



# Autonomous Vehicle Work Group



PREPARED BY

**wsp**



State of Washington

## TRANSPORTATION COMMISSION

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November 15, 2021

Dear Governor Inslee, and Members of the Senate & House Transportation Committees:

On behalf of the Washington State Transportation Commission and the Autonomous Vehicle (AV) Work Group, we are pleased to submit our annual report of findings and recommendations. This report reflects the efforts undertaken in 2021, per requirements set forth in RCW 47.01.510.

Our exploration and knowledge-building continued this year, led by our 35-member Executive Committee made up of public, private, and non-profit organizations, and seven subcommittees led by nine state agencies, with the participation of hundreds of stakeholders.

The AV Work Group is a broad-based, transparent, and inclusive process with participants leading the research and exploration of AVs. Through a collaborative approach, the effort continues to generate informed policy recommendations for your consideration, as we work collectively to prepare for the safe operation of AVs on our public roadways in Washington State.

Sincerely,

Roy Jennings, Chair  
Washington State Transportation Commission

James A. Restucci, Chair  
Autonomous Vehicle Work Group  
Executive Committee

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# Acronyms

<b>AAMVA</b>	American Association of Motor Vehicle Administrators
<b>ACC</b>	Adaptive Cruise Control
<b>ADAS</b>	Advanced Driver Assist Systems
<b>ADS</b>	Automated Driving Systems
<b>ANSI/UL</b>	American National Standards Institute / Underwriters Laboratory
<b>AV</b>	Autonomous Vehicle
<b>CAV</b>	Connected Automated Vehicle
<b>CIO</b>	Chief Information Officer
<b>DOL</b>	Department of Licensing
<b>ESD</b>	Employee Security Department
<b>GHSA</b>	Governors Highway Safety Association
<b>HB</b>	House Bill
<b>IP</b>	Intellectual Property
<b>L&amp;I</b>	Labor and Industries
<b>LKA</b>	Lane Keeping Assist
<b>MDOT</b>	Michigan Department of Transportation
<b>NHTSA</b>	National Highway Traffic Safety Administration
<b>PDDs</b>	Personal Delivery Devices
<b>Q&amp;A</b>	Question and Answer
<b>RCW</b>	Revised Code of Washington
<b>SAE</b>	Society of Automotive Engineers
<b>SSB</b>	Substitute Senate Bill
<b>TBD</b>	To Be Determined
<b>TNC</b>	Transportation Network Companies
<b>UDOT</b>	Utah Department of Transportation
<b>USDOT</b>	United States Department of Transportation
<b>UTA</b>	Utah Transit Authority
<b>VP</b>	Vice President
<b>WSDOT</b>	Washington State Department of Transportation
<b>WSP</b>	Washington State Patrol
<b>WSTC</b>	Washington State Transportation Commission
<b>WTSC</b>	Washington Traffic Safety Commission

# Executive Summary

The AV industry is continuing to evolve as it works to meet safety, mobility, environmental, and transportation needs of this country. But much work remains in order for the future to become clearer for AVs. Lower levels of automation are being deployed in vehicles today, and higher levels of automation are being tested and deployed in limited scenarios across the country. Four companies are currently self-certified with the Washington Department of Licensing to test AVs on Washington's public roadways, as of late 2021 – BMW of North America, LLC; NVIDIA Corporation; Waymo LLC; and Zoox, Inc.

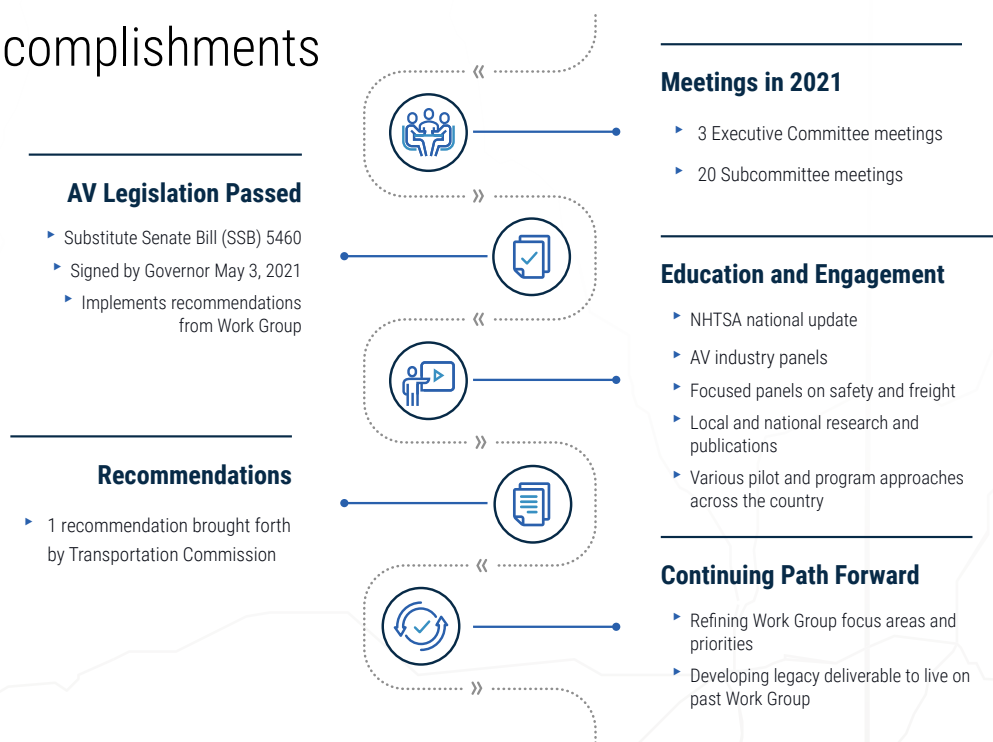
Despite the uncertain path AVs will take, automated technologies are advancing rapidly and being tested and deployed today, urging the need for the State of Washington to engage in the conversation and be ready to identify, evaluate and implement policies to ensure the safe operation of AVs on public roadways in the state. The Washington State Autonomous Vehicle Work Group, convened in 2018, continues to promote a statewide dialogue to explore the potential impacts and benefits AV technologies may bring to the state.

