MEETING NOTES

Iowa Advisory Council on Automated Transportation (ATC)

Infrastructure Readiness Subcommittee Meeting

Thursday, December 10, 2020

1:00-2:00 pm CT

Action Items:

- Adam Shell – provide update on National Cooperative Highway Research Program (NCHRP) research project
- Mark Nahra - provide an update on his work and support related to pavement markings and the MUTCD

1. Welcome and introductions – Erin Mullenix, Infrastructure Readiness Subcommittee Chair
    - Attendees – 27 people
        - Erin Mullenix (Infrastructure Readiness Chair) – Iowa League of Cities
        - Cass Dorius, Hongwei Zhang – Iowa State University
        - Teja Pristavec – University of Virginia
        - John Davis – City of Des Moines
        - Colonel Nathan Fulk (Public Safety & Enforcement Chair) – Iowa State Patrol
        - John Gibson – Iowa Division of the Federal Highway Administration
        - Skyler Knickerbocker – Iowa State University, InTrans
        - Mark Nahra – Woodbury County
        - Sandra Larson – Stanley Consultants
        - Mike Lauer – Iowa Communications Network
        - Public Science Collaborative – Iowa State University
        - Peter Rafferty, Lia Yakumithis – Gannett Fleming
        - Adam Shell, Andy Lewis, Peggi Knight, Donna Matulac, Clayton Burke, Susan Fenton, Brent Paulsen, Garrett Pedersen, Jim Schnoebelen, Tim Simodynes – Iowa DOT
        - Dan McGehee, Omar Ahmad, Jacob Heiden – University of Iowa, National Advanced Driving Simulator

2. Agriculture and Rural Communities (ARA): Wireless Living Lab for Smart and Connected Rural Communities – Hongwei Zhang, Iowa State University
    - Rural broadband is a foundation for safety and prosperity of rural communities, yet many locations still lack access. Broadband spans a variety of sectors including transportation, public safety, agriculture, education, telehealth, and more. Wireless connectivity is especially important for connected and automated transportation in various applications like active safety and networked fuel economy.
    - The current ARA plan is to deploy infrastructure across several communities and research labs in the Ames area to provide fiber-like connectivity at ten times less cost. Deployments would provide coverage anywhere within 6-7 miles of the cities providing virtually seamless connectivity.
    - ARA is built on CyNet open-source wireless network using long-distance, high-throughput communications. The team has received funding from National Science Foundation (NSF) and is a finalist in another competition. The project also has support from the Iowa DOT including infrastructure and facilities.
    - There is great opportunity for Iowa to redefine wireless research and applications for connect and automated transportation. Progress is needed in transportation safety because there are over 100 casualties per day in the U.S. alone. Connected and automated vehicles have the potential to improve safety, and Iowa can be a leader in this field.
    - Slides from this presentation will not be available at this time because the project is still in competition stage. Please contact Hongwei at Iowa State University for more information and to continue the conversation: hongwei@iastate.edu, 515-294-2143.

3. Broadband Access and Barriers in Iowa – Dr. Cassandra Dorius, Iowa State University and Dr. Teja Pristavec, University of Virginia
    - A national team of extension leaders came together during the pandemic to discuss how communities can advance economic mobility. The team received funding from the Gates Foundation to create an economic mobility infrastructure using a community's own data. How can this data be leveraged in times of crisis to advance recovery efforts? The resources below provide additional information:
        - Towards a National Community Learning Network
        - Economic Mobility Data Infrastructure
    - The dashboard linked below visualizes three measures of connectivity infrastructure as barriers to remote work, education, and mental health care. It facilitates relative comparisons between counties within states, highlighting areas where workers may have difficulty working remotely, where youth could face barriers to participating in online education, and where county residents may have high need but low access to telemental health services. The dashboard allows extension professionals and policy-makers to make informed decisions about interventions and resource allocation based on conditions in their counties.
        - Connectivity Infrastructure as a Barrier: County Explorer
    - This dashboard visualizes discrepancies between FCC-reported broadband availability and ACS-reported broadband subscription at census block group and census tract levels, and the discrepancies between FCC-reported broadband availability and MS-reported broadband usage at the county level. Using the map selector allows filtering by state, level of geography, and urban status. Hovering over each area on the resulting map displays information about the geography, land area, population, urban status, and broadband coverage.
        - US Broadband Coverage Discrepancy Map

