

STATE OF OREGON

# **TASK FORCE ON AUTONOMOUS VEHICLES**

2018 FINAL REPORT

To the Oregon State Legislature  
House Bill 4063 Task Force

Sept. 10, 2018

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## Task Force on Autonomous Vehicles

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**Image 1:** Chair Lt. Timothy Tannenbaum addresses the May 23, 2018, meeting of the Oregon Task Force on Autonomous Vehicles.

## **Disclaimer**

This final report is submitted to the Oregon State Legislature as mandated by House Bill 4063 of 2018.

The contents of this report reflect the views of the Task Force on Autonomous Vehicles, which is solely responsible for the facts and accuracy of the material presented.

## **House Bill 4063 of 2018**

The Task Force on Autonomous Vehicles was established by House Bill 4063 in Oregon's 2018 legislative session. The bill directs the task force to develop recommendations for automated vehicle legislation. The task force is directed to submit a report to the appropriate interim committee of the Legislative Assembly related to transportation no later than Sept. 15, 2018, which shall include recommendations for legislation that addresses the following issues: licensing and registration, law enforcement and crash reporting, cybersecurity, and insurance and liability. This report fulfills those requirements.

House Bill 4063 also allows the task force to develop a second report due to the Legislature on Sept. 15, 2019, which may address topics including land use, road and infrastructure design, public transit, workforce changes, and state responsibilities relating to cybersecurity and privacy.

## **Structure of Report**

The report begins with a brief overview of automated vehicle technology and considerations that prompted the creation of the task force. The next section outlines task force membership, structure, and process. Then, the report outlines the elements of a permitting process for testing highly automated vehicles in the state, before presenting additional policy recommendations in each of the subcommittee areas. Lastly, the report identifies a number of topics for further consideration identified by the task force. The appendices of the report include the text of House Bill 4063 (2018), additional comments issued by task force members, several presentations from task force members delivered at the Long-Term Policy Workshop, memoranda from the Subcommittee on Cybersecurity and Long-Term Policy, and comments from non-members.

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## Abbreviations and Acronyms

AAMVA	American Association of Motor Vehicle Administrators
ADS	Automated driving system
AV	Automated vehicle
FMVSS	Federal Motor Vehicle Safety Standards
HAV	Highly automated vehicle
HB 4063	House Bill 4063 of 2018
NHTSA	National Highway Traffic Safety Administration
ODOT	Oregon Department of Transportation
SAE	Society of Automotive Engineers

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## Definitions

**Automated driving system (ADS):** the hardware and software that are collectively capable of performing the entire driving task on a sustained basis. This term is used to describe vehicles with SAE automation levels of 3, 4 or 5. (See “Levels of Automation” on page 2.)

**Deployment:** the operation of an automated vehicle on public roads by members of the public who are not employees, contractors, or designees of a manufacturer or for purposes of sale, lease, providing transportation services for a fee, or otherwise making commercially available outside of a testing program.

**Fallback-ready user:** the user of a vehicle equipped with a Level 3 automated driving system who is able to operate the vehicle and is prepared to respond if the vehicle requests that the user intervene. (See “Levels of Automation” on page 2.)

**Federal Motor Carrier Safety Regulations:** rules and regulations establishing requirements for the safe operation of commercial motor vehicles, applicable to all employers, employees, and commercial motor vehicles that transport property or passengers in interstate commerce. Federal Motor Carrier Safety Regulations are issued by the Federal Motor Carrier Safety Administration.

**Federal Motor Vehicle Safety Standards (FMVSS):** standards and regulations establishing the minimum safety performance requirements to which manufacturers of motor vehicles and items of motor vehicle equipment must conform and certify compliance. FMVSS are issued by the National Highway Traffic Safety Administration.

**Highly automated vehicle (HAV):** a vehicle equipped with automated technology capable of performing the entire driving task, including operating the vehicle and monitoring the driving environment, for at least part of a trip. This term is used to describe vehicles with SAE automation levels of 3, 4 or 5. (See “Levels of Automation” on page 2.)



**Minimal risk condition:** a condition to which a human user or an automated driving system may bring a vehicle in order to reduce the risk of a crash when a given trip cannot or should not be completed. For example, an automated driving system that experiences a technical problem while driving at high speed on a freeway could achieve minimal risk condition by automatically removing the vehicle from the active lane of traffic before coming to a stop.

**Operational design domain:** the environment and specific conditions for which an automated vehicle is engineered and in which it can safely operate.

**Remote operator:** a person who is not seated in a position to manually exercise in-vehicle braking, accelerating, steering, and transmission gear selection input devices (if any) but is able to assume control of and operate the automated vehicle.

**Testing:** the operation of an automated vehicle on public roads by employees, contractors, or designees of a manufacturer for the purpose of assessing, demonstrating, and validating the autonomous technology's capabilities.

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# EXECUTIVE SUMMARY

The Task Force on Autonomous Vehicles was established by House Bill 4063 in Oregon's 2018 legislative session. House Bill 4063 directs that the task force "shall develop recommendations for legislation regarding the deployment of autonomous vehicles on highways." The task force is directed to submit a report to the appropriate interim committee of the Legislative Assembly related to transportation no later than Sept. 15, 2018, which shall include recommendations for legislation that addresses the following issues: licensing and registration; law enforcement and crash reporting; cybersecurity; and insurance and liability. This report fulfills those requirements. It can be found online at the website for the Task Force on Autonomous Vehicles.<sup>1</sup>

The task force has developed a recommendation for a permitting process for testing of autonomous vehicles in Oregon. The elements of the permitting process are largely consistent with national guidance from the National Highway Traffic Safety Administration (NHTSA) and the American Association of Motor Vehicle Administrators (AAMVA). In some cases, where the task force wanted direction beyond national guidance, the task force looked to other states' approaches.

The proposed permitting process would collect certain information about vehicles and drivers involved in testing, set minimum insurance coverage requirements for entities testing autonomous vehicles, require certain safety assurances regarding autonomous driving systems, and direct testing entities to engage with law enforcement and first responders to promote safe testing. The permitting process would require additional safety assurances for testing of vehicles without human drivers.

The report also includes additional policy recommendations that apply more broadly than to testing alone, such as establishing statutory definitions around autonomous vehicles that specify when a machine system, rather than a human driver, is legally responsible for safe vehicle behavior and other duties of a driver. Additionally, the report specifies statements of principle agreed to by the task force, makes recommendations for ongoing work of the task force and identifies areas for additional study as autonomous vehicles approach deployment.

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1 Oregon Department of Transportation. 2018. "Task Force on Autonomous Vehicles." Available at: <https://www.oregon.gov/ODOT/Get-Involved/Pages/Task-Force-on-Autonomous-Vehicles.aspx>

# BACKGROUND INFORMATION

The following section provides background information on different levels of vehicle automation and how they impact responsibility for vehicle operation. It also outlines the division between federal and state responsibilities with respect to regulation of vehicles and drivers, as well as giving an overview of some developments in automated vehicle testing and policy specific to Oregon. This information aligns with “AV 101” materials presented to the task force to help this diverse group become acquainted with the terminology and key issues related to vehicle automation. These materials, and other background materials that served as a basis for task force discussions, are available on the ODOT task force website.<sup>2</sup>

## Introduction to Automated Vehicles

Automated vehicles are vehicles in which some or all aspects of the driving task are performed by an automated system rather than a human. At low levels of automation, these systems may be called “driver assistance systems,” such as adaptive cruise control or lane-keeping assist. These systems are intended to aid, rather than replace, a human driver who is monitoring the driving environment and who is ultimately responsible for the operation of the vehicle. At higher levels of automation, these systems may be called “automated driving systems” (ADSs), and vehicles at high levels of automation may be called “highly automated vehicles” or “autonomous vehicles.” These systems, when engaged, are intended to perform the entire driving task, including both operating the vehicle and monitoring the driving environment, at least under certain conditions.

## Levels of Automation

The Society of Automotive Engineers (SAE) has designated six levels of automation from Level 0 to Level 5 to distinguish automated systems with different capabilities.<sup>3</sup> Figure 1 illustrates the six levels of automation, which are also described in simplified form below.

### Level 0: No Automation

The vehicle is not equipped with driving automation. The driver performs the entire driving task, including monitoring the driving environment.

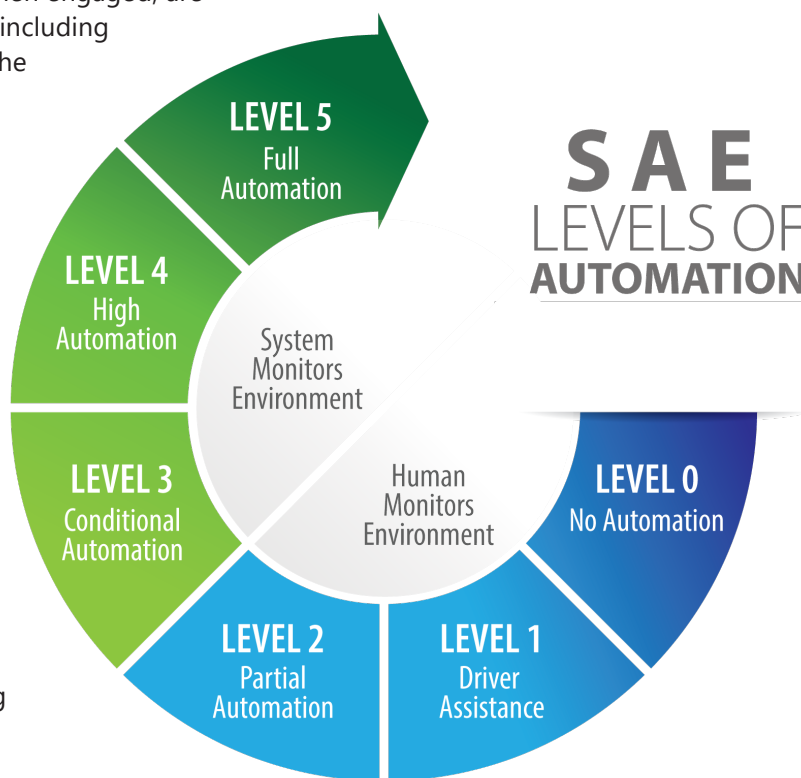


Figure 1: SAE Levels of Automation

<sup>2</sup> Available at: <https://www.oregon.gov/ODOT/Get-Involved/Pages/Task-Force-on-Autonomous-Vehicles.aspx>

<sup>3</sup> Society of Automotive Engineers. 2016. “Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles.” Available at: [https://www.sae.org/standards/content/j3016\\_201609/](https://www.sae.org/standards/content/j3016_201609/)

### **Level 1: Driver Assistance**

The vehicle is equipped with a system that automates either accelerator/brake functions (e.g., adaptive cruise control) or steering (e.g., lane-keeping assist). The driver performs all other aspects of the driving task, including monitoring the driving environment. The driver supervises the automated system and intervenes as necessary to maintain safe operation of the vehicle.

### **Level 2: Partial Automation**

The vehicle is equipped with a system that automates both accelerator/brake functions and steering. The driver performs all other aspects of the driving task, including monitoring the driving environment. The driver supervises the automated system and intervenes as necessary to maintain safe operation of the vehicle.

### **Level 3: Conditional Automation**

The Automated Driving System (ADS) is capable of performing the entire driving task, including monitoring the driving environment, under certain circumstances (e.g., only on a limited access highway, but not on city streets; only in clear weather, but not in heavy precipitation; etc.). While the vehicle is within the environment for which the ADS is engineered to operate (the "operational design domain"), an individual sitting in the driver's seat is not required to supervise the automated system or intervene to maintain its safe operation. However, that individual must act as a "fallback-ready user," who is able to assume manual control of the vehicle if it exceeds the limits of its operational design domain.

### **Level 4: High Automation**

The ADS is capable of performing the entire driving task, including monitoring the driving environment, and without the need for a fallback-ready user. At this level, a vehicle may not have manual controls, such as a steering wheel and accelerator/brake pedals, and may exclusively carry passengers without ever having a "driver." Level 4 vehicles are still confined to a certain operational design domain (e.g., a vehicle that can carry passengers within a metropolitan area, but not outside its boundaries, due to its ADS relying on high-resolution maps it only possesses for that area). However, a Level 4 vehicle may also have manual control, and allow a human driver to operate the vehicle conventionally when the ADS is disengaged.

### **Level 5: Full Automation**

The ADS is capable of performing the entire driving task, without the need for a fallback-ready user, under any conditions a human driver could reasonably navigate. This includes monitoring the driving environment. At this level, a vehicle may not have manual controls, and may exclusively carry passengers without ever having a "driver." Level 5 vehicles are not confined to an operational design domain and have driving capabilities equivalent to those of a human driver. However, a Level 5 vehicle may also have manual controls and allow a human driver to operate the vehicle conventionally when the ADS is disengaged.

## **Responsibilities of Automated Vehicle Manufacturers, Operators, and Users**

The SAE levels are important context for any regulation of automated vehicles because they imply different roles and responsibilities for humans and automated systems under different driving modes. Vehicles at SAE Levels 1 and 2 always require a human driver to be ultimately responsible for the driving behavior of the vehicle, while vehicles at SAE Level 3 perform the entire driving task under some conditions, but require the presence of a human driver who can take over in situations the system is not designed to handle. Some vehicles at SAE Levels 4 and 5 may have manual controls that allow a driver to operate the vehicle conventionally and take control of the vehicle at will. Other Level 4 and 5 vehicles may have no steering wheel, brake pedals, or other manual controls at all.

The Oregon Vehicle Code was written with the assumption that every vehicle would be operated by a licensed human driver, and that human driver is responsible for the driving behavior of the vehicle for the duration of the trip. The advent of automated vehicle technologies presents a new range of situations that must be addressed. Licensing requirements should ensure that any human who performs any aspect of the driving task should possess valid driving privileges, even if the automated driving system controls the vehicle for the majority of the trip. While new endorsements specific to autonomous vehicles are not recommended at this time, a driver should possess a class of license appropriate to the vehicle being driven (e.g., a commercial driver license for operation of a commercial vehicle). In Level 3 through 5 vehicles, a human driver may be responsible for the driving behavior of the vehicle at times it is under human control, while at others the driving behavior is the responsibility of the automated driving system and its manufacturer.

In conventional vehicles, humans bear responsibility for driving safely, following the rules of the road, maintaining insurance coverage, and other duties such as exchanging information and filing appropriate reports in the event of a crash. During times that a Level 3 or higher automated vehicle is operating in automated mode, these responsibilities may fall to the manufacturer, the owner, the operating company, or other entities. In some cases, a Level 4 or 5 vehicle may travel with no human occupants at all, or may accommodate only human passengers who play no role in the driving task and have no responsibility for vehicle driving behavior.

Definitions for automated vehicles should appropriately assign responsibility, and recognize that companies or other non-human entities bear legal responsibility for the conventional role of the human driver when the vehicles operate in autonomous mode. Laws regarding credentialing and responsibility for users of automated vehicles should ensure that passengers of AVs, including AVs in commercial ride-hailing services, are protected from responsibility for the driving behavior of a vehicle not under their control.

## Federal and State Responsibilities

The National Highway Traffic Safety Administration (NHTSA) has directed states considering automated vehicle legislation to maintain the current delineation between federal and state regulatory authority.<sup>4</sup> As outlined in NHTSA’s 2017 automated vehicle policy guidance, the federal government is responsible for regulating motor vehicle design, safety, and equipment, while state governments are responsible for regulating human drivers, establishing traffic laws, and other aspects of motor vehicle operation. Local governments have authority to establish additional traffic laws within their jurisdictions.

Federal	State
Regulating motor vehicles and motor vehicle equipment	Regulating human drivers and other aspects of motor vehicle operation
<ul style="list-style-type: none"> <li>• Set Federal Motor Vehicle Safety Standards (FMVSS) for motor vehicles and equipment</li> <li>• Enforce compliance with FMVSS</li> <li>• Manage safety recalls</li> <li>• Educate public about safety</li> </ul>	<ul style="list-style-type: none"> <li>• License drivers</li> <li>• Register motor vehicles</li> <li>• Regulate insurance and liability</li> <li>• Enact and enforce traffic laws</li> <li>• Conduct safety inspections, where states choose to do so</li> </ul>

4 National Highway Traffic Safety Administration. 2017. "Automated Driving Systems 2.0: A Vision for Safety." Available at: [https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13069a-ads2.0\\_090617\\_v9a\\_tag.pdf](https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13069a-ads2.0_090617_v9a_tag.pdf)



## National Overview

As of August 2018, 23 states and the District of Columbia have passed laws relating to automated vehicles, and governors in 10 states have issued executive orders.<sup>5</sup> These laws and executive orders vary widely in scope: Some provide only terms and definitions, others call for studies, and a few have taken the lead in crafting detailed automated vehicle policies. However, the scope of a state's regulations is not necessarily indicative of the scale of its automated vehicle activity. The Uniform Law Commission noted in a 2018 memorandum:

*"California has lengthy statutory language and even lengthier regulatory language. Florida has relatively brief statutory language. Arizona has only two executive orders. Pennsylvania has enacted legislation related only to funding. And yet all four of these states (among others) are hosting significant automated driving activities."*<sup>6</sup>

Testing of highly automated vehicles, those vehicles with SAE automation Levels 3 and above, has occurred on public roads in several states, including Washington, California, Arizona, Texas, Michigan, Pennsylvania, and Florida. For example, Waymo has been testing automated vehicles in Kirkland, Washington, since 2016, and in 2017 an automated driving system made by Torc Robotics finished a cross-country drive from Richmond, Virginia, to Seattle and back.<sup>7</sup> In California, 12 companies conducted on-road testing in 2017 and collectively drove over 500,000 miles in autonomous mode.<sup>8</sup> Testing is also being conducted on closed tracks at universities and research facilities across the United States.