The Work Group kicked off 2021 with legislation that implements recommendations from them – Substitute Senate Bill (SSB) 5460<sup>1</sup> creates a definition of “autonomous vehicle” for the self-certification pilot program and repeals an outdated revised code of Washington (RCW) that prohibits some advanced vehicle technologies. When they reconvened for 2021, the Work Group shifted its focus to realigning its structure and establishing priorities, as well as continuing its education and knowledge sharing with research, industry presentations, a national update, and hearing how other states are approaching AV testing and deployments.

The Work Group is developing a “Roadmap to the Future”, a document that will serve as a legacy deliverable, provided to lawmakers at the sunset of the Work Group at the end of 2023, which lays out a plan for the future and how Washington State can prepare for AVs. The Work Group is discussing potential use cases that can be used to frame the Roadmap in better context. The Work Group is also exploring potential testing approaches and goals that could help shape a testing pilot program in Washington State.

## 2021 Accomplishments

FIGURE 1



<sup>1</sup> Washington State Substitute Senate Bill (SSB) 5460: <https://app.leg.wa.gov/billsummary?Year=2021&BillNumber=5460>

## 2021 Recommendations

While many of the subcommittees continued to meet periodically, it led to a pause in advancing recommendations. However, based upon discussions and input from the Executive Committee, one recommendation emerged from the Washington State Transportation Commission (WSTC) in October 2021 to advance a state AV pilot program, directing the WSTC and the AV Work Group to establish a scope and implementation plan, reporting back to the Legislature by the 2023 session with results and recommendations to explore:

- Establish an AV testing grant program where state funding would be made available as either grants or loans to local jurisdictions to assist in leveraging and funding local AV testing.
- Implement a state-sponsored, focused AV test where private sector partners would be retained to assist the state in testing identified aspects of AV operations, in specified locations around the state.

# Introduction

1

The AV industry is continuing to evolve as it works to meet safety, mobility, environmental, and transportation needs of this country. But much work remains in order for the future to become clearer for AVs. Lower levels of automation are being deployed in vehicles today, and higher levels of automation are being tested and deployed across the country. Four companies are currently self-certified with the Washington Department of Licensing to test AVs on Washington's public roadways, as of late 2021 – BMW of North America, LLC; NVIDIA Corporation; Waymo LLC; and Zoox, Inc.

Despite the uncertain path AVs will take, automated technologies are advancing rapidly and being tested and deployed today, urging the need for the State of Washington to engage in the conversation and be ready to identify, evaluate and implement policies to ensure the safe operation of AVs on public roadways in the state.

To this end, RCW 47.01.510<sup>1</sup> directs the Washington State Transportation Commission (WSTC) to appoint and convene an executive and legislative Work Group to gather information and develop policy recommendations to prepare for the operation of AVs on public roadways in the State of Washington. The Work Group and the WSTC are charged with the following:

- Follow developments in AV technology and related policies;
- Explore approaches to modify state policy, rules and laws to further public safety and prepare for the emergence of AV technology;
- Share information on AV technology and policies with interested stakeholders; and
- WSTC is to develop and provide recommendations based upon the input from the Work Group and submit them along with a progress report to the Governor and Legislature by November 15 each year.

The Washington State AV Work Group (hereafter referred to as "the Work Group") first convened on June 27, 2018. The law is in force through December 31, 2023.

## Purpose of the Work Group

The primary purpose of the Work Group is to identify regulatory, policy, and operational changes necessary to enable and ensure the safe operation of AVs on public roadways, and provide recommendations to the WSTC. The WSTC, in consideration of the Work Group's recommendations, is required by law to make recommendations to the Legislature and the Governor each year.

The Work Group is executing this charge through a collaborative process that engages the public and private sectors, as well as academia, non-profit organizations, community partners, and advocacy groups. The State of Washington is taking a future-ready approach to autonomous vehicles through this Work Group, encouraging innovation and advancement in AVs while maintaining a deliberative process that ensures ideas are fully vetted before turning into policy.

## Purpose of this Document

As required under the enabling legislation, this document represents a summation of the Work Group's efforts during the 2021 calendar year<sup>2</sup>. This annual report documents the organization and composition of the Work Group, summarizes the key points of discussion and decisions as part of various Work Group meetings, outlines recommendations brought forth in 2021, and describes the Work Group's path forward for the remainder of its purview, through 2023.

<sup>1</sup> [RCW 47.01.510: Autonomous vehicle executive and legislative work group. \(Expires December 31, 2023.\) \(wa.gov\)](#)

<sup>2</sup> Per RCW 47.01.510, this report is due to the Governor and Legislature on November 15, 2021. Any activities or actions taken by the Work Group between November 15, 2021 and December 31, 2021 will be captured in the 2022 annual report.

# Work Group Overview

# 2

The Work Group serves as a public forum where public and private stakeholders, as well as community partners, academia, and advocacy groups can share insights, provide guidance in the AV space, and have collaborative discussion around evaluating and setting policy to ensure the safe operation of AVs on Washington's public roadways. Seven subcommittees were established to support the Work Group; each subcommittee is led by at least one Washington State agency, and co-chaired by an individual from the public sector and an individual from the private sector.