4. IR Work Plan & Tactical Actions

a. Build Out Fiber Backbone – Erin Mullenix, Adam Shell, Mike Lauer
    - Google Fiber project is coming online in West Des Moines. This city is investing in the infrastructure and leasing to the company. This is a unique partnership in Iowa and for Google where the conduit was provided by company for outside entities to lease.
    - 5.9 GHz Safety Spectrum is a dedicated radio spectrum reserved for transportation safety. The spectrum uses dedicated short-range communications (DSRC) to provide vehicle-to-everything (V2X) connectivity. There currently are limited deployments across the country using this spectrum, and the Federal Communication Commission voted unanimously to reduce the bandwidth specifically for transportation safety. Iowa has 20 DSRC deployments across the state. There is an opportunity for technology innovation.

b. AT Readiness
    - Adam Shell is involved with a National Cooperative Highway Research Program (NCHRP) research project on Infrastructure Modifications to Improve the Operation Domain of Automated Vehicles. This effort is in the early stages, and he will update the group as more info comes out. The Iowa ATC's Research, Development, Testing, & Evaluation working group will begin meeting in 2021, and Peggi Knight from the Iowa DOT will chair the group.
    - Donna Matulac with the Iowa DOT provided an update on automated maintenance vehicle research activities in surrounding states. Iowa will not be piloting the automated vehicle technology at this point but will continue engaging and learning with the states involved.

c. Improve Pavement Markings
    - Clayton Burke with the Iowa DOT provided update on the initiative to improve pavement markings in Iowa. The Iowa DOT approach includes the practices below, which can positively impact vehicles with advanced driver assistance systems (ADAS) and automated/connected technologies:
        - Wider pavement marking (6") using long life marking material

- Grooved-in wet weather white skip line with shadow stripe for high contrast
- 80 mm groove depth for protection
- Durable legends at the top of each interstate ramp

5. Open Discussion – All subcommittee members

6. Information and key upcoming dates
    - Iowa ATC Meeting: Q1 of 2021

ATC SUBCOMMITTEE MEETING

Infrastructure Readiness

December 10, 2020

WELCOME AND INTRODUCTIONS

Erin Mullenix –

Infrastructure Readiness Subcommittee Chair

ARA: WIRELESS LIVING LAB FOR SMART AND CONNECTED RURAL COMMUNITIES

Hongwei Zhang –
Iowa State University

BROADBAND ACCESS AND BARRIERS IN IOWA

Dr. Cassandra Dorius - Iowa State University

Dr. Teja Pristavec - University of Virginia

INFRASTRUCTURE READINESS WORK PLAN & TACTICAL ACTIONS

Build Out Fiber Backbone – Erin Mullenix, Adam Shell, Mike Lauer

- Google Fiber
- 5.9 GHz Safety Spectrum

5.9 GHZ SAFETY SPECTRUM

- Background
- FCC Meeting – November 18, 2020
  - Modernizing the 5.9 GHz Band
- Existing Deployment Impacts & Next Steps