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## Oregon Automated Vehicle Policy

From 2014 to 2015, the Oregon Department of Transportation (ODOT) conducted an assessment of the impacts that connected and automated vehicles could have on agency operations. ODOT concluded they could have disruptive impacts across agency divisions and the transportation system as a whole. AV technology may necessitate new requirements for signage and striping, while the agency may also need new systems for collecting, processing, and disseminating data to support automated vehicles. Truck platooning, an application in which two or more tractor-trailer vehicles use connected acceleration and braking systems to travel safely at a close distance and improve fuel economy, could potentially pose bridge loading impacts or affect the ability of other road users to enter or exit the highway. ODOT created a Connected and Automated Vehicle Steering Team in 2015 to coordinate the agency policy development regarding AVs. The group includes representatives from across ODOT divisions as well as Oregon State Police and the Federal Highway Administration.

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- 5 Six additional states have laws relating to truck platooning, a driver assistance technology in which two or more tractor-trailer vehicles use connected acceleration and braking systems to travel safely at a close distance.
  - 6 Walker Smith, Brian. 2018. "Uniform Law Commission Annual Meeting Memorandum." Available at: [http://www.uniformlaws.org/shared/docs/highly%20automated%20vehicles/2018AM\\_HighlyAutomatedVehicles\\_Issues%20memo.pdf](http://www.uniformlaws.org/shared/docs/highly%20automated%20vehicles/2018AM_HighlyAutomatedVehicles_Issues%20memo.pdf)
  - 7 NW News Network. 2018. "Meet the Companies Testing Self-Driving Vehicles in the Pacific Northwest." Available at: <http://www.nwnewsnetwork.org/post/meet-companies-testing-self-driving-vehicles-pacific-northwest>; Washington State Governor's Office. 2017. "Washington welcomes its first certified automated vehicle pilot test." Available at: <https://medium.com/wagovernor/washington-welcomes-its-first-certified-autonomous-vehicle-pilot-test-aceff675c003>
  - 8 California Department of Motor Vehicles. 2017. "Autonomous Vehicle Disengagement Reports 2017." Available at: [https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/disengagement\\_report\\_2017](https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/disengagement_report_2017)

In response to early interest in automated vehicle testing, ODOT worked with law enforcement and private-sector partners to develop a voluntary notification process, which was formally established in 2017. To participate in the voluntary notification process, companies notify ODOT of plans to test automated vehicles on public roads. ODOT then notifies Oregon State Police, which coordinates with local police departments along the testing route. ODOT also provides the testing company with information about any scheduled lane closures, maintenance, and other known hazards along the testing route. However, because ODOT does not currently have regulatory authority over AV testing, manufacturers are not required to notify the state when testing occurs.

House Bill 4063, which was passed by the Oregon Legislative Assembly during the 2018 session, was the first legislation enacted in the state to address automated vehicles. House Bill 4063 designated ODOT as lead agency for automated vehicle policy in the state, in line with guidance from NHTSA. The bill also established the Task Force on Autonomous Vehicles to submit this report to the Legislature, including recommendations for legislation.

# TASK FORCE ON AUTONOMOUS VEHICLES

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## Task Force Membership

House Bill 4063 named 31 stakeholder groups to be members of the task force. In accordance with the legislation, four legislators were named by the Senate President and House Speaker, with the remaining 27 members named by ODOT Director Matthew Garrett. These 27 individuals represented specific industries and organizations identified in the bill. At the first task force meeting on April 18, 2018, the members unanimously elected Lt. Tim Tannenbaum of the Washington County Sheriff's Office chair of the task force.

**Chair: Lt. Timothy Tannenbaum,**  
Washington County Sheriff's Office,  
Law enforcement

**Sen. Fred Girod,**  
Oregon State Legislature

**Sen. Rod Monroe,**  
Oregon State Legislature

**Rep. Denyc Boles,**  
Oregon State Legislature

**Rep. Susan McLain,**  
Oregon State Legislature

**Richard Blackwell,**  
Department of Consumer and  
Business Services

**Capt. Teresa Bloom,**  
Oregon State Police

**Cheryl Hiemstra,**  
Department of Justice

**Carrie MacLaren,**  
Department of Land Conservation  
and Development

**Tom McClellan,**  
Department of Transportation/DMV

**Jim Pfarrer,**  
Employment Department

**Marie Dodds,**  
American Automobile Association

**Jebediah Doran,**  
TriMet, Oregon Transit Association

**Steve Entler,**  
Radio Cab, Taxicab industry

**Daniel Fernández,**  
Jaguar Land Rover, Automotive  
Industry

**Jared Franz,**  
ATU, Transportation union

**Chris Hagerbaumer,**  
Oregon Environmental Council,  
Nonprofit organization

**Eric Hesse,**  
City of Portland, League of Oregon  
Cities

**Jon Isaacs,**  
Uber, Transportation network  
company

**Neil Jackson,**  
Oregon Trial Lawyers Association,  
Trial lawyers

**Jana Jarvis,**  
Oregon Trucking Association

**Sid Leiken,**  
Lane County, Association of Oregon  
Counties

**Mark MacPherson,**  
Teamsters, Transportation union

**David McMorries,**  
Office of the Chief Information  
Officer, Cybersecurity industry

**Robert Nash,**  
State Farm, Automotive insurance  
industry

**Carly Riter,**  
Intel Corp., AV technology industry

**Eliot Rose,**  
Metro, Metropolitan planning  
organization

**Jeremiah Ross,**  
Ross Law LLC, Consumer protection  
advocates

**Becky Steckler,**  
University of Oregon, Public  
University

**Graham Trainor,**  
AFL-CIO, Workers' union

**Sean Waters,**  
Daimler, Commercial truck  
manufacturing industry

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## Task Force Structure and Process

The members of the task force were divided into four subcommittees. These subcommittees addressed the four topics identified in the legislation: licensing and registration, law enforcement and crash reporting, insurance and liability, and cybersecurity. The Cybersecurity and Long-Term Policy subcommittee also considered some of the long-term policy areas identified in House Bill 4063 as potential topics for the second report.

Each subcommittee was led by a task force member representing a state agency with relevant expertise. The subcommittee leads coordinated with the chair, set meeting agendas, led meeting discussions, and identified reference materials and experts to consult. The lead for the Subcommittee on Licensing and Registration was Tom McClellan from the Oregon Department of Transportation; Capt. Teresa Bloom of the Oregon State Police led the Subcommittee on Law Enforcement and Crash Reporting; Richard Blackwell of the Department of Consumer and Business Services led the Subcommittee on Insurance and Liability; and Cheryl Hiemstra of the Department of Justice led the Subcommittee on Cybersecurity and Long-Term Policy.

Though each subcommittee had designated membership, all task force members were invited to attend and participate in any subcommittee meeting. As non-voting members of the task force, legislators were not assigned to particular subcommittees, but legislators attended several subcommittee meetings.

The subcommittees discussed and voted on recommendations related to their topic areas. These recommendations were then discussed and voted on in meetings of the full task force. The task force chose to send some recommendations back to the subcommittees for revisions or further examination. The subcommittees then submitted the revised recommendations back to the full task force. All of the background documents for the subcommittee deliberations and the minutes from each meeting can be found on the task force website.<sup>9</sup>

The report was approved by a vote of the full task force on Sept. 10, 2018.

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## Overview of Task Force Workshop and Scoping of Subcommittees

At a workshop held on May 23, 2018, every task force member had the opportunity to contribute to the list of considerations for all subcommittees to inform the scope of work. Staff provided preliminary lists of potential topics for each subcommittee based on national guidelines, best practices in other states, and initial feedback solicited from members in a survey before the first meeting. Task force members discussed and made additions to those lists. The considerations identified at the workshop were then compiled into goals, values, and topics for each subcommittee to address.

The goals and values were principles members wanted to keep in mind as they worked to craft the right AV framework for Oregon. The other topics were specific technical or policy issues the subcommittees needed to address to create such a framework. All of these were included in scoping documents, which were used to guide discussions in the subcommittees. Subcommittees often discussed the policy issues presented in the scoping documents point by point, while referring back to the goals and values as needed. The scoping documents for each subcommittee can be found on the task force website.

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9 Available at: <https://www.oregon.gov/ODOT/Get-Involved/Pages/Task-Force-on-Autonomous-Vehicles.aspx>

## Goals and Values

Some of the goals and values identified at the workshop were specific to certain subcommittees. For example, one of the stated goals of the Subcommittee on Law Enforcement and Crash Reporting was to “promote law enforcement and first responder understanding of legal, technical, and administrative requirements/limitations of automated technology.” In contrast, one of the goals for the Subcommittee on Insurance and Liability was the “preservation of existing consumer protections.”

The goals and values for each of the subcommittees contained common themes. Safety was identified as a top priority for all of the subcommittees. Goals included preventing crashes and establishing parameters for safe testing and deployment. The task force also emphasized the importance of ensuring the safety of all road users, including vulnerable road users such as pedestrians, bicyclists, and motorcyclists.

Other goals and values shared across the subcommittees included establishing consistent regulations across jurisdictions to facilitate interoperability; maintaining flexibility to allow for the continued development of automated vehicle technology; promoting social equity; sharing information for public interest purposes; consumer protection; and building on existing systems and processes rather than reinventing the wheel.

## Topics for Consideration by the Subcommittees

The lists of topics identified at the workshop set the scope of questions and policy areas each subcommittee needed to consider. The subcommittee leads used the topic lists to structure meeting agendas and to keep track of policy areas that still needed to be addressed. Subcommittee members also used the topic lists to identify information needs and to request research. The lists below include the broad topic areas identified for consideration by each subcommittee. The full topic lists are available as part of the scoping documents on the task force website.<sup>10</sup>

Topics for the Subcommittee on Licensing and Registration included:

- Framework for testing automated vehicles on public roads
- Rules for testing with and without a human backup driver
- Licensing requirements
- Roles and responsibilities for various users of automated vehicles
- Registration and titling requirements

Topics for the Subcommittee on Law Enforcement and Crash Reporting included:

- Safety requirements
- Adherence to traffic laws
- Driver responsibilities
- Crash and incident reporting
- Law enforcement and first responders engagement

Topics for the Subcommittee on Insurance and Liability included:

- Minimum insurance requirements
- Limits of coverage
- Should insurance follow the person, vehicle, or manufacturer
- Product liability and ownership liability
- Assigning fault in incidents

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10 Available at: <https://www.oregon.gov/ODOT/Get-Involved/Pages/Task-Force-on-Autonomous-Vehicles.aspx>

Topics for the Subcommittee on Cybersecurity and Long-Term Policy included:

- Preventing cyberattacks
- Responding to cyberattacks
- Protection of consumer privacy
- Data management

To help prepare for the second report, the Subcommittee on Cybersecurity and Long-Term Policy also held preliminary discussions about the broader potential impacts of the deployment of automated vehicles. The subcommittee considered a wide range of topics, including transportation choices, safety, social equity, greenhouse gas emission reduction, land use planning and development, changes to the workforce, infrastructure, economic development, and information sharing for public interest purposes.

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## Guidance and Examples

Oregon is not the first state to grapple with automated vehicle policy. Other states, federal agencies, and national organizations have also researched and made recommendations regarding this emerging technology. The task force was able to look to guidance from NHTSA and the American Association of Motor Vehicle Administrators (AAMVA), consider best practices from other states, and consult with industry experts. ODOT staff provided copies of NHTSA's "Automated Driving Systems 2.0: A Vision for Safety" and AAMVA's "Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles" to all task force members. In response to requests from task force members, staff also provided research memorandums to the task force and subcommittees comparing AAMVA and NHTSA guidance with other states' policies on automated vehicles. Copies of these research memorandums are available on the task force website.<sup>11</sup>

In considering these guidelines, examples, and expert input, the task force members focused on what policies would work best for Oregonians, keeping in mind Oregon's unique geography, varying urban and rural landscapes, policy priorities, and values.

## NHTSA "Automated Driving Systems 2.0: A Vision for Safety"<sup>12</sup>

The National Highway Traffic Safety Administration first issued guidance on automated vehicles in September 2016 and updated its guidelines in September 2017. "Automated Driving Systems 2.0: A Vision for Safety" clarifies federal and state roles in regulating automated vehicles, identifies ADS safety elements, and includes best practices for state legislatures and highway safety officials. The best practices address administrative considerations, applications for entities to test ADSs on public roadways, specific considerations for ADS test drivers and operations, considerations for registration and titling, working with public safety officials, and liability and insurance. The task force looked to this document to ensure that Oregon recommendations align with federal direction on AV policy.

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11 Available at: <https://www.oregon.gov/ODOT/Get-Involved/Pages/Task-Force-on-Autonomous-Vehicles.aspx>

12 National Highway Traffic Safety Administration, 2017.



## AAMVA “Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles”<sup>13</sup>

The American Association of Motor Vehicle Administrators is a nonprofit organization that represents motor vehicle administrators of the 69 states, provinces, and territories of the United States and Canada. AAMVA develops model programs in motor vehicle administration, law enforcement, and highway safety based on best practices. AAMVA’s recommendations address topics and areas that are not covered by federal law and support uniformity and reciprocity among jurisdictions. Oregon is represented on the AAMVA Board of Directors and reviews and responds to AAMVA’s policy recommendations.

AAMVA began researching automated vehicle policy in 2014 and released “Jurisdictional Guidelines for the Regulation of Highly Automated Vehicles” in May 2018. The Guidelines address four key areas: administration, vehicle credentialing considerations, driver licensing considerations, and law enforcement considerations. The Guidelines also identify topics for future work. These recommendations helped to inform the work of the Subcommittee on Licensing and Registration and the Subcommittee on Law Enforcement and Crash Reporting by ensuring that their recommendations were consistent with national guidelines on how to structure AV permitting processes and interaction with first responders. AAMVA’s recommendations do not address insurance or cybersecurity issues, so the other two subcommittees looked elsewhere for guidance.

### Best Practices from Other States

Where federal guidance and AAMVA’s recommendations were deemed insufficient, the task force looked to best practices from other states. For example, AAMVA recommends that manufacturers “make the information regarding HAVs (highly automated vehicles) and procedures available to the first responder community in the jurisdiction where the vehicle will be operated,” but does not identify what information might be necessary for first responders to effectively and safely respond to incidents involving automated vehicles.<sup>14</sup> To supplement the AAMVA recommendations, the Subcommittee on Law Enforcement and Crash Reporting considered other states’ requirements, including California’s detailed law enforcement and first responder interaction plan.

The subcommittees reviewed and compared other states’ policies on a wide variety of areas relating to automated vehicles, from licensing requirements to crash reporting to insurance. The subcommittees considered examples of successful automated vehicle programs, as well as lessons learned from states that revised their policies and approaches. The states included Arizona, California, Colorado, Connecticut, Florida, Georgia, Massachusetts, Michigan, Nebraska, Nevada, New York, North Carolina, Tennessee, Texas, Virginia, and Washington.

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13 American Association of Motor Vehicle Administrators, 2018. “Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles.” Available at: <https://www.aamva.org/GuidelinesTestingDeploymentHAVs-May2018/>

14 American Association of Motor Vehicle Administrators, 2018.

## Presentations by Experts

The Subcommittee on Cybersecurity and Long-Term Policy arranged presentations by cybersecurity experts, including Suzanne Lightman, Senior Information Security Advisor at the National Institute of Standards and Technology, and Siva Narendra, Ph.D. and CEO of Tyfone Inc., an international provider of digital security solutions for identity and transactions. The subcommittee also engaged with industry leaders such as Deloitte and the Automotive Information Sharing and Analysis Center.

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## Task Force Meeting Schedule

The task force met six times on the following dates: April 18, May 23, July 12, Aug. 1, Aug. 15 and Sept. 10.

Additionally, the subcommittees of the task force each met on the dates outlined below:

### Subcommittee on Licensing and Registration

**Lead:** Tom McClellan

**Members:** Marie Dodds, Steve Entler, Eric Hesse, Jon Isaacs, Jana Jarvis, Mark MacPherson, Sean Waters

**Meeting Dates:** May 30, June 12, June 28 and Aug. 1

### Subcommittee on Law Enforcement and Crash Reporting

**Lead:** Capt. Teresa Bloom

**Members:** Jebediah Doran, Daniel Fernández, Sid Leiken, Carly Riter, Lt. Timothy Tannenbaum

**Meeting Dates:** June 6, June 21 and July 25

### Subcommittee on Insurance and Liability

**Lead:** Richard Blackwell

**Members:** Chris Hagerbaumer, Neil Jackson, Robert Nash, Eliot Rose, Jeremiah Ross

**Meeting Dates:** June 6, June 20, July 9, July 25 and Aug. 2

### Subcommittee on Cybersecurity and Long-Term Policy

**Lead:** Cheryl Hiemstra

**Members:** Jared Franz, Carrie MacLaren, David McMorries, Jim Pfarrer, Becky Steckler, Graham Trainor

**Meeting Dates:** May 30, June 12, July 24 and Aug. 13

## Voting Results

For each subcommittee, recommendations were referred to the full task force by a consensus of all subcommittee members. See minutes from the subcommittee meetings for details.<sup>15</sup>

The full task force met twice to vote on recommendations from the subcommittees. At the July 12 meeting, a few items were referred back to the subcommittees for further consideration, and all other items received unanimous support. At the Aug. 15 meeting, all the subcommittee recommendations were unanimously approved by the task force. Some task force members explained their vote; this discussion can be found in the minutes from that meeting.<sup>16</sup>

The consensus recommendations of the Task Force on Autonomous Vehicles are contained in the next section.



**Image 2:** At the Aug. 1, 2018, workshop, members of the Task Force on Autonomous Vehicles sorted topics using a dot exercise. Chris Hagerbaumer examines the wall of subjects.