More information on the Work Group, Executive Committee, Subcommittees, and activities can be found on the Work Group website.<sup>3</sup>

**TABLE 1 |** Washington State Autonomous Vehicle Work Group Structure

## AV Work Group Executive Committee



Government Representatives and Key Stakeholders from:

- Governor
- Four members from Senate
- Four members from House
- Insurance Commissioner
- DOL Director
- WSDOT Secretary
- WSP Chief
- Traffic Safety Commission Director
- State Chief Information Officer
- Transportation Commission Member
- Health Secretary
- Employment Security Director
- Labor & Industries Director
- Data, Technology & AV Testing
- Shared, Electric, TNC & Transit
- Automakers
- Local Governments
- Consumers/Traveling Public
- Environment
- Academic
- Underrepresented Communities
- Freight
- Labor

## Subcommittees



### Health & Equity

**TBD Lead Agency**

*Co-Chairs:* Dr. Andrew Dannenberg, UW School of Public Health; TBD

- Health and equity considerations related to autonomous vehicles, such as air quality, water quality, noise, green space, mental well-being, physical activity, safety, and social connections
- Engagement from communities, prioritizing communities of color

### Infrastructure & Systems

**WSDOT Lead Agency**

*Co-Chairs:* Roger Millar, WSDOT; Mike Ennis, Association of Washington Business

- Roadway infrastructure
- Traffic management
- Transit service & vehicles
- Advertising
- Right of way
- Multi-modal transportation
- Mobility as a service

### Liability

**Insurance Comm. Lead Agency**

*Co-Chairs:* David Forte, Office of the Insurance Commissioner; Harris Clarke, PEMCO

- Insurance
- Tort liability
- Criminal law
- Judiciary

### Licensing

**DOL Lead Agency**

*Co-Chairs:* Beau Perschbacher, DOL; Drew Wilder, Vicarious Liability Risk Management LLC

- Manufacturer Vehicle Testing
- Pilot certification
- Vehicle registration
- Driver's licensing
- Rules of the road

### Safety

**WTSC & WSP Lead Agency**

*Co-Chairs:* Captain Dennis Bosman<sup>4</sup>, Washington State Patrol; Manuela Papadopol, Designated Driver

- Traffic safety
- Law enforcement
- Synchronization with other safety priorities
- Drivers and vulnerable users and hazards

### System Tech & Data Security

**State CIO Lead Agency**

*Co-Chairs:* Zack Hudgins<sup>5</sup>, Office of the Chief Information Officer; Michael Schutzler, Washington Technology Industry Association

- Data & information management
- Cybersecurity
- Privacy protection

### Workforce

**ESD and L&I Lead Agency**

*Co-Chairs:* Brenda Weist, Teamsters; Stasha Espinosa, Washington State Employment Security Department; Allison Drake, Washington State Department of Labor & Industries

- Worker safety & worker rights
- Worker displacement/job loss
- Worker retraining and transition
- Industry impacts

<sup>3</sup> Washington State Autonomous Vehicle Work Group website: <https://avworkgroupwa.org/>

<sup>4</sup> Captain Trisena Sharff served as the Safety Subcommittee public co-chair until September 2021

<sup>5</sup> Katy Ruckle served as the System Technology & Data Security Subcommittee public co-chair until July 2021



# Executive Committee

Thought leaders on the Executive Committee bring expertise, diverse viewpoints, and perspectives on ideas and recommendations generated by the Subcommittees. The membership of the Executive Committee is established by current law and allows the WSTC to appoint additional members as needed. The current membership of the Executive Committee is listed below.

**TABLE 2 |** *Executive Committee Membership*

Name and Title	Organization
<b>Legislatively Appointed Members</b>	
James A. Restucci, Work Group Chair and Commissioner	Washington State Transportation Commission
Shiv Batra, Work Group Vice Chair and Commissioner	Washington State Transportation Commission
Senator Joe Nguyen	Washington State Legislature
Senator Mona Das	Washington State Legislature
Senator Curtis King	Washington State Legislature
Senator Ann Rivers	Washington State Legislature
Representative Shelley Kloba	Washington State Legislature
Representative Mary Dye	Washington State Legislature
Representative Matt Boehnke	Washington State Legislature
Representative Sharon Shewmake	Washington State Legislature
John Batiste, Chief	Washington State Patrol
Mike Kreidler, Insurance Commissioner	Office of the Insurance Commissioner
Teresa Berntsen, Director	Department of Licensing
Roger Millar, Secretary	Department of Transportation
Debbie Driver, Senior Policy Advisor	Governor's Office
<b>Members Added by WSTC</b>	
Joel Sacks, Director	Department of Labor & Industries
Cami Feek, Commissioner	Employment Security Department
Bill Kehoe, State Chief Information Officer	Office of the Chief Information Officer
Laura Johnson, Director of the Office of Environmental Public Health Sciences	Department of Health
Shelly Baldwin, Director	State Traffic Safety Commission
Dr. Yin Hai Wang, Director	University of Washington STAR Lab
Justin Leighton, Executive Director	Washington State Transit Association
Anna Zivarts, Director of Rooted in Rights	Disability Rights Washington
Tom Alberg, Co-Chair	ACES Northwest
Sam Zimbabwe, Director	City of Seattle Transportation Department
Curt Augustine, Senior Director of State Affairs	Alliance for Automotive Innovation
Brenda Wiest, Legislative Director	Teamsters Local 117
Todd O'Brien, Public Works Director	Adams County
Jessica Ramirez, Director of Community Engagement	Puget Sound Sage
Bryan Mistele, CEO	INRIX
John Milbrath, VP Member Services	AAA
Bryce Yadon, State Policy Director	Futurewise
Steve Gordon, Principal	Gordon Trucking
Annabel Chang, Head of State Policy & Government Relations	Waymo
Ariel Wolf, General Counsel	Self-Driving Coalition for Safer Streets