THE 5.9 GHZ SAFETY BAND

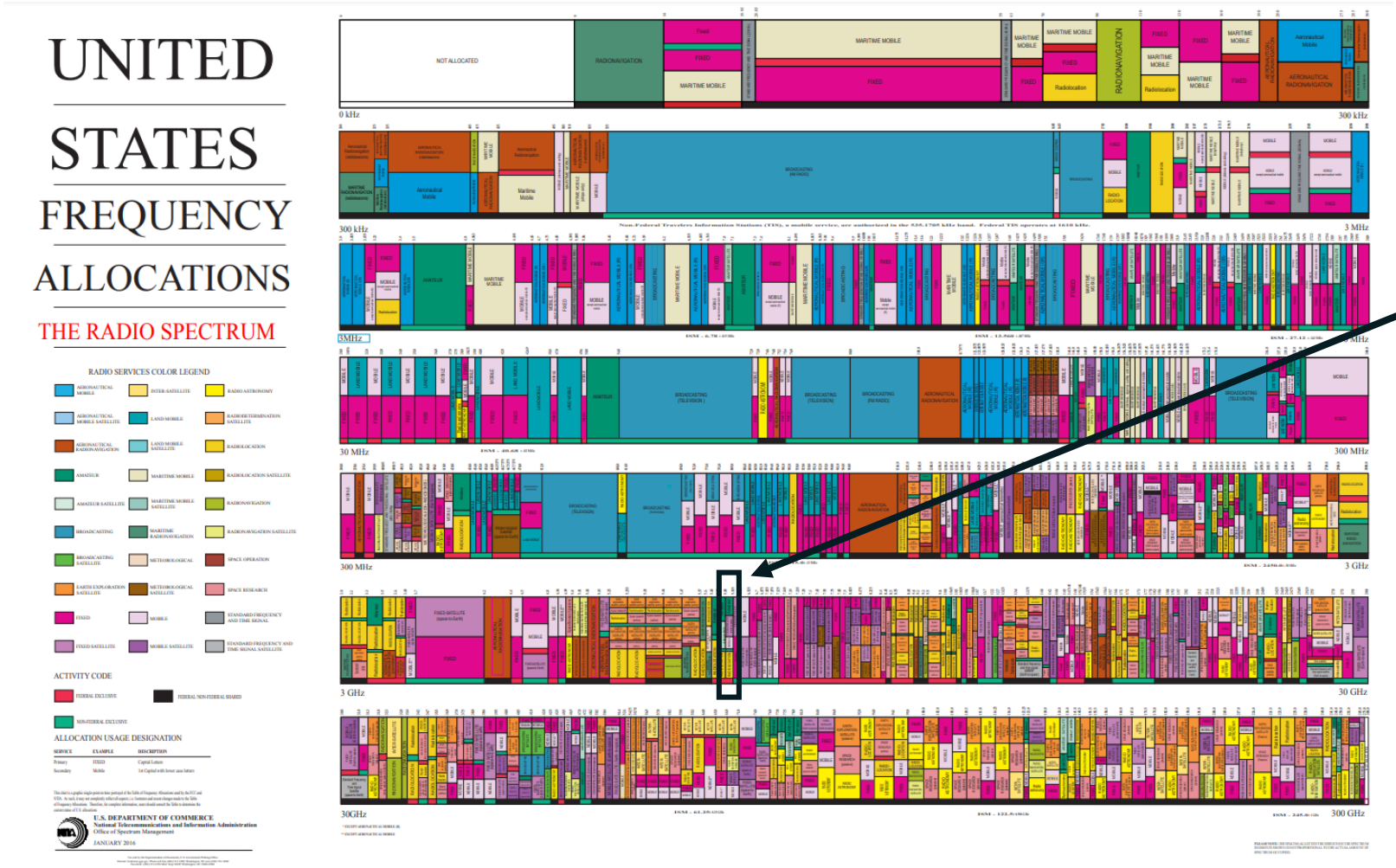
U.S. Department of Transportation

https://www.transportation.gov/content/safety-band

Federal Communications Commission

https://www.fcc.gov/news-events/events/2020/11/november-2020-open-commission-meeting