15 Oregon Department of Transportation. 2018. "Task Force on Autonomous Vehicles." Available at: <https://www.oregon.gov/ODOT/Get-Involved/Pages/Task-Force-on-Autonomous-Vehicles.aspx>

16 Oregon Department of Transportation. 2018. "Task Force on Autonomous Vehicles Meeting Minutes from Aug. 15, 2018." Available at: <https://www.oregon.gov/ODOT/Get-Involved/Documents/AVTF-minutes-081518.pdf>

# TASK FORCE ON AUTONOMOUS VEHICLES RECOMMENDATIONS

## Introduction

The majority of the recommendations made by the task force focus on requirements for testing automated vehicles on public roads. The task force also made recommendations that apply more broadly than to testing alone, such as statutory definitions for users and vehicles, and requirements for driver licensing. Finally, the task force made recommendations for topics, principles, and studies to be part of its ongoing work.

Many of the task force recommendations would necessitate statutory amendments. Other recommendations could be implemented through changes to administrative rule. For example, during task force discussions it was determined that many of the components required in the testing permit application would benefit from the flexibility provided in the rulemaking process. The task force also made general recommendations for the state approach to automated vehicle policy, such as a recommendation that Oregon continue to have a voice in and to monitor future safety requirements for automated vehicles as determined by federal authorities.

All the language contained in the sections following was voted on and approved by the Task Force on Autonomous Vehicles.

## Recommendations for Definitions

Automated vehicle legislation should direct ODOT to adopt definitions for automated vehicles and users that reflect the different roles and responsibilities of vehicle systems and human occupants at different levels of automation. The definitions from the SAE J3016 standard are currently the accepted industry and government standard for vehicles, but approaches vary for defining drivers/operators.

Principle: The definitions for automated vehicle users should clarify when the human is solely a passenger and when the human has responsibility for all or part of the driving task. Additionally, the user definitions should acknowledge that in a single trip, the human could be a passenger for one portion and have driving responsibilities for another portion.

## Recommendations for Elements of a Permit to Test Automated Vehicles on Public Roads

A manufacturer or other testing entity must obtain a testing permit from ODOT prior to testing automated vehicles on public roads. Testing permit requirements apply only to vehicles with an automation Level 3 or higher, as defined by the Society of Automotive Engineers (SAE). Testing is the operation of an autonomous vehicle on public roads by employees, contractors, or designees of a manufacturer for the purpose of assessing, demonstrating, and validating the autonomous technology's capabilities.<sup>17</sup> The permit application must contain a number of elements, consistent with recommendations from the American Association of Motor Vehicle Administrators or best practices in other states, which are detailed below.

### Contact information:

1. Name of manufacturer or other testing entity
2. Physical and mailing address(es)
3. Local address, if different from above
4. Name and contact information for program lead
5. Telephone number
6. Name and address of facility where company's training, testing, and employment records are kept

### Vehicle information:

1. Vehicle Identification Number
2. Year
3. Make
4. Model
5. License plate number and jurisdiction of issuance
6. Vehicle type (e.g., passenger or commercial)
7. SAE level of automation
  - a. Manufacturer should notify state of changes to SAE level, but is not required to begin new permit process

### Vehicle identification requirements:

1. The automated vehicle manufacturer testing automated passenger vehicles must display a small decal on the rear window of the testing vehicle to indicate to law enforcement that it is an automated testing vehicle. Consideration should be given to ensure that the decals are discreet and identifiable only by law enforcement. ODOT should create minimum standards for a decal but give discretion to manufacturers to design decals that can be applicable across different states and jurisdictions.
2. Manufacturers testing automated commercial motor vehicles do not need to display an identifying decal, but will need to provide ODOT and state police with images of the testing vehicles, information about routes, and notification of testing dates and times, similar to ODOT's current voluntary notification process for automated vehicle testing.

### Driver information:

1. Full name
2. Date of birth
3. Driver license number and jurisdiction of issuance
  - a. Principle: Protection of test drivers' personal information from public disclosure

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17 National Highway Traffic Safety Administration. 2016. "Federal Automated Vehicle Policy: Accelerating the Next Revolution in Roadway Safety." Available at: <https://www.transportation.gov/sites/dot.gov/files/docs/AV%20policy%20guidance%20PDF.pdf>



4. Summary of driver's training or copy of training materials
5. Only employees, contractors, or other designees can operate testing vehicles
6. Clean driving record
7. Passed background check

Prior testing:

1. Disclosure of jurisdictions where application or issuance of testing has occurred or been denied
2. Disclosure of jurisdictions where testing permit has been revoked
3. Self-certification that technology to be used in test vehicles has been engineered to perform in any real-world conditions the manufacturer intends to subject the vehicle to on public roadways

Insurance requirements:

1. For automated vehicle testing, require \$5 million umbrella insurance per event with a caveat to maintain existing coverages. Umbrella coverage should include accommodation for business auto policies to cover less-than-catastrophic events. Coverage should not, however, be designed to roll back consumer protections in the Insurance Code or the Vehicle Code (e.g., personal injury protection, underinsured/uninsured motorist coverage).
2. After discussion and consideration, the task force does not recommend making available alternative financial instruments for proving financial responsibility.

Safety requirements:

1. Certification that vehicles comply with Federal Motor Vehicle Safety Standards or Federal Motor Carrier Safety Regulations, or have an exemption
2. Certification that vehicle can comply with all state vehicle and traffic laws within its operational design domain, or that an exemption has been granted by ODOT<sup>18</sup>
3. Certification that vehicle has means to engage and disengage autonomous technology that is easily accessible to operator
4. Certification that vehicle has a visual indicator inside the cabin to indicate when the autonomous technology is engaged, if the vehicle is designed to allow for a human driver in the vehicle
5. Certification that a human driver will be ready to assume control or have the vehicle achieve minimal risk condition at all times

Additional safety requirements for testing without a human backup driver:

1. Notification of local authorities where testing is to take place
2. Certification that vehicle is capable of operating without a driver inside
3. Secure link to remote operator who can assume control of the vehicle or have the vehicle achieve minimal risk condition
4. Certification that vehicle meets the description of an SAE Level 4 or 5 vehicle
5. Description of operational design domain of vehicle
6. Certification that manufacturer provides training program for remote operators
7. Publicly disclosed assessment demonstrating safety approach
8. Manufacturer must revise permit application if technology changes significantly

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18 Even in cases of exemptions, vehicles would be expected to maintain safe operation at all times. An example of an exemption that was previously granted for a test motor vehicle in the state involved a vehicle with brakes certified to European Union rather than United States standards. While slightly different from U.S. requirements, the EU standards meet similarly high standards of performance and do not inhibit safe operation of the vehicle.



#### Cybersecurity requirements:

1. The manufacturer shall certify that the autonomous vehicle meets appropriate and applicable current industry standards to help defend against, detect, and respond to cyber-attacks, unauthorized intrusions, or false vehicle control commands.
2. To aid with transparency with the testing process, to increase public trust in autonomous vehicle design and cybersecurity practices, and to aid in the effort to protect related cybersecurity infrastructure, the task force encourages manufacturers to work with recognized industry information sharing entities.

#### Law enforcement/first responder interaction plan:

1. The testing permit must require that manufacturers submit a law enforcement/first responder interaction plan.
2. The law enforcement/first responder interaction plan must be shared with state police and with local law enforcement and first responders.
3. The law enforcement/first responder interaction plan must be made available to other local law enforcement agencies and first responders.
4. The task force recommends that the law enforcement/first responder interaction plan include:
  - a. How to communicate with a remote operator
  - b. Where in the vehicle to obtain owner information, vehicle registration, and proof of insurance
  - c. How to safely remove the vehicle from the roadway
  - d. How to recognize whether the vehicle is in autonomous mode
  - e. If possible, how to safely disengage autonomous mode
  - f. How to detect and ensure that autonomous mode has been deactivated
  - g. When applicable, how to safely interact with hybrid and electric vehicles
  - h. A description of the operational design domain of the vehicle

#### Fees and fines:

1. Principle: Cost recovery and reducing administrative burden
2. Allow grace period to come into compliance

#### Revoking permits:

1. Principle: The agency responsible for issuing testing permits must also have the power to revoke permits through an administrative process.

## **Additional Policy Recommendations:**

#### Driver license requirements:

1. ODOT should establish requirements that any user who performs any aspect of the driving task during a trip must be licensed. A Level 3 vehicle requires a licensed fallback-ready user. Level 4 and 5 vehicles may operate with or without a human driver, and may or may not have manual controls. In vehicles with manual controls, any user who performs any aspect of the driving task must be licensed. AV users who perform no aspect of the driving task are passengers and do not require a license.

#### Insurance requirements and liability:

1. For automated vehicle testing, it is agreed that the manufacturer maintains the insurance and the insurer of the motor vehicle is the primary insurance applicable to liabilities imposed by law for bodily injury or property damage arising out of the operation of the motor vehicle.

2. When the automated technology for commercial vehicles is more developed, the task force recommends setting insurance minimums specifically for commercial vehicles equipped with automated technology Levels 3 and higher.
3. The task force encourages a testing environment in Oregon for automated vehicles that preserves the current legal and tort liability framework. The system must remain nimble to changes in the deployment environment.

#### Compliance with Oregon Laws:

1. In order to operate in Oregon, vehicles must be capable of complying with the Oregon Vehicle Code and other relevant Oregon rules and statutes within their operational design domain.
2. Current seatbelt laws are sufficient and should apply to users of automated vehicles.
3. Current impaired driving laws are sufficient and should apply to drivers of automated vehicles.
4. Current distracted driving laws are sufficient for testing of automated vehicles and should apply to test drivers of automated vehicles.
5. The task force recognizes that Oregon law is currently sufficient to cover most possible law enforcement interactions with automated vehicles, but in the future the law may need to adapt as the technology continues to develop.

#### Crash and incident reporting requirements:

1. Current laws regarding the reporting of crashes are sufficient and should apply to automated vehicles and test drivers.
2. Testing entity must report to DMV crashes that result in the damage of property or bodily injury.
3. In the event of a crash or incident involving an automated vehicle, insurance and registration information must be provided.
4. Oregon's crash report forms should be updated to cover additional information on automated vehicles, including the vehicle's SAE level of automation and whether the autonomous technology was engaged at the time of the crash or incident.
5. After discussion and consideration, the task force recommends waiting for guidance from the federal government regarding event data recorders, in recognition of state and federal roles in regulating motor vehicle operation.
6. For automated vehicle testing, preserve and store some form of standardized, non-proprietary recorded data from a crash or incident involving an automated vehicle for the duration of the applicable statute of limitations. Data should be capable of being shared with law enforcement, government entities, or parties involved in an incident, subject to appropriate legal process. The task force would be concerned if the holder of the data charged unreasonable fees for its disclosure.

#### Safety standards:

1. Oregon should continue to have a voice in the national discussion and to monitor future safety requirements for automated vehicles as determined by the National Highway Traffic Safety Administration and other federal transportation agencies.

#### Data privacy:

1. Principle: support for a framework that protects data privacy

### **Recommendations for the Continuing Work of the Task Force:**

1. For any future discussions concerning highly automated vehicles in Oregon, the task force wishes to raise the following questions related to insurance and liability for consideration:
  - a. Establishing minimum insurance requirements for commercial autonomous vehicles

- b. Defining the operator of an automated vehicle/defining who is in control of the vehicle, including in the case of automated ride-hailing services
  - c. Determining the extent of municipal/government entity liability in the event that the entity deploys autonomous vehicles in an official capacity
  - d. Determining to what extent automobile manufacturers are liable for repairs and software updates
  - e. Sorting out who is assigned liability vs. who is required to maintain coverage
2. The task force recommends that an independent workforce study be conducted.
3. The task force recommends the following principles:
- a. Policy development for autonomous vehicles should further Oregon's existing goals and objectives, including: transportation, safety, social equity, greenhouse gas emission reduction, land use planning and development, and economic development.
  - b. Policymakers are evaluating both the impacts and opportunities the deployment of AVs will have in communities. In many cases, decision-makers are aiming to shape policies to ensure AVs can improve traffic safety and social equity, decrease congestion, boost transportation choices, protect consumers, and support a strong economy. Useful information and data will be necessary to assist in that effort, while protecting consumer privacy and proprietary information.

# ISSUES IDENTIFIED FOR ADDITIONAL STUDY

While the recommendations of this report focus largely on a permitting process for AV testing, the task force recognizes that this is only the first step in an iterative process to develop a framework for deployment of automated vehicles. Further clarifications likely need to be made to the motor vehicle code and other statutes regarding driver responsibilities, such as how to ensure that passengers of autonomous vehicles are wearing seatbelts, or how autonomous vehicles will affect the applicability of distracted driving statutes. As increasing numbers of autonomous vehicles enter the fleet, they may begin to have transformative effects on the economy, infrastructure requirements, urban design, and other areas of major implication.

The task force held the Long-Term Policy Workshop on Aug. 1, 2018, to discuss additional areas of consideration related to autonomous vehicles. Five members of the task force delivered presentations highlighting specific issues proposed for inclusion in the 2019 report:

- Graham Trainor of the Oregon AFL-CIO delivered a presentation outlining the economic impact that autonomous vehicles could have on employment and the importance of sharing the costs and benefits of automated transportation fairly. He also called for a thorough workforce analysis to be included in the 2019 Task Force on Autonomous Vehicles Report.
- Becky Steckler of the University of Oregon's Sustainable Cities Initiative presented on the impacts of emerging technologies on cities, highlighting how autonomous vehicles could affect street capacity, parking needs, commerce, land use, and other aspects of urban design.
- Eliot Rose of Metro highlighted data needs related to AVs that will help urban planners design a safe, efficient, equitable, and well-maintained transportation system. Data might include aggregated and anonymized data on travel patterns, traffic volumes, vehicle occupancy, and collisions.
- Eric Hesse of the Portland Bureau of Transportation presented on autonomous vehicle deployment from an urban planning perspective, highlighting the disruptive potential of the new technology and the need to establish clear policy outcomes and long-range plans for AVs. The presentation covered Portland's Smart Autonomous Vehicles Initiative (SAVI) and the need for a well-defined role for local governments.
- Jeb Doran of TriMet presented on Oregon's public transportation goals and other adopted plans, including the Oregon Bicycle and Pedestrian Plan and the Transportation Safety Action Plan. This presentation also highlighted a number of data needs regarding AVs, including travel patterns and occupancy, as well as highlighting research findings suggesting that AVs could lead to additional trips and vehicle miles traveled, particularly if privately owned rather than shared.

These five presentations are included in full in Appendix C. Task force members had the opportunity to contribute individual comments to this report, including areas for additional study, which are included in Appendix B. Finally, comments from non-members of the task force are included in Appendix E.

# CONCLUSION

With this report, the Task Force on Autonomous Vehicles seeks to lay the foundation for a safe framework for automated vehicles in the State of Oregon. This framework intends to allow for development of this promising new technology, while introducing appropriate safeguards and oversight to maintain the safety of the transportation system and all of its users. The wide-ranging membership of the task force has resulted in a set of recommendations that reflects a range of perspectives from across Oregon and across many different industries, while maintaining consistency with other state and national automated vehicle policies.

With recommendations for legislation addressing licensing and registration, law enforcement and crash reporting, insurance and liability, and cybersecurity, this report fulfills the obligation laid out by House Bill 4063 for the 2018 report. However, the task force recognizes that this report is only the first step and that many critical impacts of automated vehicles remain to be addressed. Only through an ongoing process, with continued evaluation, will Oregon develop a framework that maximizes the benefits of this new transportation technology for all Oregonians and people traveling within our borders.

# APPENDICES

Appendix A: House Bill 4063 of 2018

Appendix B: Task Force Member Official Comment Letters

Appendix C: Presentations from the Long-Term Policy Workshop

Appendix D: Memorandums from the Cybersecurity and Long-Term Policy Subcommittee

Appendix E: Public Comment



**APPENDIX A:**

HOUSE BILL 4063 OF 2018

**Enrolled**  
**House Bill 4063**

Introduced and printed pursuant to House Rule 12.00. Pre-session filed (at the request of House Interim Committee on Transportation Policy)

CHAPTER .....

AN ACT

Relating to autonomous vehicles; and declaring an emergency.

**Be It Enacted by the People of the State of Oregon:**

**SECTION 1.** The Department of Transportation is the lead agency responsible for coordination of autonomous vehicle programs and policies.

**SECTION 2.** (1) The Task Force on Autonomous Vehicles is established.

(2) The task force consists of 31 members appointed as follows:

(a) The President of the Senate shall appoint two members from among members of the Senate who are not members of the same party.

(b) The Speaker of the House of Representatives shall appoint two members from among members of the House of Representatives who are not members of the same party.

(c) The Director of Transportation shall appoint 27 members as follows:

(A) Six members representing state agencies that will be affected by the deployment of autonomous vehicles.

(B) Twenty-one members as follows:

- (i) One representative of the automotive industry;
- (ii) One representative of the cybersecurity industry;
- (iii) One representative of law enforcement;
- (iv) One representative of transportation network companies;
- (v) One representative of the autonomous vehicle technology industry;
- (vi) One representative of the automotive insurance industry;
- (vii) One representative of trial lawyers;
- (viii) One representative of workers' unions;
- (ix) Two representatives of transportation unions;
- (x) One representative of the Association of Oregon Counties;
- (xi) One representative of the League of Oregon Cities;
- (xii) One representative of the American Automobile Association;
- (xiii) One representative of the Oregon Trucking Associations;
- (xiv) One representative of the taxicab industry;
- (xv) One representative of a metropolitan planning organization;
- (xvi) One representative of the Oregon Transit Association;
- (xvii) One representative of a nonprofit entity;
- (xviii) One representative of the commercial truck manufacturing industry;
- (xix) One representative of consumer protection advocates; and

(xx) One representative of a public university.