# The Work Group is Evolving

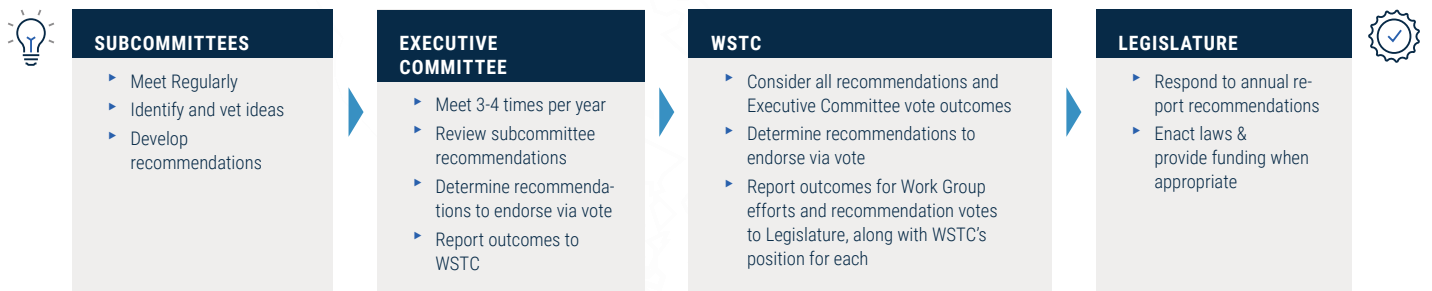
2021 brought the opportunity to pause and assess the process and structure of the Work Group. The first three years were productive, and to ensure the momentum continues, the body identified process changes that will support their continued work and ensure active involvement by both state agencies and partner entities.

The first three years of the Work Group's efforts centered around initial research and knowledge-building. In its remaining time (through 2023), the Work Group is shifting its focus towards more specific planning efforts that will inform long-term policy guidance to decision makers, beyond the Work Group's existence. The end result of this effort will be to produce a "Roadmap to the Future" to serve as a guide for future policy and regulatory implementation (see p. 13 for more information). To support this adjustment, the Work Group acknowledged the need to adjust its process and approach.

To date, the Work Group has been structured to foster a bottom-up approach to AV policy development, where ideas and recommendations are organically generated and curated through open discussions across seven subcommittees, and then advanced for discussion and vetting by the Work Group Executive Committee. Vetted recommendations from the Work Group are then handed off to the WSTC for review and discussion prior to being presented to the Governor and Legislature in the annual report.

Moving forward, the WSTC and its staff, along with subcommittee lead agency staff and subcommittee co-chairs will convene regularly as a newly constituted body referred to as the "working group" to identify focus areas and specific topics to explore, using subcommittees to discuss, further develop, and vet them. The Executive Committee will continue to evaluate matured recommendations and ideas and advance their thoughts and recommendations to the WSTC. An overview of the original, and adjusted roles and process are outlined in figures 2 and 3 below.

**FIGURE 2 |** Original Work Group Structure and Responsibilities (2018-2020)



**FIGURE 3 |** Adjusted Work Group Structure and Responsibilities (2021-2023)



# A Year of Exploration, With an Eye to the Future

The Work Group kicked off 2021 with legislation that implemented recommendations from them. When they reconvened for 2021, the Work Group shifted its focus to realigning its structure and establishing priorities, as well as continuing its education and knowledge sharing with research, industry presentations, a national update, and hearing how other states are approaching AV testing and deployments.

## Work Group Recommendations Codified in 2021 Legislative Session

Substitute Senate Bill (SSB) 5460<sup>6</sup>, implementing recommendations of the autonomous vehicle work group”, sponsored by Senator Joe Nguyen, was signed by Governor Inslee on May 3, 2021. This bill:

- Creates a definition of “autonomous vehicle” to only include SAE levels 4 and 5, for the self-certification pilot program. (2020 Work Group recommendation)
- Repeals RCW 46.37.480 section 1 relating to prohibition of television viewers in vehicles – distracted driving component of this language is addressed in other, newer distracted driving laws. (2020 Work Group recommendation)
- Moves the effective date of House Bill 2676 section 2 on Reporting back one year, to October 1, 2022.
- Provisions to provide rulemaking authority for the Department of Licensing for the AV testing program, a 2020 Work Group recommendation, was in original bill language, but was later removed in the Senate substitute bill.

## Work Group Meetings, Learnings, and Knowledge Sharing

The Work Group’s Executive Committee continued its explorations and expansion of knowledge through 2021, holding three meetings during the year with topics ranging from national perspectives, industry updates, state pilot approaches, and ongoing research.

### NHTSA National Update

Dr. Steven Cliff, Acting Administrator of the National Highway Traffic Safety Administration (NHTSA) addressed the Work Group in October to share some remarks on behalf of the agency. Dr. Cliff started off by sharing that over the next four years, the agency will work to improve safety for all road users including drivers, passengers, pedestrians, bicyclists, children, older Americans, and people with disabilities. He noted the agency is advocating for a safe systems approach that is people-focused and supports “The Five E’s”: equity, engineering, education, enforcement, and emergency medical services.