5.9 GHZ SAFETY SPECTRUM



https://www.ntia.doc.gov/page/2011/united-states-frequency-allocation-chart

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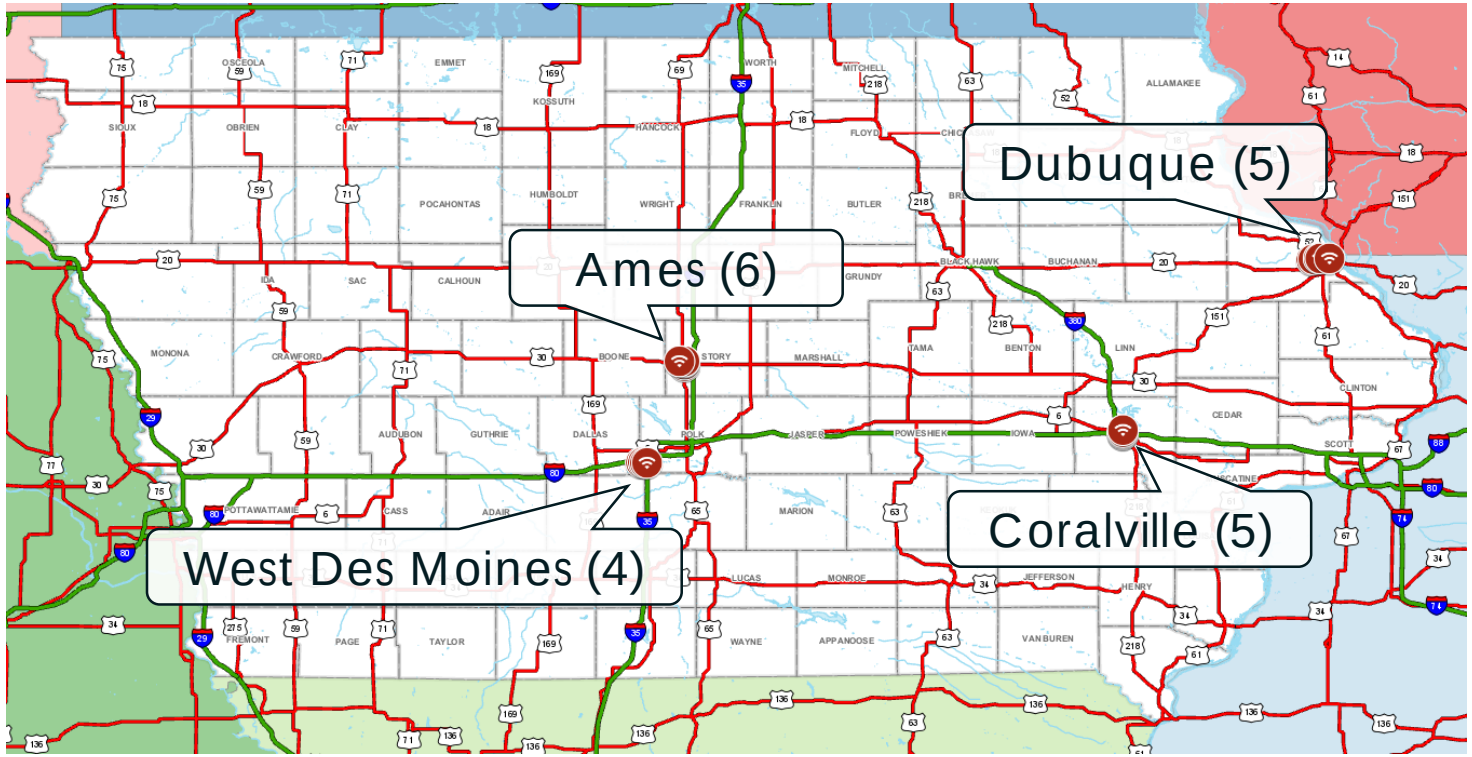
5.9 GHZ SAFETY SPECTRUM

National Connected Vehicle Signal Phasing and Timing (SPaT) Deployment Challenge



Applied Info to buy back DSRC roadside kit

Company makes offer following US regulator's decision on 5.9 GHz safety spectrum

https://www.itsinternational.com/its7/news/applied-info-buy-back-dsrc-roadside-kit

