movement Assist

Improve Air Quality

- Eco-Approach and Departure at Signalized Intersections
- Eco-Traffic Signal Timing



Synergies among applications increase benefits and reduce costs



SAMPLE DEPLOYMENT CONCEPT – Greypool County

~ Improving Safety and Mobility in a Rural Area ~

Increase Accessibility

- Dynamic Transit Operations

Improve Safety

- Red Light Violation Warning
- Stop Sign Gap Assist
- Left Turn Assist

Informing Drivers During Bad Weather

- Weather Response Traffic Information



Synergies among applications increase benefits and reduce costs



SAMPLE DEPLOYMENT CONCEPT – District 13 Operations

~ Improving the Efficiency of Road Maintenance ~

Improve Snow Removal

- Enhanced Maintenance Decision Support System

Improve Management of Work Zones

- Work Zone Traveler Information



Improve Situational Awareness

- Probe-based Pavement Maintenance

Synergies among applications increase benefits and reduce costs



SAMPLE DEPLOYMENT CONCEPT – I-876 Corridor

~ Improving Freight Movement in an Inter-State Corridor ~

Improve Freight Productivity

- Freight Advanced Traveler Information System
- Drayage Optimization
- Freight Signal Priority

Improve Truck Safety

- Curve Speed Warning
- Do Not Pass Warning/Lane Change Warning



Synergies among applications increase benefits and reduce costs



CV PILOTS DEPLOYMENT SCHEDULE AND RESOURCES

- Proposed CV Pilots Deployment Schedule

Schedule Item	Date
Regional Pre-Deployment Workshop/Webinar Series	Summer-Fall 2014
Solicitation for Wave 1 Pilot Deployment Concepts	Early 2015
Wave 1 Pilot Deployments Award(s) Concept Development Phase (6-9 months) Design/Build/Test Phase (10-14 months) Operate and Maintain Phase (18 months)	September 2015
Solicitation for Wave 2 Pilot Deployment Concepts	Early 2017
Wave 2 Pilot Deployments Award(s) Concept Development Phase (6-9 months) Design/Build/Test Phase (10-14 months) Operate and Maintain Phase (18 months)	September 2017
Pilot Deployments Complete	September 2020

- Resources

- ITS JPO Website: <http://www.its.dot.gov/>
- CV Pilots Program Website: <http://www.its.dot.gov/pilots>



CV PILOTS WEBSITE



Print page

- Research
 - Safety
 - Mobility
 - Environment
 - Road Weather
 - Policy
 - Connected Vehicle Technology
 - CV Pilots Deployment Project
 - Pilots Deployment Project
 - Short-Term, Intermodal Research
 - Exploratory Research
 - ITS Cross-Cutting Support
 - Success Stories

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

Connected Vehicles CV Pilots Deployment Project



- ### Latest News & Updates
- Sample Deployment concept audio recordings for District 13 Operations is now available (9/23/14)
 - Sample Deployment concept audio recordings for Greypool County is now available (9/22/14)
 - Deployment concept audio recordings for Downtown Sunnyside and H.W. Halleck Expressway are now available (9/18/14)
 - CV Pilots FAQs (Updated September 16, 2014)
 - Webinar Part 1 recording is now available - August 27, 2014 - Webinar Series Part 1: Concept, Phases, Waves, and Partnerships (9/4/14)
 - The USDOT Connected Vehicles Pilot Deployment Program Webinar Series Part 2: Communications and Role of DSRC is open for registration
 - The presentation material of the USDOT Connected Vehicles Pilot Deployment Program Webinar Series Part 1 is available now
 - The Descriptions of the Connected Vehicle Applications are available now
 - Summary of Responses to the Connected Vehicle Pilot Deployment Program's Request for Information (RFI)
- [More news »](#)

About the CV Pilots Deployment Project

The U.S. DOT (DOT) connected vehicle research program is a multimodal initiative that aims to enable safe, interoperable networked wireless communications among vehicles, infrastructure, and personal communications devices. Connected vehicle research is sponsored by the DOT and others to leverage the potentially transformative capabilities of wireless technology to make surface transportation safer, smarter, and greener. Research has resulted in a considerable body of work supporting pilot deployments, including concepts of operations and prototyping for more than two dozen applications. Concurrent Federal research efforts developed critical cross-cutting technologies and other enabling capabilities required to integrate and deploy applications.

Based on the successful results of the connected vehicle research program, and the recent decision by NHTSA to pursue vehicle to vehicle communications safety technology for light vehicles, a robust connected vehicle pilots program is envisioned as a mechanism to spur the implementation of connected vehicle technology. These pilots will serve as initial implementations of connected vehicle

CV Pilots Portal

- CV Pilots FAQs
- CV Applications
- Deployment Concepts



Featured Links

- Active Transportation and Demand Management (ATDM)
- Connected Vehicle Reference Implementation Architecture (CVRIA) and SET-IT
- Connected Vehicle Test Beds
- Open Source Application Development Portal (OSADP)
- Research Data Exchange (RDE)
- Safety Pilot
- Vehicle-to-Infrastructure (V2I) Prototype
- ITS Professional Capacity Building Program (PCB)

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