(3)(a) The task force shall develop recommendations for legislation to be introduced during the next odd-numbered year regular session of the Legislative Assembly regarding the deployment of autonomous vehicles on highways.

(b) The proposed legislation under this section shall be consistent with federal law and guidelines and shall address the following issues:

- (A) Licensing and registration;
- (B) Law enforcement and accident reporting;
- (C) Cybersecurity; and
- (D) Insurance and liability.

(4) The task force may study and consider the potential long-term effects of autonomous vehicle deployment to be addressed in future legislation, including the following:

- (a) Land use;
- (b) Road and infrastructure design;
- (c) Public transit;
- (d) Workforce changes; or
- (e) State responsibilities relating to cybersecurity and privacy.

(5) A majority of the voting members of the task force constitutes a quorum for the transaction of business.

(6) Official action by the task force requires the approval of a majority of the voting members of the task force.

(7) The task force shall elect one of its members to serve as chairperson.

(8) If there is a vacancy for any cause, the appointing authority shall make an appointment to become immediately effective.

(9) The task force shall meet at times and places specified by the call of the chairperson or of a majority of the voting members of the task force.

(10) The task force may adopt rules necessary for the operation of the task force.

(11)(a) The task force shall submit a report in the manner provided by ORS 192.245, and shall include recommendations for legislation described in subsection (3) of this section, to the appropriate interim committee of the Legislative Assembly related to transportation no later than September 15, 2018.

(b) The task force may submit a report in the manner provided by ORS 192.245, and may include recommendations for legislation, if any, resulting from the task force's study under subsection (4) of this section, to the appropriate interim committee of the Legislative Assembly related to transportation no later than September 15, 2019.

(12) The Department of Transportation shall provide staff support to the task force.

(13) Members of the Legislative Assembly appointed to the task force are nonvoting members of the task force and may act in an advisory capacity only.

(14) Members of the task force who are not members of the Legislative Assembly are not entitled to compensation or reimbursement for expenses and serve as volunteers on the task force.

(15) All agencies of state government, as defined in ORS 174.111, are directed to assist the task force in the performance of the task force's duties and, to the extent permitted by laws relating to confidentiality, to furnish information and advice the members of the task force consider necessary to perform their duties.

**SECTION 3.** Section 2 of this 2018 Act is repealed on January 2, 2021.

**SECTION 4.** This 2018 Act being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this 2018 Act takes effect on its passage.

**Passed by House March 1, 2018**

.....  
Timothy G. Sekerak, Chief Clerk of House

.....  
Tina Kotek, Speaker of House

**Passed by Senate March 2, 2018**

.....  
Peter Courtney, President of Senate

**Received by Governor:**

.....M,....., 2018

**Approved:**

.....M,....., 2018

.....  
Kate Brown, Governor

**Filed in Office of Secretary of State:**

.....M,....., 2018

.....  
Dennis Richardson, Secretary of State

**APPENDIX B:**

TASK FORCE MEMBER OFFICIAL  
COMMENT LETTERS



**UBER**

**8/29/18**

**To: ODOT Autonomous Vehicle Task Force Members & Staff**

**From: Jon Isaacs, Public Affairs Manager, Uber; Task Force TNC Representative**

**Re: Official Comment on AV Task Force Report to the Oregon Legislature**

I appreciate the opportunity to submit this comment for inclusion in the ODOT Autonomous Vehicle Task Force (AVTF) report to the Oregon Legislature. The report does not transparently reflect the concerns raised by members of the technology AV industries with respect to certain aspects of the task force recommendations. I am submitting this comment to ensure that my statements at the August 15th meeting, representing the concerns of industry, are accurately reflected in the report.

Uber is a founder and active member of the Self-Driving Coalition for Safer Streets, as well as an active member of TechNet, the Internet Association, the Technology Association of Oregon (TAO), and Forth. I serve on the TAO advocacy committee. While my position on the ODOT AVTF was the transportation network company (TNC) representative, I was transparent throughout the process that my comments and votes would be on behalf of all of these organizations representing the technology industry broadly, and the AV industry specifically. With only four task force members, out of 33, representing industry, the views that I expressed were made only after communication and discussion with these industry trade associations, to ensure the broader voice of the technology industry was represented in AVTF full- and sub-committee discussions.

At the August 15th full AVTF meeting, prior to the AVTF votes to approve all sub-committee recommendations, representatives of Technet, Internet Association, TAO, and Forth all gave public comment. Their testimony stated that, while they did not have any serious concerns with the content of the committee's testing-only recommendations, the task force and ODOT missed an opportunity by not addressing deployment of autonomous vehicles in the recommendations. Two members of TAO testified that, from their perspective as Oregon companies working to develop AV technology, testing-only recommendations would have limited utility as several other states already allow both testing and deployment of AVs. Additionally, a concern was expressed that Oregon is falling behind in adopting statewide autonomous vehicle and shared

mobility policy, and adopting AV testing-only regulations would do little to catch Oregon up to the rest of the nation.

When I cast my votes, I stated that my vote in favor of the recommendations came with several reservations reflecting the broader position of the industry. I outline them again here for inclusion in the report:

- Despite the recommendations being limited to the testing of AVs, I voted to support them because they are consistent, with a few small exceptions, with AV testing policies adopted by other states. Further, I was encouraged by the fact that the task force and ODOT staff were responsive to concerns expressed by industry representatives on the task force, and made changes to the recommendations reflecting the industry's position in some areas, particularly on licensing, and data sharing and protection.
- Despite my vote in favor of the AVTF recommendations, the industry is deeply concerned that the adoption of AV testing-only policies would continue to keep Oregon far behind in realizing the potential positive benefits of AVs to safety, congestion relief, and transportation equity. Several states have already adopted policies and programs allowing testing, deployment, and uniform transportation network company laws, which means a testing-only policy in Oregon will have limited utility.
- If the AVTF recommendations are going to be the basis for 2019 legislation, the industry's support of the recommendations does not guarantee support for a 2019 bill. The technology and AV industries would only support a bill if, at the very minimum, it includes a path to deployment of AVs. Additionally, the industry will call on the legislature to adopt uniform statewide shared mobility and TNC regulations that will be necessary to ensure that the benefits of AVs will be equitably realized by all Oregonians.

Thank you for the opportunity to submit this comment. I want to thank, in particular, Representative Susan McLain for her strong leadership throughout the AVTF process. We look forward to continuing to work collaboratively to make Oregon a leader in adopting innovative transportation and shared mobility policies that will accelerate the shift to a safer, more sustainable, and more equitable transportation future for all Oregonians.



August 30, 2018

VIA ELECTRONIC MAIL


## **Oregon Task Force on Autonomous Vehicles**

DTNA always appreciates the opportunity to work with Oregon on advancing new technologies that will improve safety and efficiency, which are the pillars of our organization. DTNA greatly appreciates the work the committee put into the AV recommendations, and is generally in line with the recommendations. However, DTNA believes the legislature should consider some minor changes to the committee recommendations, including, but not limited to, the following:

- (1) As suggested by the committee, pictures of the test vehicles would be submitted as part of the approval process to test in the state. However, pictures of test vehicles are often confidential and need protection. It is critical that DTNA maintain its confidentiality during this time as it protects our ability to innovate freely.
- (2) State preemption is required to resolve potentially conflicting city and county laws that only create a patchwork regulatory environment that will hamper efficiency, and more importantly, innovation for this important technology.
- (3) DTNA believes a sunset provision is a prudent requirement as federal rules become more mature and work toward national standards that will govern the safety of automated vehicles.

DTNA is the leading in-state manufacturer of commercial vehicles and would be the primary organization impacted by any proposed recommendations and legislation regarding automation. To date, we have enjoyed a mutually respectful relationship with ODOT that has allowed DTNA to safely perform testing in Oregon, which, in turn, creates new technologies that benefit the public. We look forward to working with Oregon on optimizing these recommendations and any future automated vehicle policy and regulation.

Sincerely,



**Sean T. Waters**  
Director, Product Compliance and Regulatory Affairs  
Daimler Trucks North America and Detroit Diesel Corporation

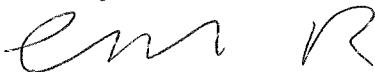
Ms. Adams-Kalloch and ODOT staff supporting the Oregon Task Force on Autonomous Vehicles:

Thank you for providing the opportunity to discuss how Oregon should develop legislation regarding automated vehicles (AVs). AVs could have a transformative impact on our transportation system and our communities. As a metropolitan planning organization (MPO), Metro works with partners including the City of Portland and TriMet. Collectively, we are responsible for enacting traffic laws and for planning, financing, building, operating and maintaining transportation infrastructure, programs and services. AVs are likely to be deployed in metropolitan areas first, so we and our peer agencies will be responsible for upholding Oregon's statewide planning goals as AVs arrive in our state.

We appreciate that the Task Force has begun to build a shared understanding of the issues and potential impacts related to AVs across representatives with diverse backgrounds and interests, and the report accurately captures the consensus recommendations of the Task Force to date. Though the charge of the task force was to "develop recommendations for legislation regarding the deployment of autonomous vehicles," the recommendations in this first report are focused on regulations governing testing of AVs on Oregon's roads. We recognize the interest that private companies have in developing and testing new technology, and we appreciate that the Task Force has come up with recommendations to minimize potential harm to the public during AV testing. We would like to see the State go further and build on this shared understanding to develop more comprehensive recommendations about how AV policy should advance the public interest. AV legislation should ultimately govern deployment as well as testing in a manner that proactively supports safe, equitable, and environmentally sound communities in Oregon.

The final report should provide the Legislature with the necessary context to interpret the recommendations and develop interim AV policy that benefits all Oregonians, en route to developing more permanent and comprehensive policy regarding deployment. Below we highlight additional information that we believe the Legislature needs to consider when reading this report. We are also including a platform that outlines the elements of AV policy that we believe are necessary to support Oregon's goals.

Sincerely,



Eliot Rose, Metro  
Representing metropolitan planning organizations



Eric Hesse, City of Portland  
Representing League of Oregon Cities



Jeb Doran, TriMet

Representing Oregon Transit Association

### **Additional contextual information**

Though the report captures the recommendations of the Task Force, we believe that the following additional information is necessary for the Legislature to consider alongside the report in order to develop AV policy that benefits all Oregonians.

**The State needs to collect additional information on AV testing to ensure that testing is safe and supports the public interest.** Allowing AVs to be tested on public roads, which is the focus of the report, primarily benefits private companies that are developing AV technology. As defined in the report, testing is conducted “for the purpose of assessing, demonstrating, and validating the autonomous technology’s capabilities” (p. 15). The recommendations allow members of the public to seek recourse in the event of a collision during AV testing, but Oregon can do better than simply working to ensure that testing does no harm to its residents.

The purpose of testing should not be limited to companies honing their technology, but should also include the need for Oregon to prepare for deployment by collecting information about how AVs impact safety and transportation behavior. The recommendations in the report require only that companies report collisions that occur during testing to the State. In order to evaluate the safety of AVs, Oregon needs to know not just where and how collisions occur, but also where and how AVs are being tested in order to understand the risks that AVs pose relative to other modes. Other states require additional data from AV tests for this reason. We believe Oregon should follow suit, and make test data available to inform policymaking in a way that protects the trade secrets of companies that test AVs. More data is also necessary to fulfill the recommendations of the Task Force, which state that “the agency responsible for issuing testing permits must also have the power to revoke permits through an administrative process” (p. 17). It is unclear how an agency would make a sound determination to revoke a permit for safety reasons based on the limited data that would be shared with the State under the current recommendations.

**Regulations that focus on testing alone are not adequate to address the full set of issues involved in deployment.** Though the Task Force was charged with developing recommendations on deployment of AVs, members chose to focus on testing given that members had limited time to meet. The regulatory framework for testing partially lays the groundwork for AV deployment, but Oregon needs comprehensive deployment policies to address the issues that matter to Oregonians, such as safety, congestion, job opportunities and equitable access to transportation. In order to address these issues, the State needs to take action well before AVs are deployed at scale. Task Force members representing both the public and private sectors called for Oregon to develop policy governing AV deployment. The Task Force recommendations focus on testing because it is a first step, not because it is the most important step.

**Local and regional governments have critical responsibilities with respect to AVs.** Federal and state agencies have regulatory authority over many aspects of AV deployment, which the report summarizes well (p. 4). However, the report neglects to mention local governments’ authority to enact and enforce traffic laws. Ensuring that AVs can follow these laws is critical to ensuring that AVs operate safely in cities. Some local governments, including Portland, already have drawn from extensive experience working with both community members and companies in the AV sector to adopt policies governing AV testing and deployment. These local policies set an important precedent for state AV legislation and should be honored.

### **Automated vehicle policy platform**

The City of Portland, TriMet and Metro developed the platform below, which outlines the elements that AV legislation needs to include in order to advance the public interest and meet state and regional policy goals.

**Oregon should take a nimble approach to AV policy that focuses on meeting state policy goals.** AV policy should focus on achieving outcomes including safer roads, vibrant communities, shared prosperity and equitable and environmentally sound transportation options—not on deploying new technology solely for the sake of innovation. In the short term, AV legislation should include policy levers and data sharing requirements to keep Oregon on track to achieving these outcomes instead of focusing narrowly on enabling AV testing and deployment. Over the long term, the State should monitor and assess the impacts of AV deployment and adjust AV regulations based on its findings.

**AV policies should create shared prosperity.** Recent innovations in transportation and technology have replaced stable, family-wage jobs with low-paying contract work. Oregon should ensure that the transition to AVs benefits workers by identifying in advance the new job opportunities that AVs will create for workers, creating wage and benefit standards for these opportunities and implementing a robust “just transition” program to make displaced workers whole.

**AVs should improve transportation options for all Oregonians.** Transportation services that operate using AVs should equitably serve people of color, low-income communities, people with disabilities, older adults and other underrepresented groups. The state’s transportation system should be designed and priced to prioritize affordable, accessible and shared options.

**Oregonians who are harmed by AVs should be able to seek justice.** The State needs to maintain a system of accountability within both public and private tort laws as AVs take over the responsibilities of human drivers. Oregonians should be compensated for their losses when negligent operation or design of automated driving systems leads to injuries, death, property damage or loss of privacy.

**Local governments should maintain authority over how vehicles, including AVs, operate in their communities.** City streets are complex operating environments for any vehicle, with all types of road users, often-congested streets and areas with vulnerable travelers like school and hospital zones. Just as cities and counties govern speed limits, designate safe routes for all travelers, prioritize modes that move people efficiently and enact other laws to ensure that streets are safe for everyone, local governments should retain authority to regulate AV operations on local streets to help improve safety for all travelers.

**AV companies and users should pay their fair share of the costs of building and maintaining the transportation system.** Companies that develop their technology by testing vehicles on Oregon’s roads should cover the costs of testing. Over the long term, the State and local governments explore innovative approaches to pricing AV travel, such as mileage-based

pricing, to fund roadway maintenance and other infrastructure that may be needed so AVs can operate safely.

**AVs should be thoroughly tested before they are allowed to operate on Oregon's roads.**

Testing vehicles has traditionally been a federal responsibility, but in the absence of a robust federal AV safety program, the State should collect adequate data to evaluate the safety of AVs before they are deployed, set policy accordingly and retain the authority to revoke permission to test and/or operate AVs that prove unsafe.

**Provide access to information from AVs to advance the public interest**, including but not limited to:

- Data on travel patterns so public agencies can plan the transportation system to maximize the benefits of AVs and implement land use, transportation equity and environmental goals
- Data on crashes and data breaches so law enforcement, victims of crashes and others can maintain a system of accountability, and so that Oregon has sufficient data to evaluate AV safety
- Data on trips carried by private transportation services so public agencies can ensure that these services are safe and equitable

Public agencies already collect data on the use of the public right of way. Data on roadway usage, including AVs, should be shared to help agencies monitor impacts, define benefits and plan accordingly. The State should create or enroll in a system to collect, aggregate and share data in a manner that protects confidentiality and trade secrets and converts data into information that Oregonians need to advance the public interest.

## **APPENDIX C:**

# PRESENTATIONS FROM THE LONG-TERM POLICY WORKSHOP





# WORKERS' PERSPECTIVE ON AUTONOMOUS VEHICLE TECHNOLOGY, DEPLOYMENT



Graham Trainor, Chief of Staff, Oregon AFL-CIO  
AV Task Force Member, August 1, 2018



# Economic Disruption is Not a New Challenge for Workers



Workers have dealt with and adapted to automation and changes throughout history

---



Policy often attempts to catch up with these changes, rather than planning for them

---



State and local governments have an important role in fostering these changes, but also must play an active role in creating social policy that helps achieve a bright future for ALL



**A STRONG VOICE**  
FOR OREGON'S WORKERS

# What's at Stake for Oregon Workers?



Over 70,000 workers in Oregon's transportation industry

---



Risk of exacerbating economic inequality

---



AV technology can further erode job quality in various sectors

---

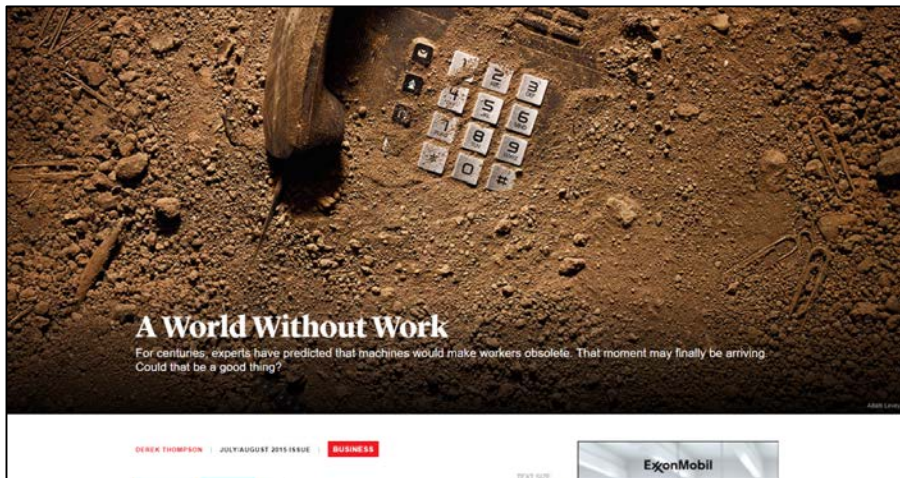


Job creation opportunities, but...



