



Wyoming DOT Connected Vehicle Pilot

JANUARY 15, 2020

Pilot Update



- DSRC uncertainty
- Next steps
- Benefits

DSRC vs. 5G

- DSRC is the only currently available CV technology
- 5G is coming (and hyped) but it's not here
- April 30, 2019 meeting, EVERY participant was advocating to keep all 75 mhz of spectrum for public safety
- Telcom industry is putting muscle behind 5G marketing
- Change from DSRC to 5G is a hardware switchout
- Head fake → reallocation to WiFi

FCC Vote – Reallocation of Spectrum

UNITED STATES FREQUENCY ALLOCATIONS

THE RADIO SPECTRUM

RADIO SERVICES COLOR LEGEND

- | | | |
|-----------------------------|---------------------------|--|
| AIRCRAFT MOBILE | AIRTEL SATELLITE | RADIO ASTRONOMY |
| AIRCRAFT MOBILE SATELLITE | LAND MOBILE | RADIO DETERMINATION SATELLITE |
| AIRCRAFT RADIONAVIGATION | LAND MOBILE SATELLITE | RADIOLOCATION |
| AMATEUR | MARITIME MOBILE | RADIOLOCATION SATELLITE |
| AMATEUR SATELLITE | MARITIME MOBILE SATELLITE | RADIONAVIGATION |
| BROADCASTING | MARITIME RADIONAVIGATION | RADIONAVIGATION SATELLITE |
| BROADCASTING SATELLITE | METEOROLOGICAL | SPACE OPERATOR |
| Earth observation satellite | METEOROLOGICAL SATELLITE | SPACE RESEARCH |
| FISH | MOBILE | STANDARD FREQUENCY AND TIME SIGNAL |
| FISH SATELLITE | MOBILE SATELLITE | STANDARD FREQUENCY AND TIME SIGNAL SATELLITE |

ACTIVITY CODE

- | | |
|--------------------------|----------------------------------|
| GOVERNMENT EXCLUSIVE | GOVERNMENT NON-GOVERNMENT SHARED |
| NON-GOVERNMENT EXCLUSIVE | |

ALLOCATION USAGE DESIGNATION

SERVICE	EXAMPLE	DESCRIPTION
Priority	EOSS	Coastal Loran
Secondary	MOB	air flight with voice and data

The chart is published in accordance with the FCC Table of Frequency Allocations and is for informational purposes only. It does not constitute an offer of any service and should not be used as a basis for any business transaction. The chart is subject to change without notice and is not intended to be a substitute for the FCC rules.

U.S. DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Office of Spectrum Management
August 2011



FCC Vote – Reallocation of Spectrum

➤ FCC Proposal

- Lower 45 MHz to unlicensed WiFi
- Upper 30 MHz to ITS needs
 - 20 MHz of the upper portion of this to CV2X
 - Remaining either for DSRC or CV2X

➤ Reallocation impacts unclear

- USDOT cautions against interference from WiFi
 - Study shows bleed over into dedicated spectrum

Future of WYDOT CV Project

- WYDOT resilient design
- RSUs and OBUs purchased with dual capability
- All I2V information can be delivered by DSRC or Satellite
- Currently expanding tech capability to deliver TIMs statewide
- Waiting for final FCC rule but have options to pivot
- Lear decision to end product support
- Loss of Distress Notification application without Lear device
- Loss of both V2V applications without DSRC
- Continuing to deploy in WYDOT and fleet vehicles