NHTSA recognizes that automated driving systems (ADS) are mostly in the testing and development stages, and restricted to operations in more simplified domains. NHTSA believes cautious and responsible progress is the right tempo for their development. At maturity, ADS may offer opportunities and positive impacts to safety, equity, accessibility, air pollution, and reduce traffic congestion. In those areas where we have concerns, we must collectively build possible solutions now, such as privacy concerns for mobility-as-a-service, cybersecurity, and information gathered by camera monitoring and location information.

Dr. Cliff provided information on where the USDOT sees a national vision and regulatory posture for AVs in America, key research priorities for USDOT in the CAV space over the next few years,

6 Washington State Substitute Senate Bill (SSB) 5460: <https://app.leg.wa.gov/billsummary?Year=2021&BillNumber=5460>

NHTSA's plans for updating its AV 4.0 guidance, and advise for how Washington State could attract more testing and eventual AV deployment. The full NHTSA address and Q&A session can be viewed on the Work Group's website for the October 5th meeting<sup>7</sup>.

### Panels – Industry, Safety, and Freight

Industry representatives shared their insights and experience testing in other states, offered input into Washington State's current law on AV's, and provided overviews of their work, products, and future plans. Industry representatives with the Alliance for Automotive Innovation and the Self-Driving Coalition for Safer Streets also spoke to their concerns with House Bill (HB) 2676<sup>8</sup>, including concerns regarding law enforcement notifications and incident reporting. The representatives noted their willingness to continue to work with legislators and the Work Group to refine legislative language to best serve all involved parties.

An automated technologies safety panel was held with representatives from the AV industry and the research community to explore what is being done in automated technology safety research at various levels of automation. A freight panel was also held to discuss industry perspectives on federal and state regulatory efforts as well as safety issues related to the future of autonomous trucking.

### Research and Publications

The Connected and Autonomous Vehicles Research Team with the University of Washington Technology Law and Public Policy Clinic presented on research conducted to provide the Washington Legislature with unbiased findings and analysis on the current state of AV legislation throughout the country. The Team also provided suggestions for Washington, including public/private partnerships, creating a coalition with neighboring states, and establishing new CAV-related laws as well as amending existing laws that impact CAV testing and deployment.

The Washington Traffic Safety Commission presented on its ADAS Survey and Education Plan study to understand where Washingtonians are now with understanding of ADAS in vehicles

today, with specific focus on adaptive cruise control (ACC) and lane keeping assist (LKA) technologies. Key points highlighted that although drivers of vehicles that are ADAS-equipped generally understand the technology and its capabilities, there are still gaps in knowledge and a need for further education.

The Work Group received an overview of the American Association of Motor Vehicle Administrators (AAMVA) recently published *Automated Delivery Vehicles and Devices Whitepaper*<sup>9</sup>. AAMVA developed this adjunct document to the Safe Testing and Deployment of Vehicles Equipped with Automated Driving Systems Guidelines Edition 2, acknowledging the Guidelines did not adequately address automated delivery vehicles and devices. The whitepaper includes a clear distinction between delivery vehicle and device types, and that jurisdictions should develop oversight processes for PDDs involving state, local, and enforcement agencies.

The Virginia Tech Transportation Institute presented on Governors Highway Safety Association (GHSA) recently published *Law Enforcement, First Responder, and Crash Investigation Preparation for Automated Vehicle Technology* report<sup>10</sup>. The objectives of this effort were to distill and summarize strategies for integrating ADS-equipped vehicles into the US fleet without significant disruption to protocols of public safety, and to develop proposed curricula to provide a knowledge base for ADAS and ADS deployment for law enforcement, first responders, and crash investigators. The curricula highlighted the need to differentiate ADAS and AV, understanding governmental responsibilities, interacting with ADS-equipped vehicles, and understanding and accessing data.

### States Conduct Pilots - Informing Possibilities for Washington State

#### UTAH | STATE-SPONSORED AV PILOT

The Utah Autonomous Shuttle Pilot, a collaboration between the Utah Department of Transportation (UDOT) and Utah Transit Authority (UTA), looked to expose the public to AV technology, evaluate operational characteristics, understand factors that

<sup>7</sup> Washington State Autonomous Vehicle Work Group website, Executive Committee October 5, 2021 meeting materials page: <https://avworkgroupwa.org/committee-meeting/executive-committee-meeting-11>

<sup>8</sup> Washington State House Bill (HB) 2676 <https://app.leg.wa.gov/billsummary?BillNumber=2676&Chamber=House&Year=2019>

<sup>9</sup> AAMVA Automated Delivery Vehicles and Devices Whitepaper: <https://www.aamva.org/AutomatedDeliveryVehiclesAndDevicesWhitepaper-May2021/>

<sup>10</sup> GHSA Law Enforcement, First Responder, and Crash Investigation Preparation for Automated Vehicle Technology report <https://www.ghsa.org/resources/Preparation-for-Automated-Vehicle-Technology21>

influence passenger and pedestrian trust, and test the capability to communicate with traffic signal infrastructure. The UDOT and UTA defined project goals and issued invitations to qualified automated shuttle vendors to submit proposals to support the pilot. The pilot ran for approximately two years, with a year of planning, 6 months to procure the AV shuttle, and operations for 17 months. The pilot operated at a variety of sites across Utah such as the University of Utah, the State Capitol, and the Mountain America Expo Center, providing broad interaction with the public and stakeholders to hold a dialogue, assess public opinions and attitudes, and provide exposure of the technology to policy influencers. Key findings from the pilot were that AV shuttles are a suitable supplement to existing transit operations and that there are some operational and regulatory constraints identified during the pilot that could be addressed for future deployments. The pilot included surveys conducted by cognitive psychologists to evaluate rider trust, the operator's role (or operating without an operator), and the public's understanding of and comfort level with accessibility, comfort, operations, etc.