**A STRONG VOICE**  
FOR OREGON'S WORKERS

# What's at Stake for Oregon Workers?



**A STRONG VOICE**  
FOR OREGON'S WORKERS

# Uncertain Future, Opportunities to Lead



Despite uncertainty, Oregon can and should lead through social impact policy

---



Getting it right, getting it wrong

---



Short/medium term AND long-term planning



**A STRONG VOICE**  
FOR OREGON'S WORKERS

# Working Oregonians' Principles for AV Testing and Deployment



Create shared prosperity in the transportation industry

---



Use AVs to strengthen public transportation, with increased access for communities of color, low-income and disabled communities

---



Maintain public control and accountability

---



Share the costs and benefits of automating transportation fairly



**A STRONG VOICE**  
FOR OREGON'S WORKERS

# Recommendations from Worker Representatives

- **Include opportunity for worker and impacted community voices to be heard in this process**
- 

## **2018 AV Task Force Report**

- Include reference about the importance of a thorough workforce analysis to be included in 2019 AV Task Force Report
  - Include reference regarding the importance of broader social impact recommendations to be considered in 2019 AV Task Force Report
- 

## **2019 AV Task Force Report**

- Include thorough, independent workforce analysis that looks at today's transportation industry as well as AV impacts 10-20 years out
- Include a section regarding broader social impact policy recommendations



**A STRONG VOICE**  
FOR OREGON'S WORKERS





# URBANISM NEXT:

## IMPACTS OF EMERGING TECHNOLOGIES ON CITIES

**Becky Steckler, AICP**

Urbanism Next Program Manager

[beckys@uoregon.edu](mailto:beckys@uoregon.edu)

[@basteckler](#)

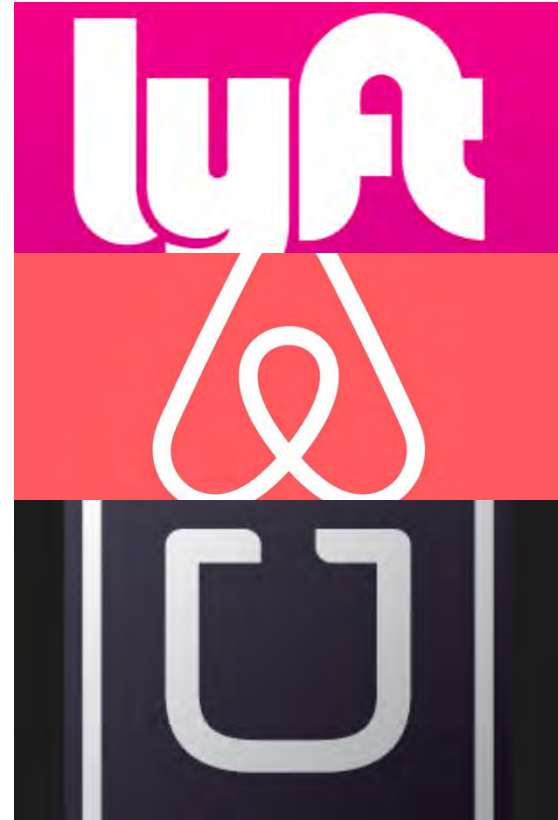
[www.urbanismnext.com](http://www.urbanismnext.com)



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OREGON



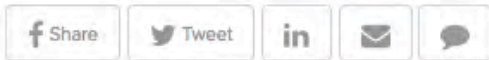




# Multiple Studies Find Ride-Hailing Contributes to Congestion and Transit Losses

Surveys on ride-hailing conducted by regional planning agencies, academic institutions, and public transit agencies throughout the U.S. reviewed by the Associated Press largely led to the same conclusion: more traffic and reduced use of transit.

March 9, 2018, 2pm PST | [Irvin Dawid](#)



[Alfredo Mendez / Flickr](#)



What's the trade-off? // [Seth Wenig/AP](#)

## The Ride-Hailing Effect: More Cars, More Trips, More Miles

[LAURA BLISS](#) OCT 12, 2017



# AUTONOMOUS VEHICLES



# NEW MOBILITY



**BIKETOWN** 



zipcar



BIRD



Lime



# MOBILITY AS A SERVICE



# SUBSCRIPTION SERVICES



Monthly Plans

About us

News

Help



	Whim To Go	Whim Urban	Whim Unlimited
Monthly payment	Free	49€	499€
Local public transport	Pay per ride	Unlimited Single Tickets	Unlimited Single Tickets
Taxi (5km radius)	Pay per ride	10€ per ride	Unlimited
Car	Pay per ride	49€ per day	Unlimited
City Bike	Not included	Unlimited (30min)	Unlimited
Cancel anytime	✓	✓	✓
<a href="#">Add-ons incl regional HSL &gt;</a>			
	<a href="#">Read more</a>	<a href="#">Read more</a>	<a href="#">Read more</a>



# E-COMMERCE

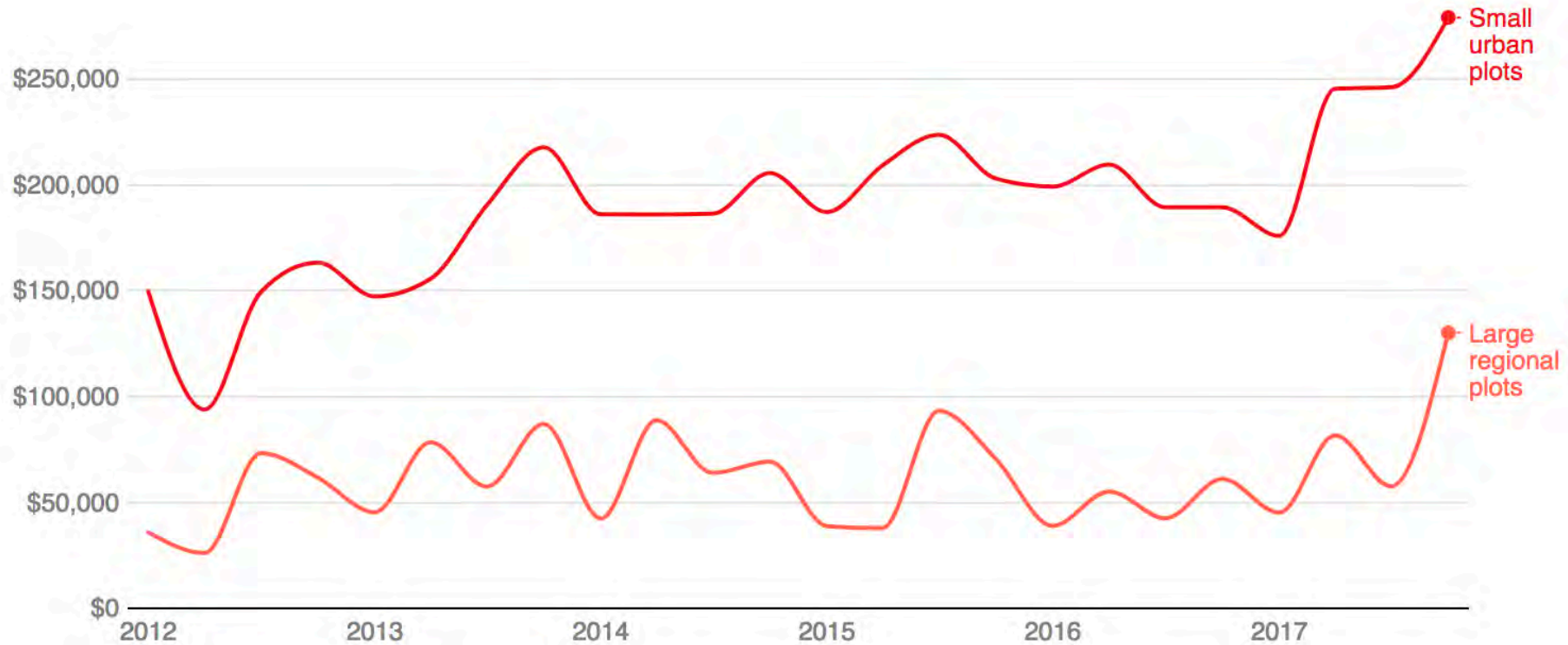




# E-COMMERCE



# PRICE/ACRE OF INDUSTRIAL LAND, US, 2012-2017



*Small = 5-9.99 acres, large = 50-500 acres*

Source: [CoStar](#), [CBRE Research](#) • Created with [Datawrapper](#)

Viewed at: <https://www.recode.net/2018/1/3/16845162/two-day-shipping-e-commerce-double-warehouse-land-prices-last-mile>

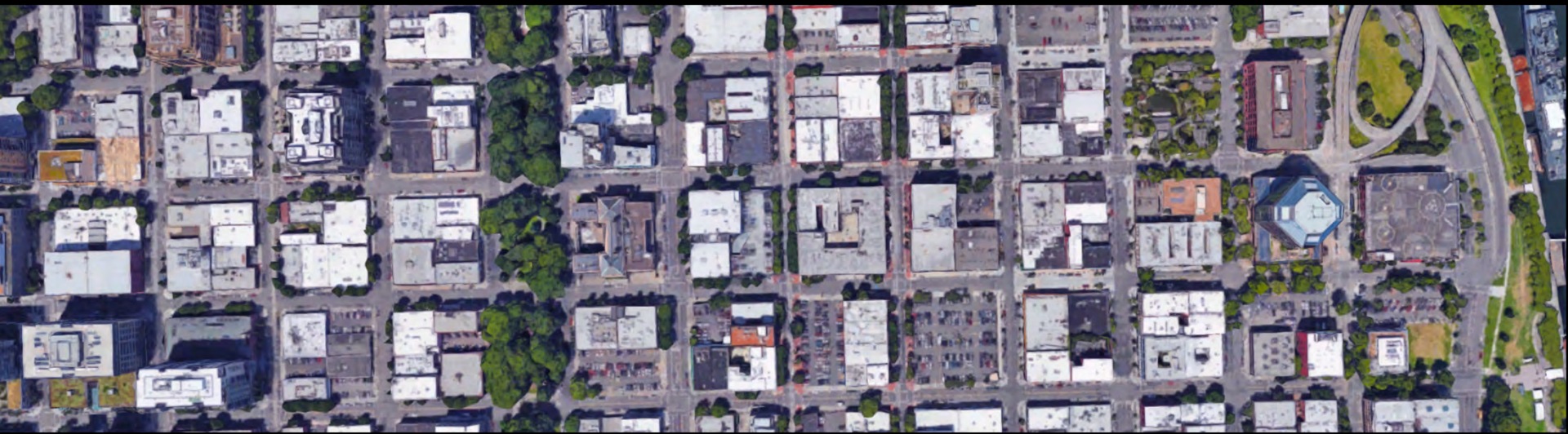


Car











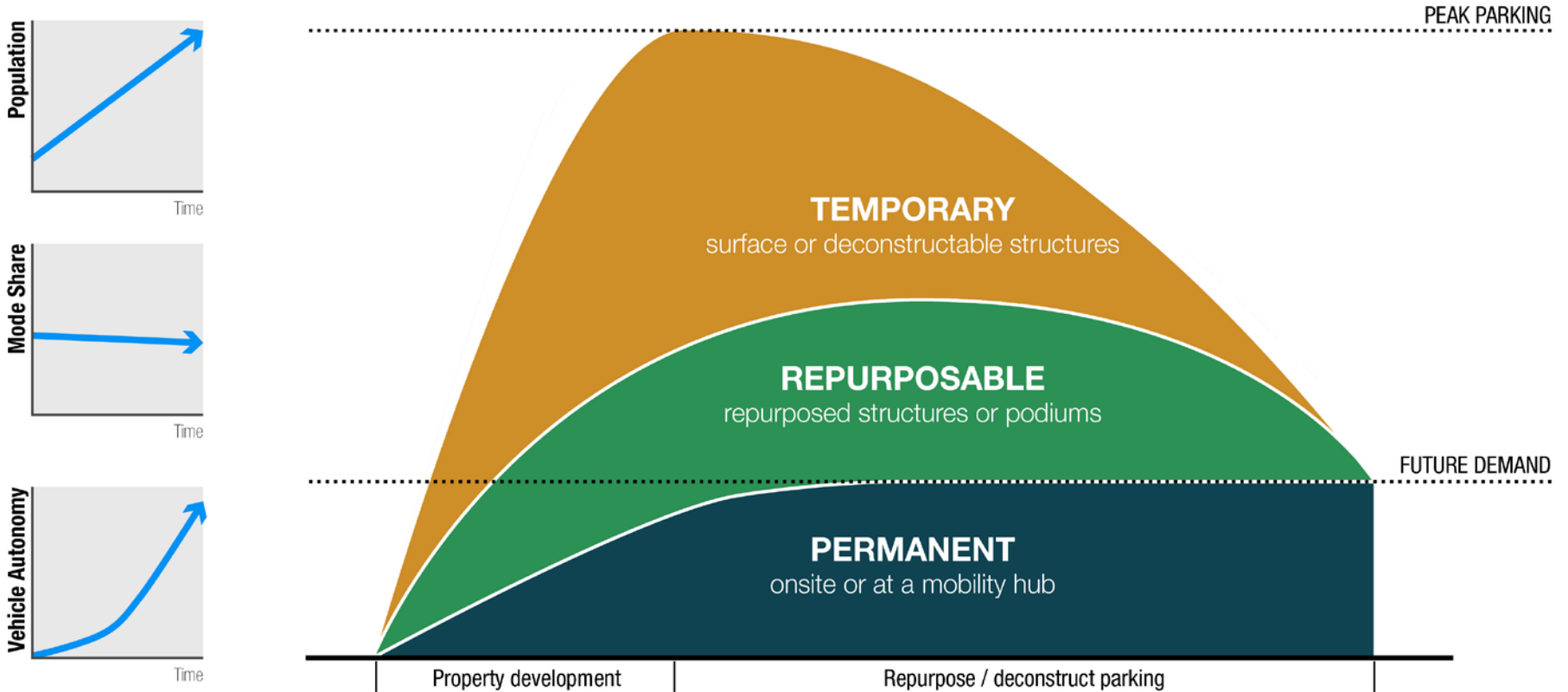








# Type of parking demand/supply

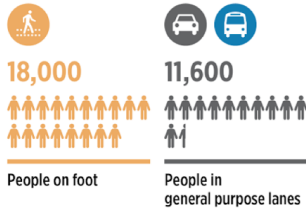
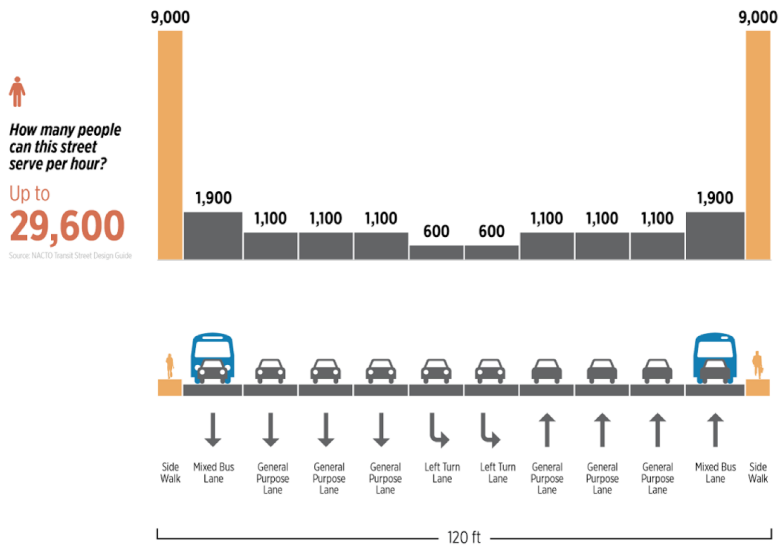




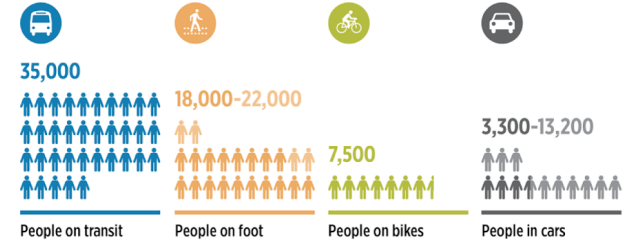
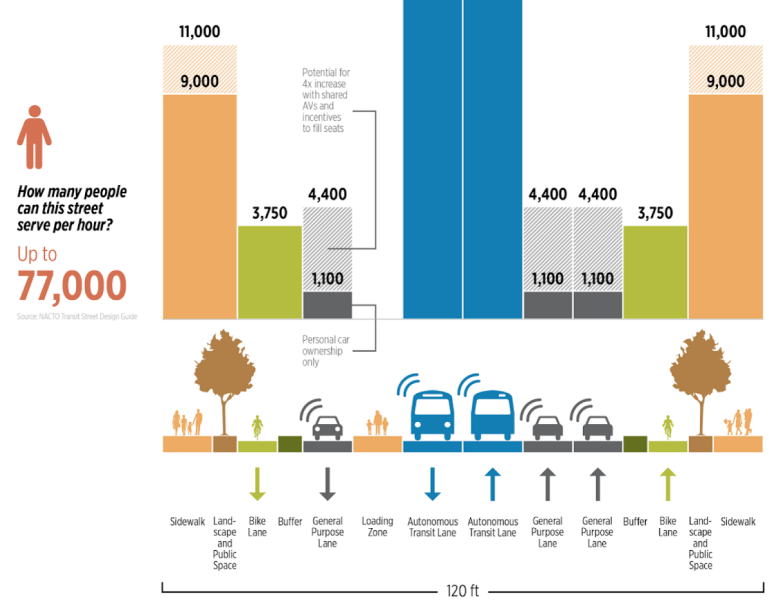