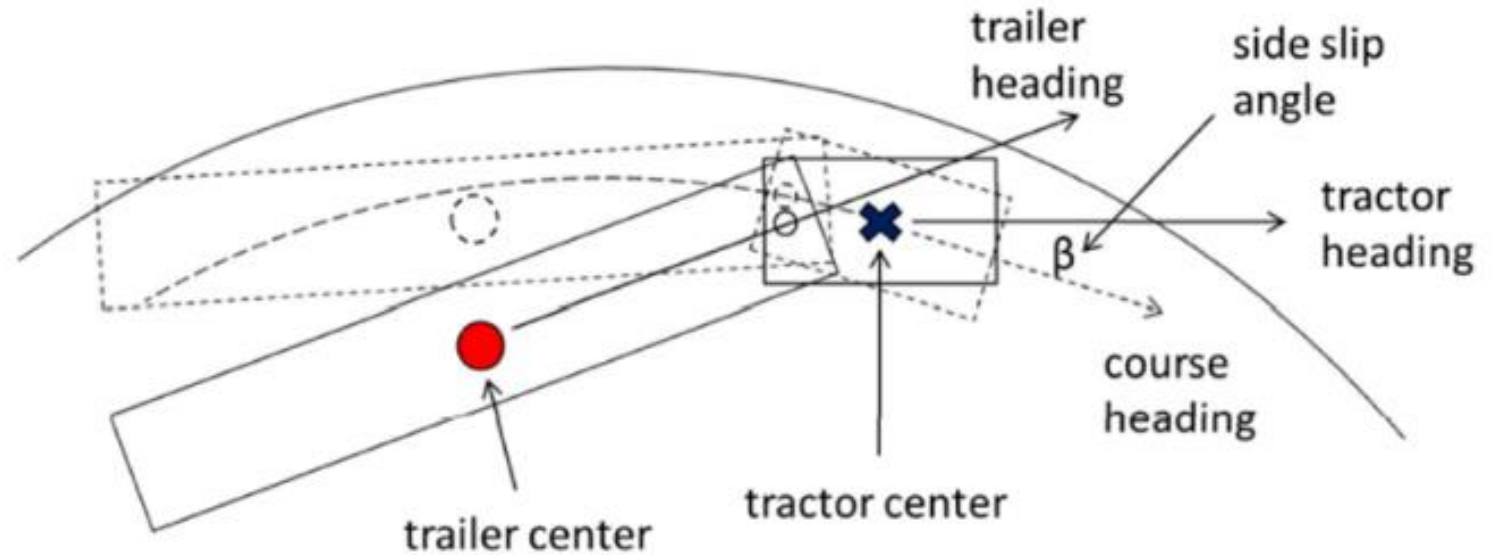
Issue – DSRC Shadow

- DSRC shadow created by box trailers
- Antenna placement was critical and we had to forge new ground on this research
- Cable had to be designed to minimize signal loss



Issue – Truck Articulation

- Trucks don't track like cars
 - BSM Part 1 is required but Part 2 is optional
 - This causes problems for V2V issues like FCW



Strategy: Require Part 1 and Part 2

Three pilot sites have agreed to use Basic Safety Message Parts 1 & 2

RSU Management

Connected Vehicle Monitor
version 2.0

Layers

- RSU Network
- RSU DSRC
- Construction
- VSL
- Incidents

RSUs 76	Active TIMs 243	RSU Network Not Available IPv4 - status up 	IPv6 Status null Node status is Down.
RSU Installation Status		IPv4 Status null Node status is Down. 	DSRC Status null Node status is Down.

Existing: 76
Proposed: 0

RSU Network: I80 E 317.2

Site Status	Existing
Vehicle Count (past 24 hours)	0
IPv4 Status	Node status is Up.
IPv4 Last Sync	3/20/2019, 9:08:01 AM
IPv6 Status	Node status is Up.
IPv6 Last Sync	3/20/2019, 9:08:01 AM
# Active TIMs	0

Related tables:

- Active TIMs

Zoom to

<https://wydotcwp.wyoroad.info/cvm>

Connected Vehicle Pilot



WYOMING DOT CONNECTED VEHICLE PILOT

IMPROVING SAFETY AND TRAVEL
RELIABILITY ON I-80 IN WYOMING



visit the Wyoming Connected Vehicle Pilot website
<https://wydotcwp.wyroad.info>

email
ali.ragan@wyo.gov