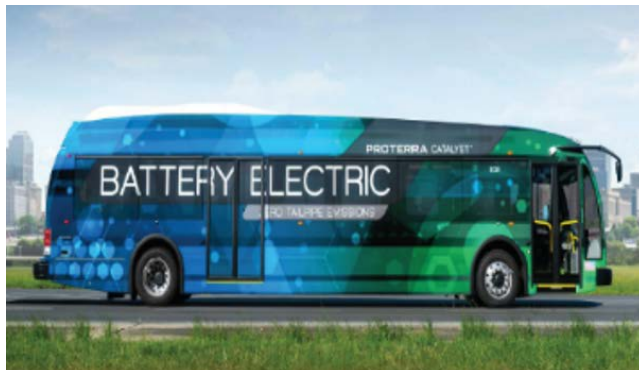


SOURCE: UDOT/UTA

### MINNESOTA | OPEN, ROLLING GRANT PROGRAM TO MEET CAV OBJECTIVES

The Minnesota Department of Transportation and Department of administration established the CAV Challenge in 2018. The program is an open and rolling procurement process that fosters innovation, allowing public and private entities to propose CAV solutions to improve safety, efficiency, equity, outreach, and mobility. The CAV Challenge Program is state-funded, with Minnesota investing \$2.5 million each year to seek innovative ideas to test and deploy new and emerging CAV technologies. Key reasons to use this type of approach is when the goals or requirements are hard to define and/or rapidly changing, as is the case in the CAV space. Key lessons learned included equity, prioritization, human-centered design, IP and trade secret

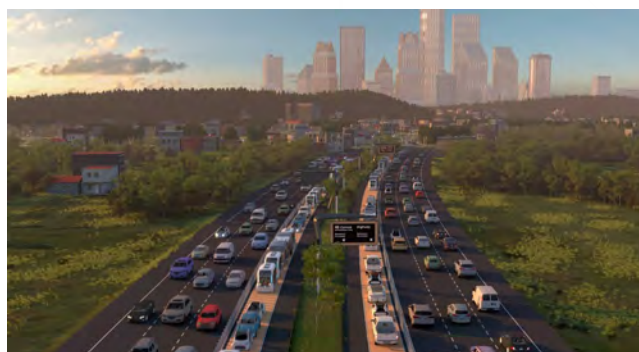
protection, performance measures and accountability, seeking feedback, and managing expectations.



SOURCE: Minnesota DOT CAV Challenge

### MICHIGAN | PUBLIC/PRIVATE PARTNERSHIP

Connected and Automated (CAV) Corridor is a first-of-its-kind connected corridor in Michigan, bringing together technology and infrastructure to create a connected corridor improving safety, congestion, accessibility, and other benefits for the state. The Michigan Department of Transportation (MDOT) issued a request for innovative proposals to define a system solutions approach to develop and implement a CAV corridor at no cost to MDOT. The project is seeking to convert an existing travel lane into a mixed-use lane for both CAVs and non-CAVs. The project will not add lanes or remove any capacity. The project is focusing on transit and personal vehicle use cases.



SOURCE: Cavnue

More information on Work Group meeting presentations can be found on the AV Work Group website: <https://avworkgroupwa.org/resources>.



## AV Testing and Pilots – Informing Policy-Making

AV readiness is complex, with a lack of a national regulatory structure, creating a patchwork of state regulations and guidance. One key area of AV readiness is testing, which is occurring across the country. During Work Group meetings this year, there was a strong indication the Work Group should invest in attracting AV testing to the state. The Work Group evaluated two potential testing approaches – a pre-defined pilot with a scope and vision defined by the procuring body, such as a low-speed shuttle pilot conducted by the UDOT and UTA, and a grant-like program that focuses on innovative proposals to meet defined objectives, such as the Minnesota Department of Transportation's CAV Challenge. These pilot approaches differ in how they balance public versus private ownership and control, cost and risk sharing, the level of scope defined, the contracting approach, and how objectives are approached and achieved. The Work Group indicated a preference for a hybrid approach, leveraging key components from both the prescribed pilot and grant program approaches.

The Work Group also discussed potential goals for a pilot, which can guide the type of pilot and approach to pursue, expectations for both the public and private sector, and how the pilot aligns with other related or competing goals, such as state environmental goals. The Work Group identified potential priorities in terms of goals for a potential AV pilot in Washington State, focusing on informing policy-making, improving public awareness, and enhancing organizational knowledge – the three top objectives for AV testing as identified in a work session earlier in the year.

The desire to attract AV testing to the state and further evaluate a potential pilot approach and goals was further validated in the WSTC's recommendation to advance AV testing in Washington through a hybrid approach, outlined in section 4 of this report.

## Subcommittee Efforts Throughout the Year

Several of the subcommittees met during 2021, exploring issues related to AV policy, technology, and furthering expanding the knowledge base in preparation for AVs in Washington State.

Detailed subcommittee meeting information and reference materials is available on the Work Group website.

### Liability Subcommittee

The Liability Subcommittee held 4 meetings in 2021, hearing from the American Property Casualty Insurance Association, State Farm and PEMCO insurance companies, the federal legislative advisor to the National Association of Insurance Commissioners, and an advanced mobility systems planner from WSP USA. The subcommittee looked at the upcoming shift in the paradigm for auto insurers for assigning risk, the shift to a more commercial ownership system, data access and affordability in related to liability assignment, definition of driver and operator being updated across the states, federal activities for autonomous vehicle legislation and reduction in bi-partisan support, and the market shift to more product liability arrangements and how it affects consumers.