# STREET CAPACITY

## Present



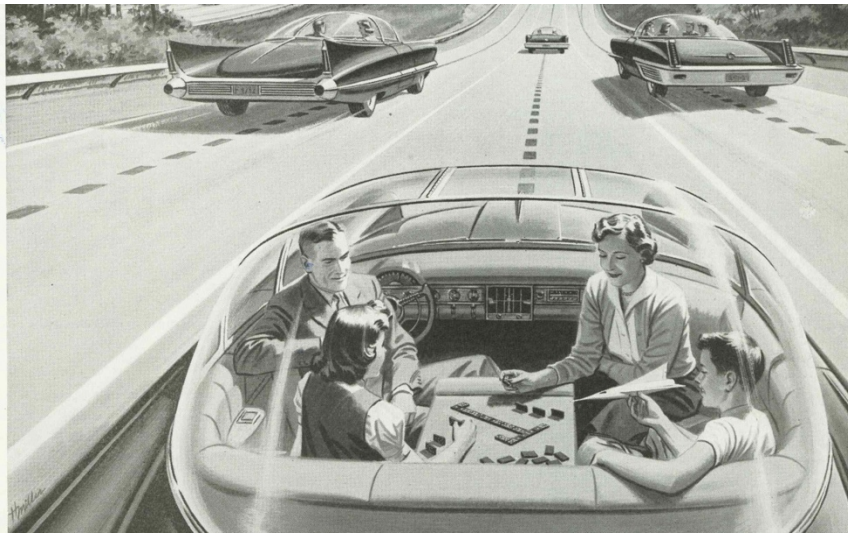
## Future



Source: NACTO, Blueprint for an autonomous future











# LAND USE AND TRANSPORTATION ASSUMPTIONS NEED TO CHANGE





**AVs ARE NOT A TRANSPORTATION ISSUE.**

**E-COMMERCE IS NOT A RETAIL ISSUE.**

# URBANISM NEXT – UNIVERSITY OF OREGON

- [urbanismnext.com](http://urbanismnext.com)
- [urbanismnext.uoregon.edu](http://urbanismnext.uoregon.edu)
- Research Reports
- Clearinghouse
- National Network
- Projects
- 2019 Conference





# URBANISM NEXT: IMPACTS OF EMERGING TECHNOLOGIES ON CITIES

**Becky Steckler, AICP**

Urbanism Next Program Manager

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[@basteckler](https://twitter.com/basteckler)

[www.urbanismnext.com](http://www.urbanismnext.com)



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OREGON





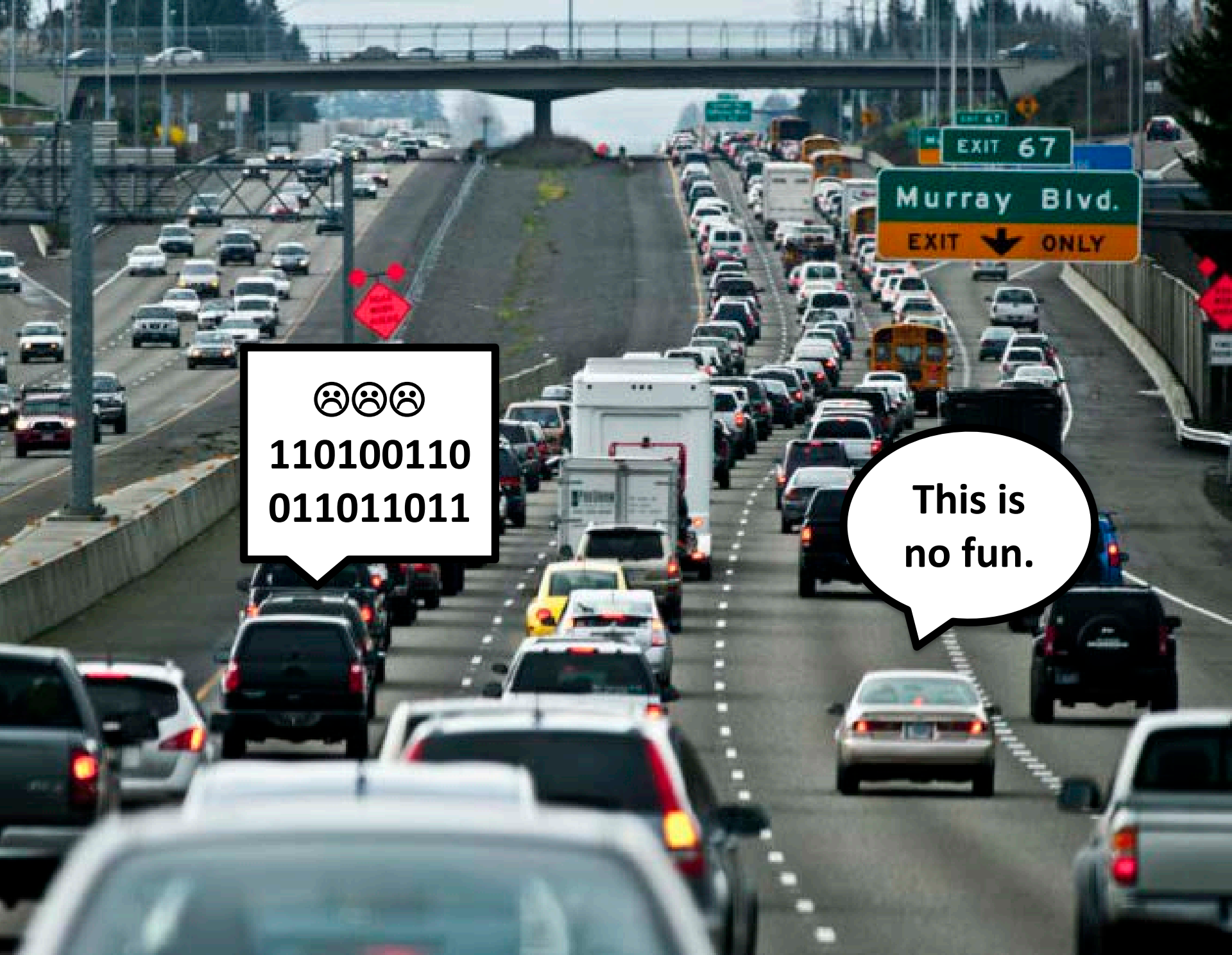
## **AVs and Transportation Data**

Eliot Rose, Metro

Oregon AV Task Force Long-Term Workshop



Greater Portland  
The year 2033



110100110  
011011011

This is  
no fun.



# What do we use data for?

To implement state land use, transportation and environmental goals.

To ensure that the transportation system is:

- Safe
- Efficient
- Equitable
- Well-maintained

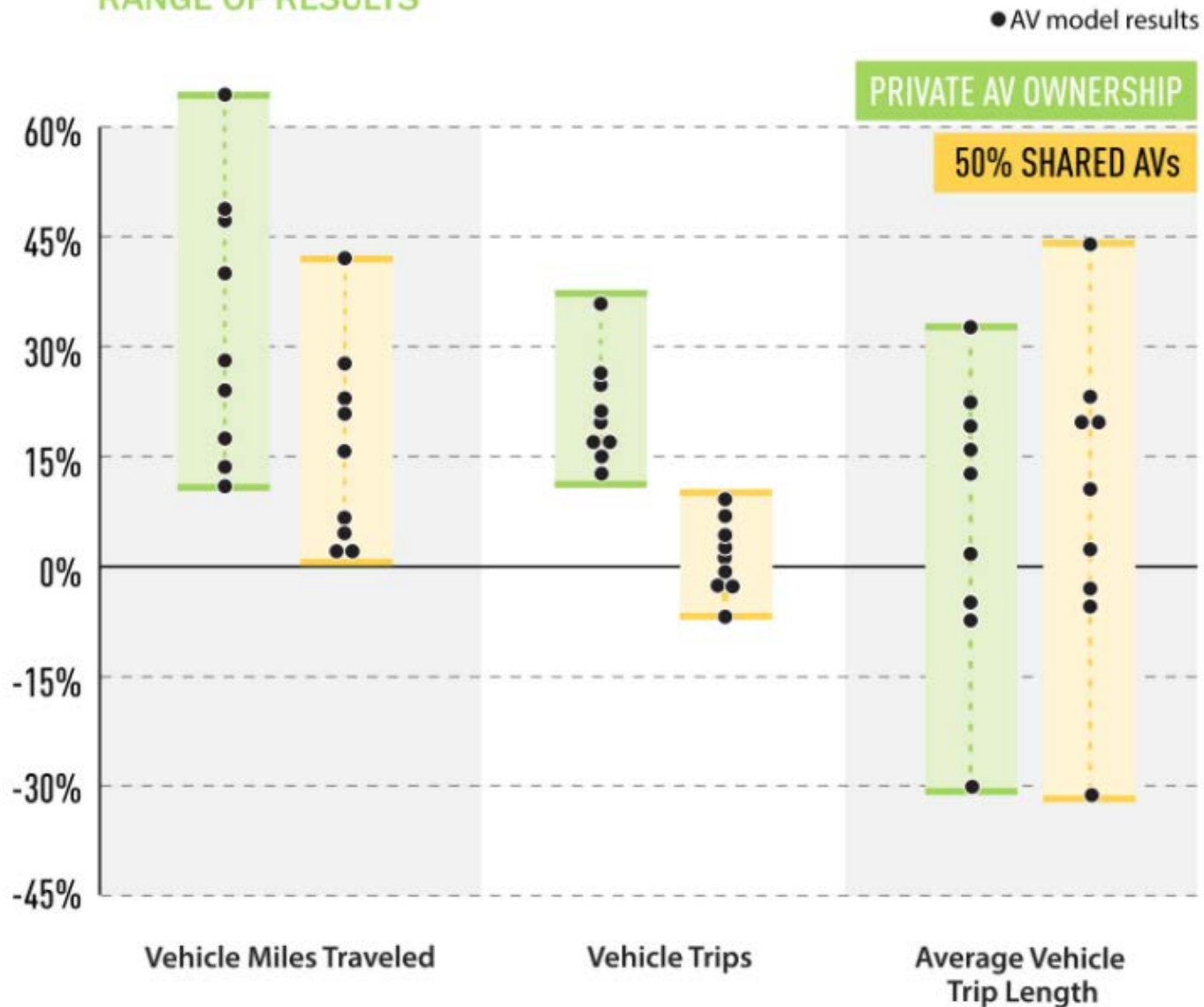
# What data do we use now?

- Travel patterns (origins, destinations, times)
- Traffic volumes
- Collisions
- Number of passengers

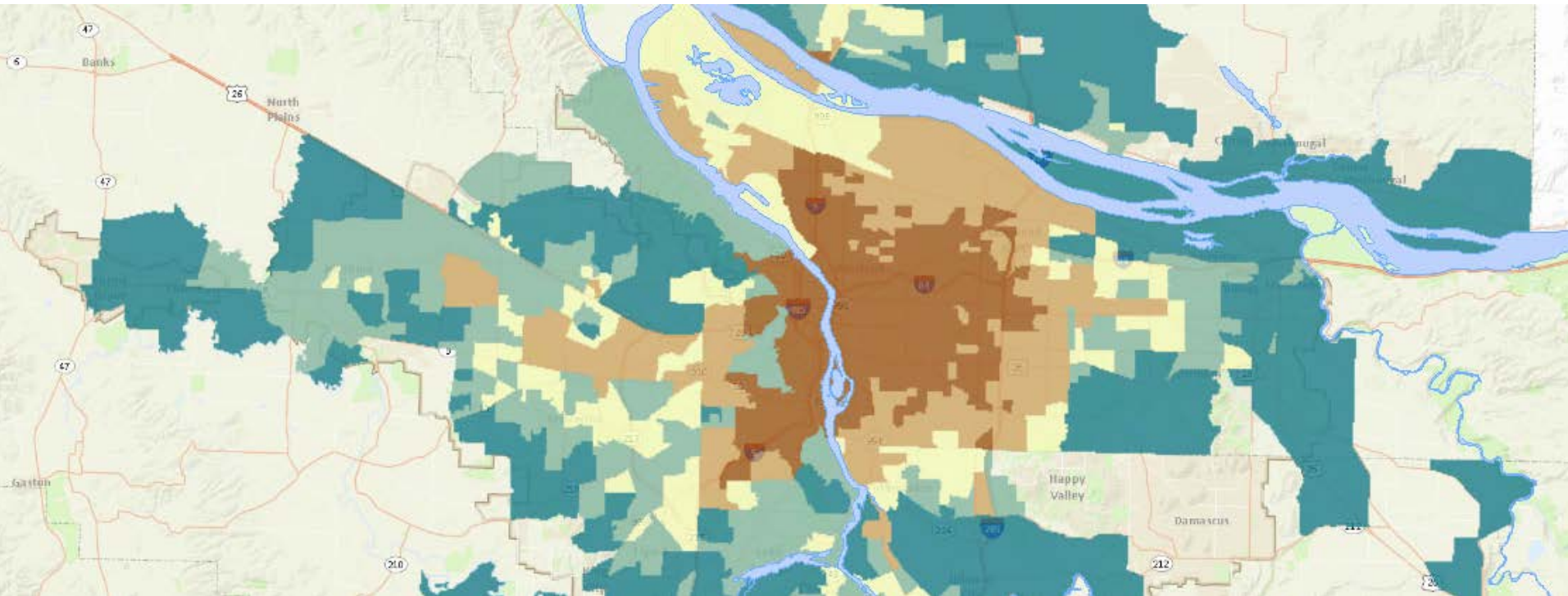


# Why is AV data important?

## VEHICLES RANGE OF RESULTS

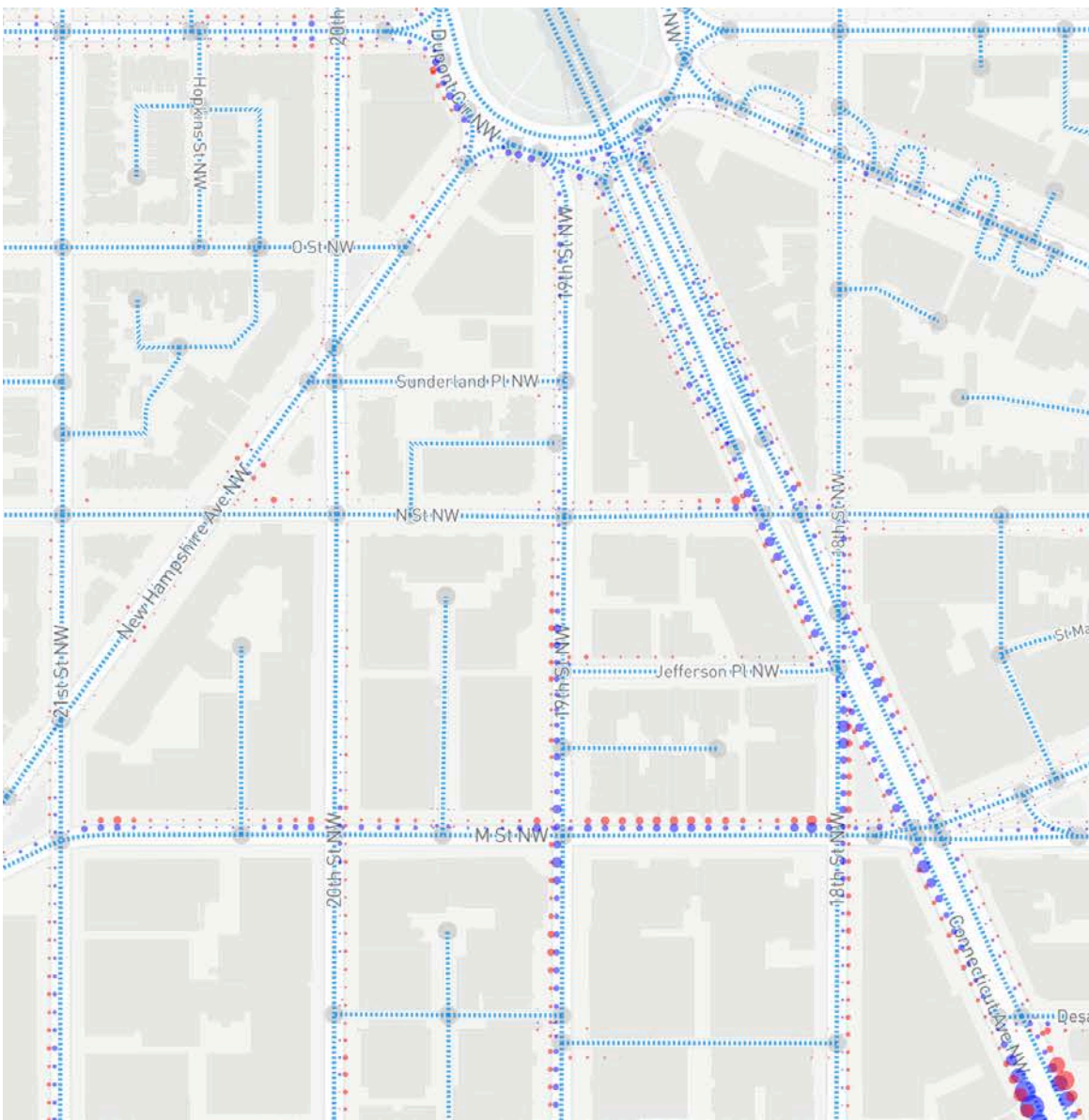


# What data don't we want?



- Data on individual trips
- Data on individual companies
- Personally identifiable information
- Data on how AVs make travel decisions

# Data standards and exchanges offer a way forward

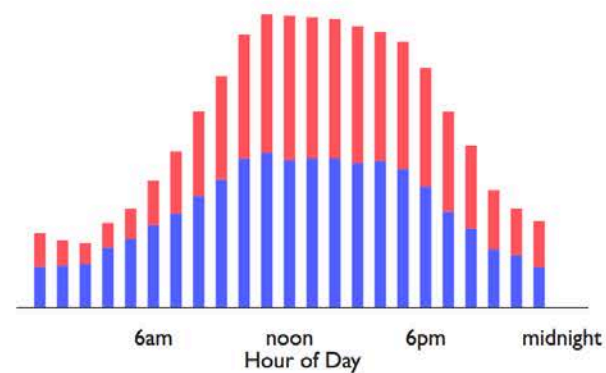


## Analysis

### Pick-up/Drop-off by Hour of Day

Total by hour for November 2017

■ Pick-up ■ Drop-off



## Filters

Days of Week



Hours of Day



# How Can Urban Planning Engage in the AV Revolution?

## Make AVs Work for Us

Eric Hesse

Supervising Planner, Policy Innovation & Regional Collaboration

City of Portland Bureau of Transportation

*Representing the League of Oregon Cities*



**PBOT**  
PORTLAND BUREAU OF TRANSPORTATION

# How can Urban Planning guide the AV Revolution?

**“Urban planning can be described as a technical and political process concerned with the welfare of people, control of the use of land, design of the urban environment including transportation and communications networks, and protection and enhancement of the natural environment.”**

(Wikipedia)





# AV: Greatest Disruption in 100 Years?



1900: All horses.



