Wyoming DOT
Connected Vehicle Pilot Deployment Program

SAFETY COMMUNICATION TECHNOLOGY SHOWCASE

OCTOBER 30, 2018
Agenda

- Welcome
- Project Background
- Partner Remarks
- Behind the Scenes
- Next Steps for Deployment
- Ribbon-Cutting
- On-Road Demonstrations
  - I-80 and the Archer Complex
Key Technology Partners

NCAR
NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

LEAR CORPORATION

VITAL ASSURANCE

McFARLAND MANAGEMENT, LLC

ICF

Neaera Consulting
Designing for the Future

SiriusXM

WYDOT Team

- Equipment
- Traffic
- Telecom
- Patrol
- GIS/ITS
- District Personnel
- Rigging Shop
- IT
- Public Affairs
Corridor Overview
I-80 Corridor

- Runs 402 miles along Wyoming’s southern border
- More than 32 million tons of freight per year
- Truck volume is 30-55% of the total traffic stream on an annual basis
  - Seasonal peaks as high as 70%
I-80 Corridor
I-80 Corridor

U.S. Annual Hours of Blowing Snow
Estimated from Modeled Data

Map generated July 2012 by Meridian Environmental Technology under funding of Clear Roads Project #10-02.

Data portrayed in this map were generated using data from the North American Model (NAM) over the course of the 2004/05 through 2010/11 winter seasons, and 3-sim landcover data from the University of Maryland. The NAM data were used to track "blowable snowpack", which was subsequently evaluated against wind speed and surface roughness. No reliable, national observational record of the frequency of blowing/sifting snow exists for calibration, so data should be treated only as a gross estimate of where, and how often, blowing snow occurs. More information as to the specific process used to develop this map is available from Clear Roads.
I-80 Corridor
I-80 Corridor
I-80 Corridor

One of the most heavily instrumented rural corridors in the United States

136 Variable Speed Limit Signs
   supported by 94 traffic sensors
54 Electronic Message Signs
44 Weather Stations
52 Webcams
WYDOT’s Approach

Roadway Design
- Good roadway design
- Select best geometry using powerful modeling tools

Mitigation
- Slope modifications
- Snowfence

Technology
- Intelligent transportation systems
- Connected vehicle technology
Connected Vehicle Pilot
Connected Vehicle Technology
Benefits to Drivers

- Pilot participants will have better information from V2V and I2V messages
- The TMC will have improved information from pilot vehicles
- All drivers will benefit from more timely and accurate alerts
- Information shared with 3rd parties
CV Pilot Partner Remarks

- Game changing technology
- Safety and efficiency of the transportation system
WYDOT Field Personnel

- Tom DeHoff, District Engineer, District 1 in southeast Wyoming
- Representing all districts
- Responsibilities
  - Traffic
  - Construction
  - Equipment
  - Maintenance
  - Contractors
WYDOT Field Personnel

- Top Priority: Safety of personnel
  - Maintenance: Summer and winter activities
  - Traffic: Striping and other traffic operations
  - Construction: Work zone safety

Every year about 8 snow plows are hit in spite of flashing lights around the plow to make them visible.
WYDOT Field Personnel

- Roadway Safety
  - Fewer crashes and less severe crashes result in fewer deaths and fewer road closures
  - Fewer crashes mean WYDOT employees and other responders remain out of harm’s way
Wyoming Highway Patrol

- Pleased to participate in pilot
- Timely information will benefit the public
- Parked patrol vehicles will announce position which minimizes risk of a crash
I-80 Corridor
Troopers made 24,905 traffic stops on I-80 in Wyoming last year and 106,630 traffic stops statewide.

- Each stop puts officer in jeopardy
- CV applications provide patrol officers with more protection on the road

Responding to incidents quicker can improve public safety
- Distress Notification application can minimize secondary crashes and allow Troopers to respond more quickly to crashes
Behind the Scenes
System Design

- Integrate with Existing Systems
- Leverage Open Source Software
- Use Standards
- Agile Development
- Acceptance Testing
System Security

SECURITY BY DESIGN

- HSM On-board units
- HSM Road-side units
- VPN Protect data in transit
- HSM & Background Checks For TMC
- Database Encryption Tables w/ Potential PII
- SCMS Certificates and Validation
- Firewalls IPv4 and IPv6
Data Management

Data Sources

Back Office Operations (e.g., TMC)

Operational Data Environment (Controlled)

Research Data Archive (Controlled)

Research Data Archive (Public)

Operational Data Exchange (Public)

Independent Evaluators

3rd Party Developers & Researchers

CV Vendors & Deployers

Programmatic privacy protection and data fluidity enable rapid innovation, now and in the future
System Interoperability

➢ Future CV Ecosystem
   • Many vehicles
   • Many vendors
   • Many jurisdictions

➢ Messages between vehicles and infrastructure must be seamlessly exchanged and understood by each other

➢ Interoperability of CV Systems is vital to national deployment
Interoperability

- video
Next Steps for Deployment
Next Steps for Deployment

- Equip 400 partner vehicles with CV Technology
- Driver training
- Operate the system for demonstration period
- Collect data and assess performance
- Plan for long-term sustainability
Wyoming’s Connected Vehicle Pilot Project is dedicated to all families who have lost a loved one on a Wyoming highway.
visit the Wyoming Connected Vehicle Pilot website
https://wydotcvp.wyoroad.info
email
dot-cvpilot@wyo.gov