The subcommittee plans to develop damage scenarios for internal discussion, walking through application of a few ideas that affect assignment of liability, and plan to provide results to the Work Group in 2022.

### Licensing Subcommittee

The Licensing Subcommittee met once in 2021, after the legislative session wrapped up. The subcommittee provided feedback and information on the SSB 5460 that passed this year, and heard feedback from industry representatives on concerns around reporting and notifications covered in HB 2676 that led to delaying its effective date to 2022 (implemented through SSB 5460). The subcommittee also heard from the Self-Driving Coalition's feedback on HB 2676 as well as their insights for testing and deployments in Washington State. The committee plans to continue working with the industry on their concerns in HB 2676 in preparation for the 2022 legislative session.

### Safety Subcommittee

The Safety Subcommittee met several times through the year, continuing efforts to learn more about the landscape of AV safety, focusing on bringing together decision makers, the AV industry, and subject matter experts, such as Waymo and the World Economic Forum, in an effort to better understand how to support AV regulation and comprehensive standards.

The subcommittee hosted several presentations on topics including autonomous vehicle policies across the globe, how the Waymo Driver avoids fatal human crashes, law enforcement considerations for autonomous vehicles, pavement markings and their impacts to autonomous technologies, level 3 autonomy, and AV use cases and regulation. The subcommittee has also stayed engaged on the progress of the Washington Traffic Safety Commission in its ongoing Advanced Driver Assist Systems (ADAS) Survey and Education Plan project.

### Systems Technology & Data Security Subcommittee

The Systems Technology & Data Security Subcommittee met several times this year, mainly focused on continued discussions around the ANSI/UL 4600 Standard for Safety for the Evaluation of Autonomous Vehicles and Other Products<sup>11</sup>, a self-driving car safety case assessment that takes a goal-based approach to determining how safe an automated technology has been designed. The UL 4600 standard “seeks to specifically address the ability of autonomous products to perform safely and as intended – without human intervention – based on their current state and sensing of the operating environment. Reliability of hardware and software necessary for machine learning, sensing of operating environment and other safety aspects of autonomy is also addressed.”

The Systems Technology & Data Security Subcommittee held a joint meeting with the Safety Subcommittee to receive an overview on the standard and hold a discussion with various stakeholders as to the applicability, use, and benefits (or not) of applying the standard in Washington State. Throughout this joint meeting, along with additional discussions among the System Technology & Data Security subcommittee throughout the year, there were competing perspectives on whether the UL 4600 standard is ready and appropriate to apply in Washington State.

There was no clear recommendation or consensus that came out of the subcommittee’s UL4600 discussions, however they were robust and resulted in letters being sent to the Work Group from those that oppose those standards and from individuals that helped to draft those standards. Copies of letters from an AV Industry Coalition providing stakeholder feedback on UL 4600, the WSTC response to the industry coalition letter, and a

response from the principal technical author of the standard are included as appendices to this report.

### Health & Equity Subcommittee

The Health & Equity Subcommittee had a number of members impacted by the pandemic and workloads shifted accordingly. In late 2020 and early 2021, the Health & Equity Subcommittee identified that the most important role the subcommittee can serve is to review recommendations produced by other subcommittees from a health and equity point of view. The subcommittee requested other subcommittees provide future recommendations to the Health & Equity Subcommittee prior to submitting as formal recommendations, with enough time to allow the subcommittee to review and provide a health and equity lens to the recommendation.

The subcommittee does not plan on holding regular subcommittee meetings, but does plan on continuing some work identified by the subcommittee to pursue. Members in the subcommittee are continuing to look into issues and potential recommendations related specifically to impacts to road users with disabilities, such as how someone in a wheelchair uses an AV.

Dr. Dannenberg, subcommittee co-chair, is also working with two students at the University of Washington, looking at the health and equity issues related to AVs on a broader scale, looking at literature, discussing with other states and researchers, and identifying a list of major equity issues and appropriate policies to address them. One issue noted was that of safety and security of riders in a shared AV scenario, particularly of women who may not be comfortable getting into a shared AV with a stranger and no driver or operator present, and what technologies could be present to make the experience feel safer and more comfortable, such as a panic button.

### Infrastructure & Systems Subcommittee

The Infrastructure & Systems Subcommittee did not meet in 2021. The significant progress made by the subcommittee to date includes the development of the Washington State Cooperative Automated Transportation Policy Framework (adopted by the Work Group in 2019) and development of recommendations related to funding work zone real time data

11 ANSI/UL 4600 Standard for the Safety for the Evaluation of Autonomous Vehicles and Other Products: <https://ul.org/UL4600>

and pavement marking strategies to prepare for AV deployment. Given those milestones, and the general subcommittee membership meeting fatigue, the subcommittee decided to hold off on further work while the AV Work Group Executive Committee finalizes its adjustment and strategic approach for how it will proceed in its assessment of Washington State's needs for AV preparations.

Once the above referenced work by the AV Work Group Executive Committee is finalized, the subcommittee will be better able to assess how it can best support the AV Work Group's needs going forward.

### **Workforce Subcommittee**

The Workforce Subcommittee did not meet in 2021. The pandemic presented subcommittee members with many challenges, including a need for the agencies that co-chair this work group – Employment Security Department (ESD) and Department of Labor and Industries (L&I) – to respond to the crisis and perform the work needed to support the state during the height of the pandemic, and will continue through the rebuilding of the economy. The co-chairs have committed to doing a deeper dive into the workforce-related issues that this subcommittee may tackle – worker safety, rights, retraining, displacement, impacts of automation across various industries, etc. Prior to the end of 2021, co-chairs began planning and hosting informal roundtable conversations with representatives from the business and labor communities to identify potential topics of focus for the subcommittee to undertake. Additionally, the co-chairs plan to hold a formal subcommittee meeting in early 2022 to further the work of this group.