INFRASTRUCTURE READINESS WORK PLAN & TACTICAL ACTIONS

Assess & Advance AT Readiness

- **NCHRP Research Project Update – Adam Shell**
- Follow-up on FHWA Webinar Series – Impact of AVs on Highway Infrastructure
- Automated Maintenance Vehicle Research Activities - Donna Matulac

ASSESS & ADVANCE AT-READINESS

NCHRP 20-102: Impacts of CAVs on State & Local Transportation Agencies

Objectives

- Identify critical issues associated with connected vehicles and automated vehicles that state and local transportation agencies and AASHTO will face,
- Conduct research to address those issues, and
- Conduct related technology transfer and information exchange activities

NCHRP NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3824

ASSESS & ADVANCE AT-READINESS

NCHRP 20-102(24)-Infrastructure Modifications to Improve the Operational Domain of Automated Vehicles

- Objectives
- Intended Outcomes
- Schedule & Next Steps

NCHRP NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4680

AT COUNCIL RDT&E WORKING GROUP UPDATE

RDT&E Working Group Chair – Peggi Knight (Iowa DOT)

INFRASTRUCTURE READINESS WORK PLAN & TACTICAL ACTIONS

Assess & Advance AT Readiness

- NCHRP Research Project Update – Adam Shell
- **Follow-up on FHWA Webinar Series – Impact of AVs on Highway Infrastructure**
- Automated Maintenance Vehicle Research Activities - Donna Matulac

FHWA WEBINAR SERIES

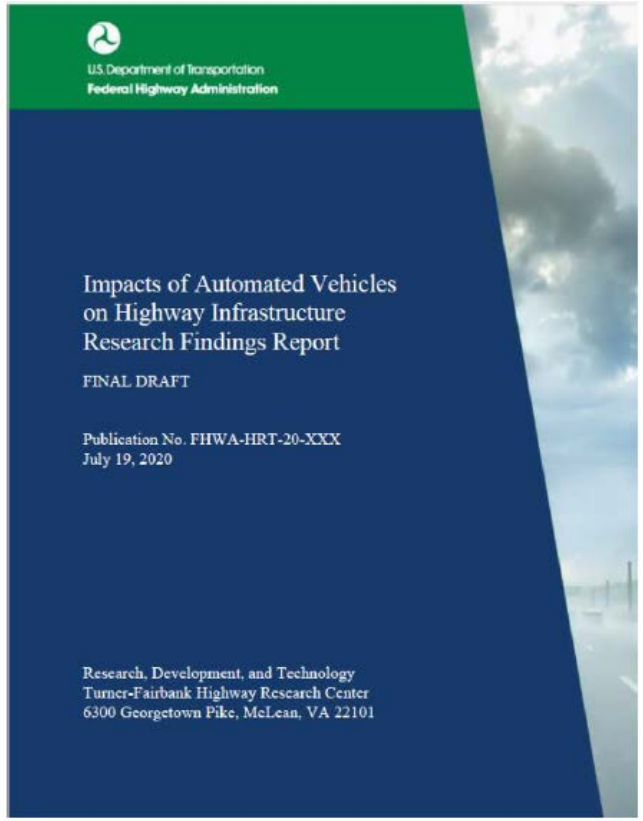
Impact of AVs on Highway infrastructure

Series Overview

- Webinar 1: Traffic Control Devices (TCD) – 10/9/2020
- Webinar 2: Physical Infrastructure & Operations – 10/16/2020
- Webinar 3: Agency Readiness – 10/23/2020

Project Objectives

- Provide agencies information they can use today to prepare for the infrastructure evolution driven by the deployment of AVs
- Provide agencies with possible impacts of initial AV deployment on roadway infrastructure (10 years)
- Provide research opportunities as derived from the work
- This project isn't providing operational and policy recommendations



Source: FHWA.