1913: All cars.

**Impact to cities could be as significant as the invention of the car.**

**Policy decisions will determine their impact.**

**Utopian vision:** Automated vehicles complement active transportation and mass transit, radically reduce the total number of cars, increase safety and mobility options, and free up public space currently used for parking

**Nightmare vision:** Automated vehicles induce longer commutes and sprawling development, compete with walking and cycling, and reduce investment in high capacity mass transit.

# Automated Vehicles & Congestion

## what happened.

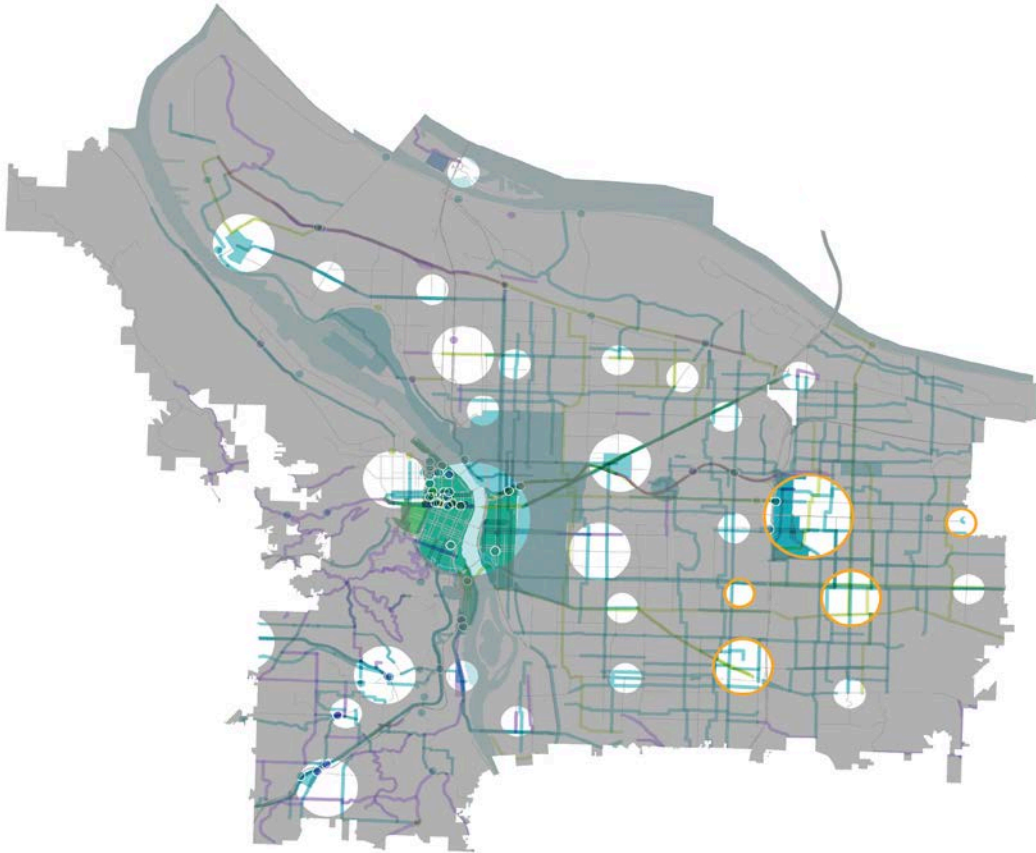
Cumulative effect of privately-owned autonomous vehicles:

- 12-68% **increase in VMT**
- 2-26% **increase in vehicle trips**
- 43% **decrease** to 16% **increase** in transit trips

Source: Fehr and Peers

2. Establish Clear Policy Outcomes  
and Long Range Plans to place AVs in context and connect the  
dots between transportation and land use

# SAVI: Goals-Based Policy

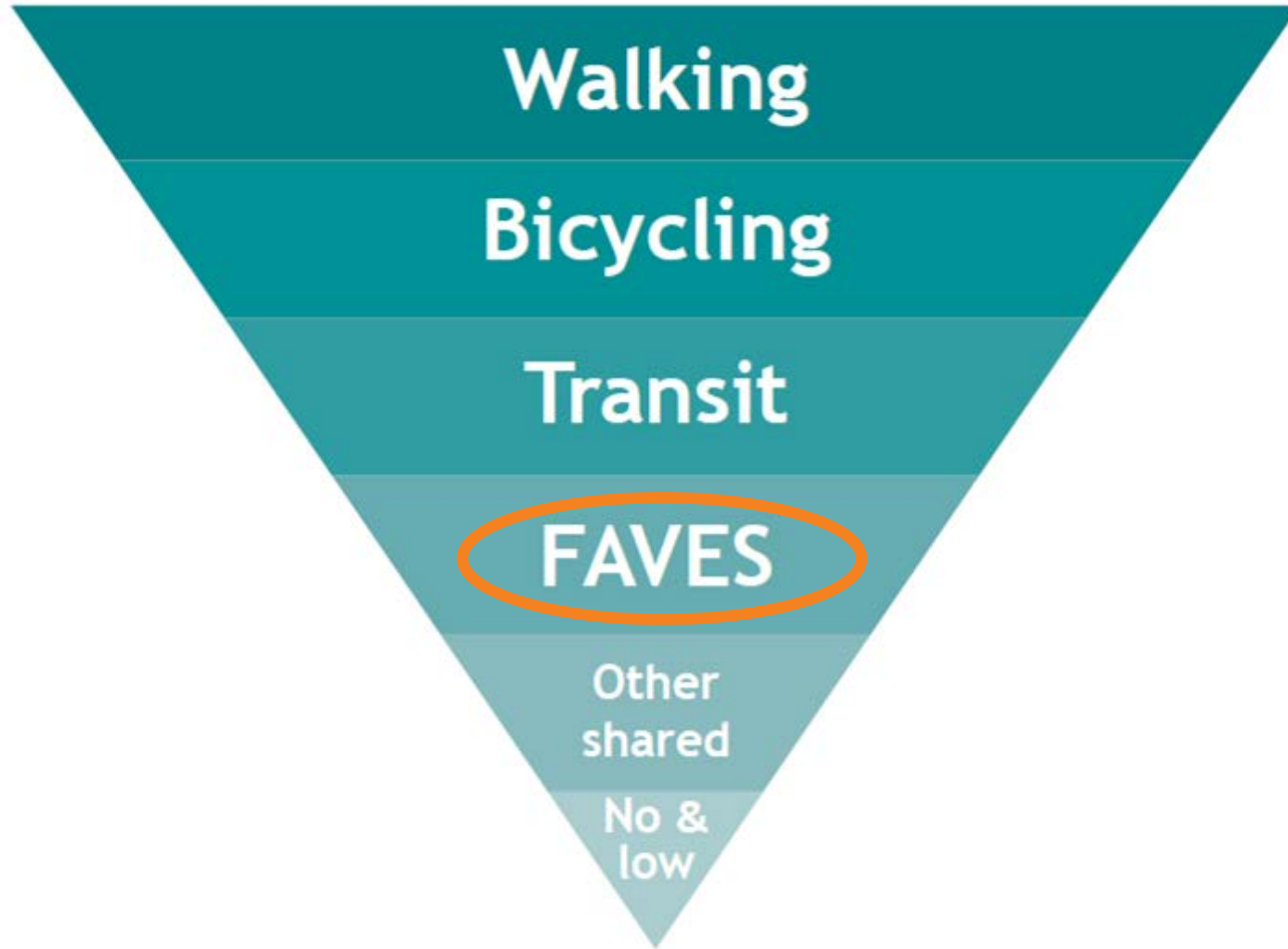


## AV's should advance the outcomes/goals in Comprehensive Plan

- **Vision Zero:** Prioritize Safety on our streets particularly for most vulnerable travelers
- **Health:** Support active transportation and healthy communities
- **Economic Opportunity:** Support local economic growth and great places
- **Equity:** Ensure benefits accrue to disadvantaged people without increased burden
- **Congestion & Climate:** Reduce burden on the transportation system and environment



# Policy: Prioritize!



**Fleets of  
Automated  
Vehicles (that are)  
Electric &  
Shared**

### 3. Create A Clear Operating Landscape And Role For Local Agencies

# Clear Federal, State, and Local Roles

## Federal Role

- Vehicle safety testing and certification
- Funding for state and local V2I and pilot projects

## State Role

- Vehicle Registration
- AV operations on state roads
- Funding for V2I and pilot projects

## Local Role

- AV operations on local roads (City Engineer authority)
- Pilot projects
- Managing Mobility Services



# Getting Ahead: Portland's Smart Automated Vehicle Initiative (SAVI)

Mayor & Transportation Commissioner announced Portland's Smart Automated Vehicle Initiative (SAVI) in April 2017

Invites AV Testing and Piloting in Portland

Directed staff to prepare four elements:

1. Policy foundation
2. Request For Information (RFI)
3. Administrative Rule: framework for permitting, data collection
4. Public Engagement Strategy

"We want to do AV right."



# What will determine the outcome? Policy & Actions

## Portland Administrative Rule and Permit Process

Establishes clear path for AV test approval/permit

- Requires a Permit for use of city streets
- Establishes clear approval criteria
- Requests basic info: what, when, where
- Builds on TNC permitting framework
- Lays out public engagement process (if needed)
- Clarifies data reporting
- Indemnifies City
- Creates interim fee structure





# Local Role: Managing AV Operations

## Tools

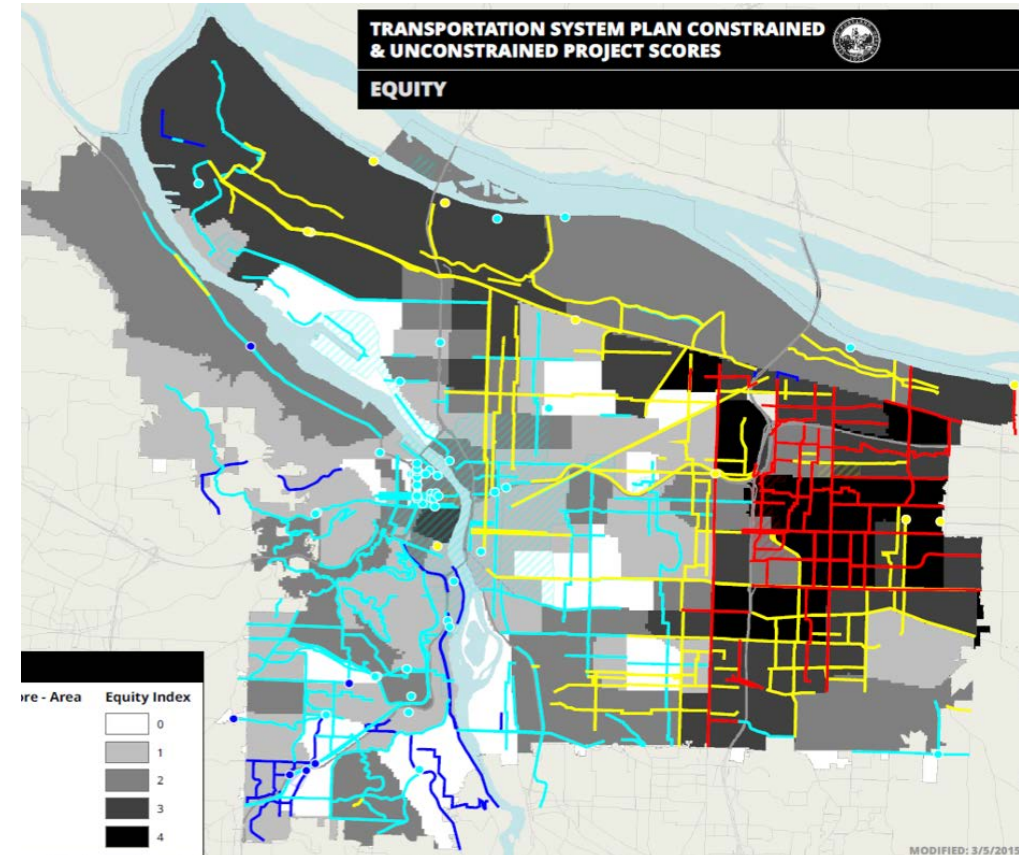
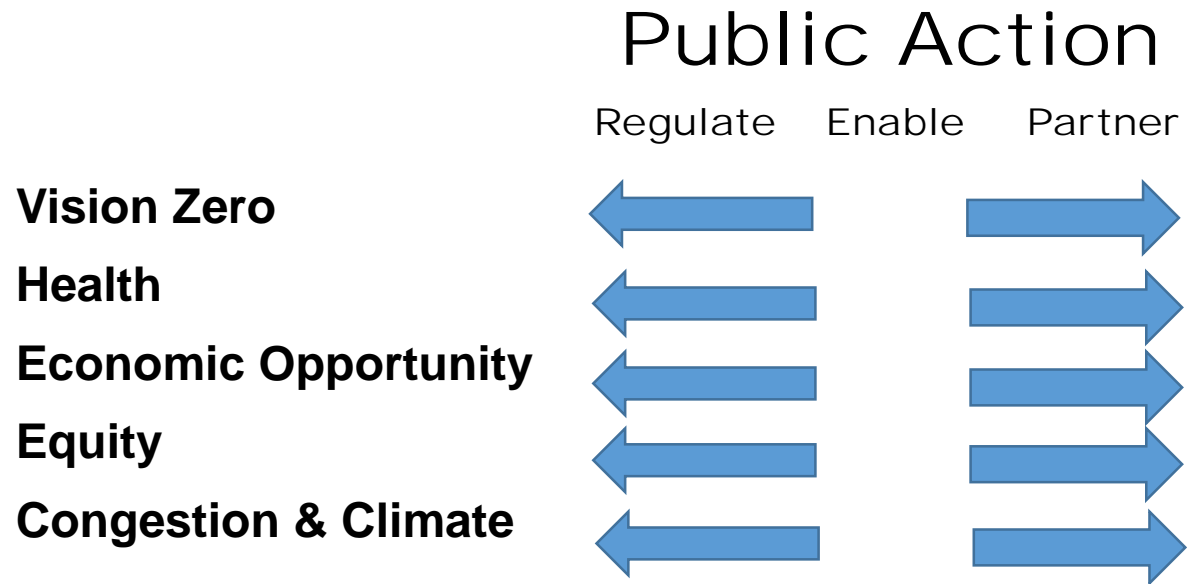
- Street design
- Parking
- Pick-up and drop-off zones
- Speeds
- Freight loading and unloading
- Efficiency incentives
- EV charging
- Smart V2I infrastructure
- Technology on poles or in pavement
- New maintenance requirements
- Pricing





# SAVI: Goals-Based Policy

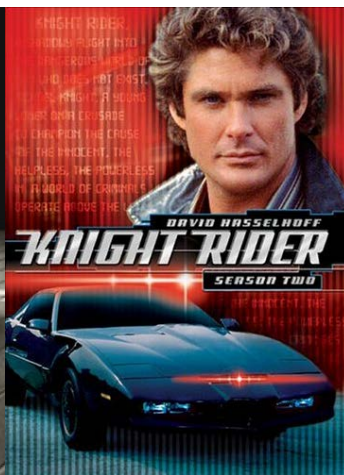
How do we assess the impact of specific AV proposals?