# Recommendations



The Work Group spent most of 2021 evaluating collecting information, assessing its priorities, and identifying its next steps. While many of the subcommittees continued to meet periodically, it led to a pause in advancing recommendations. However, based upon discussions and input from the Executive Committee, one recommendation emerged from the WSTC, outlined below.

## Recommendation: Advance a State AV Testing Program

### RECOMMENDED BY:

Washington State Transportation Commission

### RECOMMENDATION:

Advance a state AV testing program which could take one of the two main types of approaches, or could be a mixed approach

- **Establish an AV testing grant program** where state funding would be made available as either grants or loans to local jurisdictions to assist in leveraging and funding local AV testing.
- **Implement a state-sponsored, focused AV test** where private sector partners would be retained to assist the state in testing identified aspects of AV operations, in specified locations around the state.

The Legislature should direct the WSTC and the AV Work Group to establish a scope and implementation plan which provides further details on both approaches and identifies the level of funding needed to carry out each approach. The WSTC should be required to report back to the Washington State Legislature by the 2023 session with the results of this work and recommendations.

### WSTC ACTION:

*Presented to the WSTC by the Work Group Chair, Commissioner Jim Restucci, at the WSTC's October 20th meeting*

The WSTC unanimously approved the recommendation (one commissioner was excused). Key points of the WSTC discussion on the recommendation follows:

- Non-profit and community stakeholders need to be engaged throughout the process.
- The type and structure of an AV test/pilot is unknown at this time, along with what the purpose and goals would be, and what acceptance measures should be used. More work is needed to determine this and scope the program.
- Legislative direction could help define expectations and priorities of decision makers that would inform the scoping of this program.
- The WSDOT Secretary noted support for the recommendation, and requested that if WSDOT is identified as a partner in developing this program, that additional funding beyond existing DOT resources, be requested from the Legislature to support this effort.

## A look Back at 2020 - Results

Several policy and operational recommendations were brought forth by the Work Group in 2020. The table below outlines the 2020 recommendations, and the subsequent actions taken to address them.

**TABLE 3 |** 2020 Recommendations advanced to the Executive Committee and WSTC for consideration

Source	Recommendation	Executive Committee Action	WTSC Action	Outcome and Current Status
Safety Subcommittee	Clarify the State's definition for autonomous vehicle	Endorsed	Endorsed	Included in SSB5460, passed in May 2021, and added to RCW 46.92.010 as section 8.
Safety Subcommittee	Requirement for a Law Enforcement/ First Responder Interaction Guide	Endorsed	Endorsed	No further action taken.
Safety & Licensing Subcommittees	Repeal Section 1 of RCW 46.37.480 on TV screens	Endorsed	Endorsed	Included in SSB5460, passed in May 2021, and removed from RCW 46.37.480.
Licensing Subcommittee	Amendment of RCW 46.92.010 to enable rulemaking by the Department of Licensing for the Self-Certification Program	Endorsed	Endorsed	Originally included in SB5460. Removed from Substitute SB 5460 in March 2021.
Health and Equity Subcommittee	Conduct structured public outreach	Endorsed	Endorsed	No further action taken.
Health and Equity Subcommittee	Identification of testing locations	Endorsed	Endorsed	No further action taken.
Infrastructure and Systems Subcommittee	Increased investment on enhanced roadway pavement markings	Endorsed	Endorsed	No further action taken.
Infrastructure and Systems Subcommittee	Support WSDOT's work zone data initiative	Endorsed	Endorsed	No further action taken.

# Roadmap to the Future

# 5

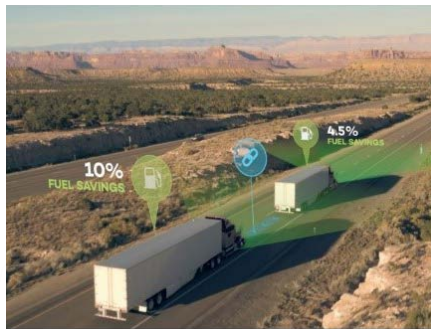
This year was an opportunity for the group to re-calibrate its focus as it works towards final deliverables by the end of 2023. To support this, the Work Group made adjustments to its process to bring focus and support to the development of a "Roadmap to the Future". This document will serve as a legacy blueprint that will be provided to lawmakers when the Work Group sunsets, setting forth a plan on how Washington State can comprehensively prepare for the operation of AVs on our public roadways.

The *Roadmap* will be framed around tangible use cases that have the potential for testing and deployment in Washington State, to help provide real-world context and identify realistic opportunities and actions the state can make to prepare for AVs. Within the context of each use case, the *Roadmap* will hone in on how to address key components of AV preparedness, including agency readiness, safety, public outreach, testing/pilots, and path to deployment. The five high-level use cases that will shape the Roadmap include:



## PRIVATE PASSENGER AV

Privately owned or leased self-driving vehicles that are used for personal travel.



## FREIGHT

Long-haul, middle-mile, and local/last-mile freight transport and delivery.



## RIDE HAILING

Automated passenger vehicle (with or without a safety operator) serving as a taxi for a passenger trip within defined geographic limits.



## LAST MILE GOODS DELIVERY

Vehicles of various form factors providing goods delivery to end-customers without a human occupant.



## AUTOMATED TRANSIT

Automated bus functionality, including platooning and precision station platform docking. Operation primarily in dedicated lanes/guideways or bus yards.