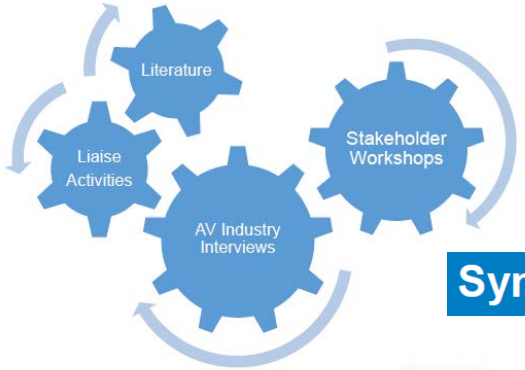
FHWA WEBINAR SERIES

Impact of AVs on Highway infrastructure

Themes & Key Items

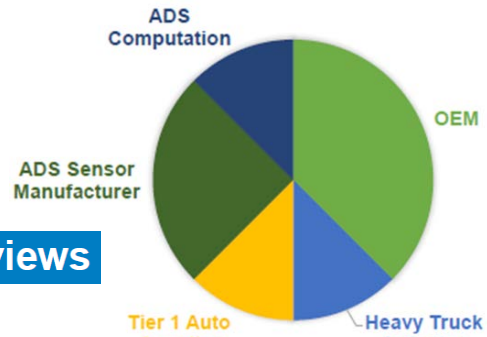
Webinar 1 - Traffic Control Devices (TCD)

- Automation Evolving Highway Infrastructure
- AV Industry Interviews (Synthesized Findings)
- Stakeholder Workshops (AASHTO, Committee on Maintenance 2019 & TRB AV Symposium 2019)
- Recommendations for the MUTCD and Early AV Readiness Suggestions
- New Developments in Assisted and Automated Driving Technology (Automotive Safety Council)



Synthesize Materials

Source: FHWA.



AV Industry Interviews

Source: FHWA.

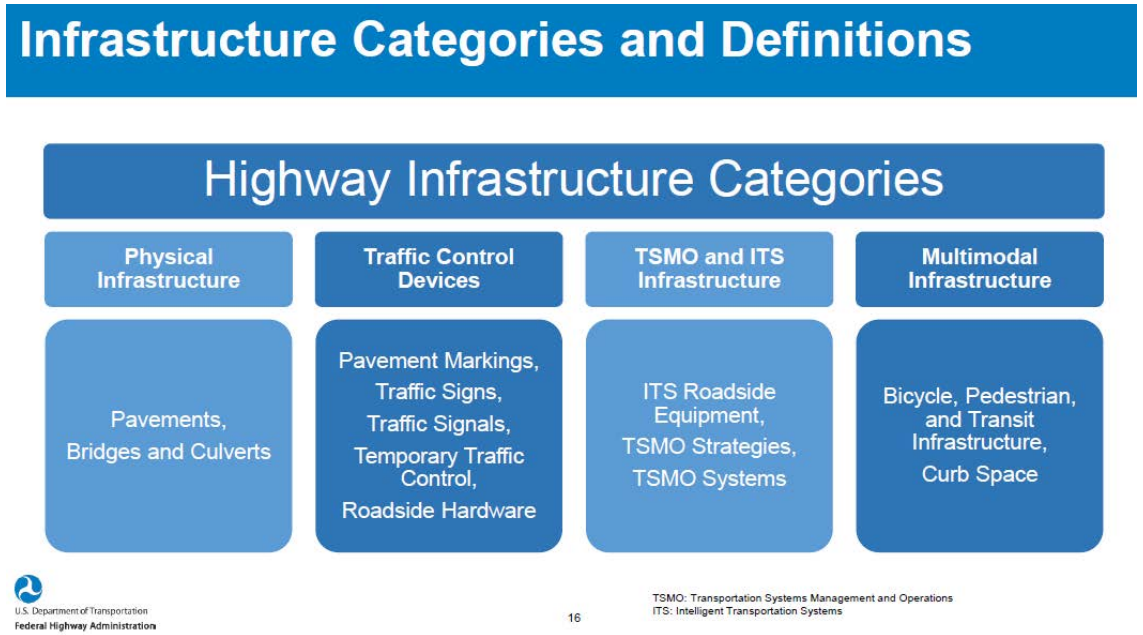
FHWA WEBINAR SERIES

Impact of AVs on Highway infrastructure

Themes & Key Items

Webinar 2: Physical Infrastructure & Operations

- AV Industry Interviews (Synthesized Findings)
- Stakeholder Workshops (2019 Conferences)
- Highway Infrastructure Categories
- Washington DOT Update and Perspective



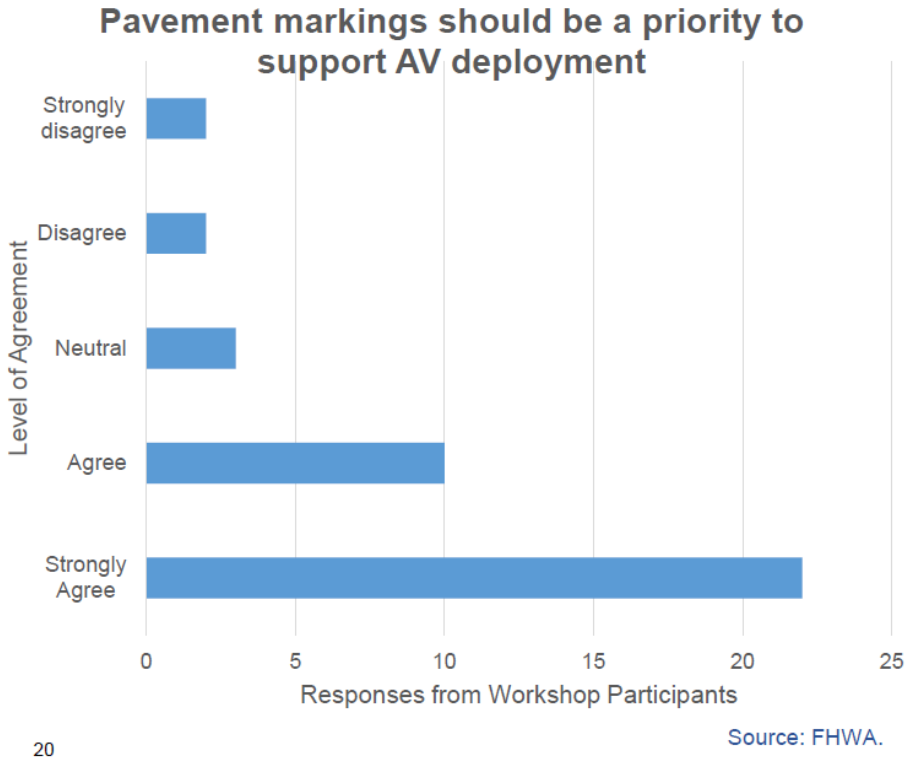
FHWA WEBINAR SERIES

Impact of AVs on Highway infrastructure

Themes & Key Items

Webinar 3: Agency Readiness

- IOO's Perspectives
  - Some *Not* Ready…
  - Some *Getting* Ready…
- Specific Prepare Actions Underway
- Other Readiness Actions Reported by IOOs
- Opportunities for Collaboration
- Additional Identified Research Ideas
- Integration of Roadway Automation ConOps



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INFRASTRUCTURE READINESS WORK PLAN & TACTICAL ACTIONS

Assess & Advance AT Readiness

- NCHRP Research Project Update – Adam Shell
- Follow-up on FHWA Webinar Series – Impact of AVs on Highway Infrastructure
- **Automated Maintenance Vehicle Research Activities - Donna Matulac**

INFRASTRUCTURE READINESS WORK PLAN & TACTICAL ACTIONS

Improve Pavement Markings - Clayton Burke, Mark Nahra

- State and Local perspectives

OPEN DISCUSSION

INFORMATION AND KEY UPCOMING DATES

Next ATC Meeting

- Q1 of 2021

THANK YOU