# Av Task Force

## Long Term Policy Workshop



Jeb Doran, RLA, ASLA  
TriMet, Portland, OR  
[doranj@TriMet.org](mailto:doranj@TriMet.org)  
503-962-2141

# Goals defined

## Oregon defined goals for Transit and livability

- System data; guides planning efforts
- Modeling; tools we have to make predictions
- Create policies that support adopted plans
- Adopted plans related Transit;
  - Oregon Bicycle and Pedestrian Plan
  - Transportation Safety Action Plan
  - Oregon Public Transportation plan



# Goals defined

## Summary of Public Transportation goals

- Maximize safety for all modes!
- Fast, reliable, high frequency transit service
- Partnerships expand mobility options; AV & TNC
- People first, prioritize walk & bike
- Livability; density around stations
- Climate change; carbon footprint reduction
- Support the communities we serve
- Plan for the future; Service enhancements

# Data defined

## **Public Data we want for planning**

- origins and destinations
- route
- travel speeds and duration
- date and time of travel
- number of occupants
- crash incidents

## **Private Data we don't need for planning**

- travelers' personal information,
- details on individual AV trips,
- proprietary technology
- processes for data collection, translation, and actions initiated by the technology

# TNC Travel Behavior research

- Data based analysis
- Travel patterns of TNC
- Patterns dictated by consumer
- Trends comparison
  - TNC increased use
  - Transit ridership decline
  - Correlation?
- TNC filling niche; benefit
- TNC conversion to AV
  - Likely follows TNC patterns
  - Consumer driving behaviors

# Ridership

## Transit Cooperative Research Program Report 195

- Shared-Use Mobility Center
- TNCs use on weekends and evenings
- not during peak transit periods
- no relationship between TNC use & longer-term ridership

# Ridership

## TriMet Research Suggests other factors

- Economic displacement
- Frequency
- Reliability

TransitCenter

Nov 14, 2017

**In Portland, Economic Displacement May Be A Driver of Transit Ridership Loss**



# PLANNING FOR AUTONOMOUS VEHICLES



Presented by Mike Wallace, Fehr & Peers  
Research Lead by Kevin Johnson, Fehr & Peers  
AMPO Annual Conference, October 2016

# Scenario planning

## Fehr and Peers,

### Case Study; Will AV cars travel more or less?

- Tested regional models
- adapted effects shaping outcomes; AV
- Findings;

#### Privately Owned SOV AVs

12-68% rise in VMT

2-26% rise in Vehicle trips

16-43% fewer transit trips

#### Shared AVs (50%)

4-43% rise in VMT

1-7% rise in Vehicle trips

Up to 16% rise in Transit Trips

# Exploring the possibilities

## New policies, New mobility, New partnerships

- Connect to transit
- Expand transit coverage
- Off-peak service options
- Data share;
  - mobility apps
  - New infrastructure
  - planning



## **APPENDIX D:**

MEMORANDUMS FROM THE  
CYBERSECURITY AND LONG-  
TERM POLICY SUBCOMMITTEE

## Memo

To: Cybersecurity and Long-Term Policy Subcommittee of AV Task Force  
From: Carrie MacLaren, Deputy Director, DLCD, and Becky Steckler, University of Oregon  
Date: July 18, 2018  
RE: Desired Data to Guide AV Policy Development

The future of AVs is uncertain; but there is a consensus that large-scale deployment of AVs will have significant impacts on our communities. Having good information about early AV usage will help Oregon build well-informed policy for the long term.

Decision-makers are rightly aiming to shape policies to ensure AVs can improve traffic safety, decrease congestion, boost transportation choices, and support a strong economy. The private sector should be asked to share useful information to assist in that effort, while protecting consumer privacy and proprietary information.

This memo aims to outline what information will be most useful.

### What information do state and local governments need?

Data most relevant to understanding the impacts of AVs on travel and maximizing their benefits are listed below. The list is consistent with the National Association of City Transportation Officials' (NACTO) [Data Sharing Principles](#).

- **Trip origins, destinations, types (passenger, goods delivery, or zero-occupancy/goods), and time of day**, to understand travel demand. NACTO calls for origin/destination data at the block face level (i.e., which side of a city block a trip starts or ends at). Cities such as Portland, [New York](#) and [Boston](#) collect or are looking to collect TNC data at the block face level or an even finer scale.
- **The number of vehicle occupants**, allowing Oregon to incentivize shared travel and capture value from zero-occupant vehicles. Cities have become more interested in occupancy data as the impacts of TNCs on congestion have become more apparent ([New York](#) and [San Francisco](#)).
- **Location and severity of collisions; location of instances of rapid acceleration and deceleration and sudden collision avoidance; and AV operation disengagement**. As Oregon's vision is to [eliminate deaths and serious injuries on its transportation system by 2035](#), maximizing the safety benefits of AVs is a key opportunity to reach that goal.

Transportation agencies use state and federal collision data to identify safety problems. Yet data on non-fatal collisions is not always available, and collisions are often under-reported. AVs can provide those data, including data on near-misses to help identify potentially dangerous locations before collisions occur.

Data on AV disengagement (where a human driver has to take control of the vehicle) will be critical to understanding how AVs are impacting safety during the early years of deployment. Most TNC regulations require collision reporting (for example, see [Portland's City Code, section](#)



16.40.280), and NACTO calls for collecting data on collisions, acceleration/deceleration, and disengagements in anticipation of AV deployment. The State of California also collects data on disengagements through its AV testing program (Section 227.46).

- **Data on AV operator distraction.** Distracted operation has been noted as a challenge, particularly for Level 2, 3, and 4 technology. As AVs work to train operators to not have false sense of security, data on operator distraction levels will be key to ensure long-term safety.
- **Route traces and parking data** to understand how AVs are affecting travel patterns (e.g., whether vehicles cruise or park, whether AVs are rerouting onto local streets to avoid congestion). This is not reflected in NACTO's principles, but it is critical to fully understanding the impacts of AVs.
- **Traffic volumes and length of trips (in minutes) and/or vehicle speeds** to identify congested trips and causes of delay.
- **Data on traffic violations by AVs.** While hopefully a small set of data, the underlying challenges of safely integrating law-constrained AVs with human-driven vehicles, bicycles and pedestrians, may result in helpful data.

Additional data from TNCs operating AVs would be helpful to help ensure shared fleets provide safe and equitable service.

- **Service provider (e.g., Uber, Lyft) and type (e.g., UberBLACK, UberPOOL).** This is a standard requirement in city-TNC data sharing agreements. Cities are increasingly interested in service type since the introduction of shared TNC services, but few collect it.
- **Booking type (advance/real-time); wait time; cost of trip; and location, date, and time of unfulfilled, declined, and cancelled rides.** These data help ensure shared fleets are meeting people's needs throughout our communities.

Shared fleets [might be able](#) to provide travel options for those who need them the most. The evidence is mixed. Some studies of TNCs have found [people of color](#), [people in wheelchairs](#), and other marginalized groups face longer wait times and greater numbers of unfulfilled rider requests. Of particular concern is the potential impacts on transit, a low-cost transportation option whose [ridership could be reduced](#) by AVs, leading to cuts in service. AVs could also supplement, rather than supplant, transit service.

Overlaying data on wait times, costs, and cancellations with Census demographic data can help us understand whether Oregonians are receiving equitable service. This could help us meet our Title VI requirements and inform equity-related regulations. Portland collects these data with the exception of cost (see Portland City Code 16.40.200 et. seq.), and NACTO recommends collecting data on unfulfilled rides.

- **Number and type of passenger complaints**, which can be a valuable resource for understanding safety and equity. Portland collects TNC complaint data (see pages 19-20 of the Greyball Audit Report).

## How should data be provided?

Data must be properly managed to avoid compromising privacy and proprietary information.

Aggregation is the most common method to protect sensitive data, and one of the simplest to execute. Aggregation can enable agencies to use data. We are not interested in individual trips; we are interested in travel patterns, and many transportation agencies lack capacity to manage large quantities of data. Data can be aggregated spatially, temporally, or both.

[NACTO's data sharing principles](#) recommend aggregating different data to different scales, and our recommendations below, which are largely consistent with NACTO's recommendations, follow suit.

Data type	Spatial aggregation	Temporal aggregation
Trip origins and destinations	Block face	Hourly averages
Number of occupants	Street segment	Hourly averages
Safety (collisions, sudden acceleration/deceleration, AV operation disengagement)	Point (disaggregate)	Real-time
Route traces	Street segment or by origin/destination pairs, or disaggregate with trip ends truncated	Hourly averages
Traffic volumes and speeds	Street segment	Hourly averages
Booking type; wait time; cost of trip; unfulfilled, declined/cancelled rides	Census tract	Hourly averages
Passenger complaints	N/A (complaint data does not need to be spatial)	Real-time

The data should be updated monthly at a minimum in an analysis-ready origin-destination format. For shared fleets, it would be best for data to be further disaggregated by service provider and type of service for regulatory purposes.

Some organizations have proposed third-party repositories to collect and process increasing amounts of transportation data and share them with public agencies. Both [NACTO](#) and Seattle DOT (in cooperation with University of Washington) are exploring this approach, which also has precedents in federal efforts such as the [National Household Travel Survey](#) and [Fatality Analysis Reporting System](#), both of which allow users to either download raw data (cleaned of personally identifiable information) or query databases to get aggregate results for the data that they need. Creating a similar repository for AV data would:

- Better protect of travelers' sensitive information:** A central repository could employ more advanced techniques to provide privacy than those discussed above, such as differential privacy, which technology companies use to gain insights into users' habits while preserving confidentiality. Many transportation agencies do not have the capacity to apply advanced privatization techniques. Such techniques could even enable the inclusion of certain demographic data in aggregate to assist transportation agencies in understanding equity issues.

- **Boost convenience for companies:** Instead of providing data to each of the local, regional, and state jurisdictions in which their vehicles operate, companies could supply all data in a single consistent format to a single third party.
- **Provide more manageable data for agencies:** A repository similar to the two federal tools mentioned above could enable transportation agencies to query data for only their area of interest, get it aggregated to the scale that they need, and create custom cross-tabulations to answer key policy and planning questions.
- **Increase adaptability:** As increasing numbers of AVs are on the road, more data will be available, and it will be both possible and necessary to understand AV travel patterns in more detail. A central repository would make it possible to display data at finer scales as increasing amounts of data become available.

June 29, 2018

**TO:** Cybersecurity and Long-Term Issues Subcommittee of the Autonomous Vehicles Task Force  
**FROM:** Becky Steckler, University of Oregon and Task Force Member

**RE:** AV Policy Furthering Oregon's Transportation, Land Use, and Global Warming Pollution Reduction Goals and Economic Development Principles

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## **BACKGROUND**

At the May 30, 2018 meeting of the Cybersecurity and Long-Term Issues Subcommittee meeting I suggested that the autonomous vehicle (AV) policies that the state adopts should help to achieve the myriad statewide transportation, greenhouse gas emission reduction, land use, economic development and other related topic goals. I volunteered to put together this memorandum listing the pertinent goals. Note that all of these plans and documents contain additional information about each goal and accompanied objectives, strategies, and action items to implement them.

The rest of this memorandum provides a brief summary of the most relevant transportation, greenhouse gas reduction, land use, and economic development plans and goals that policy makers should consider to make sure that new policies, programs, or revenue systems related to AVs support these goals and do not create barriers to achieving them. The summary is followed by links to each plan and a list of the plan goals.

## **SUMMARY**

Autonomous vehicles will dramatically impact Oregon's transportation system. Any policy, program, or revenue structure adopted by the state should support the implementation of the Oregon Transportation Plan goals (see below). Because AVs will need to be integrated into a multi-modal system and will likely impact all modes, this memorandum includes the goals for Oregon's Public Transportation System Plan and Oregon's Bicycle and Pedestrian Plan. While Oregon has a Freight Plan, it does not address local delivery of goods and services (such as Uber Eats, Amazon deliveries, etc.), which occur primarily on city streets and roads. Automation of local goods delivery and the increase of e-commerce will also significantly impact the state's transportation system.

This memorandum lists the goals for the following plans:

- Oregon Transportation Plan
- Transportation Safety Action Plan
- Oregon Public Transportation Plan (DRAFT)
- Oregon Bicycle and Pedestrian Plan
- 2017 ORS 468A.205 Policy: Greenhouse gas emissions reduction goals
- Oregon Statewide Transportation Strategy
- Oregon Land Use Planning Goals
- Business Oregon Strategic Plan Priorities

Of all the goals identified in the above plans, there are a few worth highlighting. Given the importance of mobility to Oregon's economic, public health, and sustainability outcomes, policy makers should

ensure that **AV policies support all of the goals of the Oregon Transportation Plan and the Oregon Safety Action Plan**. AVs promise to deliver significant safety improvements but there is seemingly no reason to allow AVs if they do not. In addition, policy makers should ensure that AV policies, programs, and revenue structures support the **Oregon Public Transportation Plan Goal 1 – Mobility: Public Transportation User Experience** and **Goal 4 – Equity**. Government policy plays an important role in ensuring that people of all ages, abilities, and income levels can get from A to B. We should ensure that all Oregonians have affordable, safe, efficient, and equitable transportation to jobs, services, and key destinations.

The potential for AVs to significantly increase vehicle miles traveled and increase the pressure for sprawl may jeopardize Oregon's ability to achieve its greenhouse gas (GHG) emission goals in **ORS 468A.205**. One of the best ways to reduce vehicle miles traveled is to **improve the efficiency, comfort, and reduce the cost for walking, biking, and transit, as envisioned in the Oregon Statewide Transportation strategy**. At the same time, the potential for AV electrification could help the state achieve its goal for **fuel-efficient/alternative energy vehicles**.

According to Nelson/Nygaard, a leading transportation consulting firm, the demand for parking may decrease by 80% in an autonomous future ("Autonomous Vehicles and the Future of Parking," 2016). Given the potential reduction in demand for parking, the opportunity to increase density highlights the need to ensure that people can walk, bike, or take transit to their destinations. It will be increasingly difficult to move people by single occupancy vehicles or even shared occupancy vehicles in increasingly dense cities. Policy makers should ensure that AVs integrate and support increased density and pedestrian, bicycle, and transit systems.

Of the 19 statewide goals, **Oregon Land Use Goal 12 Transportation** is critical. Oregon's land use program is based on planning transportation and land uses that are mutually supportive. Both the land use program and Business Oregon's Strategic Priorities understand the importance of transportation for Oregon's economy, especially worker access to jobs, customer access to businesses, access to materials, and the shipment of goods.

Finally, a well-functioning transportation system is critical to ensure that employees and customers can get to Oregon businesses as well as for shipping and receiving goods from across the country and around the world. The state should ensure that AV policies, programs, and revenue structures provide the infrastructure businesses need to succeed.

It should be no surprise that all of these plans have overlapping goals. Oregonians understand that the success of our communities is highly dependent on a transportation system that provides mobility and accessibility, manages congestion, supports the economy, supports sustainability, and is safe, healthy, and equitable. This will be much easier with coordinated land uses and a revenue structure that provides the resources needed for transportation investments, as well as partners from the local to the national level that are working together to achieve these goals. AV policies, programs, and revenue structures should help Oregonians achieve the very important goals identified in the above-named plans.



## STATEWIDE GOALS IMPACTED BY AVS

This section lists the goals of statewide transportation, greenhouse gas emissions, land use and economic development plans that AVs may impact. Policy makers should ensure that any policies, programs, and taxes support these goals and do not make it more difficult for the state to achieve them.

### TRANSPORTATION

AVs may be as transformative as the introduction of the car. The impacts and disruption to the transportation system should not be underestimated. All policies, programs, and revenue structures created by Oregon policy makers should help the state achieve the goals in the Oregon Transportation Plan.

In addition, one of the major arguments for deploying AVs is to improve the safety. According to the Oregon Department of Transportation, 445 people were killed and 41,754 were injured in 2015 (“2015 Oregon Motor Vehicle Traffic Crashes: Quick Facts,” 2017).

[Oregon Transportation Plan \(2006\)](#) implemented by the Oregon Department of Transportation and local governments:

- **Goal 1 – Mobility and Accessibility.** Provide a balanced, efficient and integrated transportation system that ensures interconnected access to all areas of the state, the nation and the world. Promote transportation choices that are reliable, accessible and cost-effective.
- **Goal 2 – Management of the System.** Improve the efficiency of the transportation system by optimizing operations and management. Manage transportation assets to extend their life and reduce maintenance costs.
- **Goal 3 – Economic Vitality.** Expand and diversify Oregon’s economy by transporting people, goods, services and information in safe, energy-efficient and environmentally sound ways. Provide Oregon with a competitive advantage by promoting an integrated freight system.
- **Goal 4 – Sustainability.** Meet present needs without compromising the ability of future generations to meet their needs from the joint perspective of the environment, economy, and communities. Encourage conservation and communities that integrate land use and transportation choices.
- **Goal 5 – Safety and Security.** Build, operate and maintain the transportation system so that is safe and secure. Take into account the needs of all users: operators, passengers, pedestrians and property owners.
- **Goal 6 – Funding the Transportation System.** Create sources of revenue that will support a viable transportation system today and in the future. Expand ways to fund the system that are fair and fiscally responsible.
- **Goal 7 – Coordination, Communication and Cooperation.** Foster coordination, communication and cooperation between transportation users and providers so various means of transportation function as an integrated system. Work to help all parties align interests, remove barriers and offer innovative, equitable solutions.

## **SAFETY**

One of the primary reasons to have AVs is to save lives and reduce injuries. According to the National Safety Council (National Safety Council, Undated), more than 40,000 died in car crashes in the 2017 in the US, 4.57 million people were injured and societal costs were about \$413.8 billion.

### **Transportation Safety Action Plan (2016) implemented by the Oregon Department of Transportation and local governments:**

- **Safety Culture** – Transform public attitudes to recognize all transportation system users have responsibility for other people’s safety in addition to their own safety while using the transportation system. Transform organizational transportation safety culture among employees and agency partners (e.g., state agencies, MPOs, Tribes, counties, cities, Oregon Health Authority, stakeholders and public and private employers) to integrate safety considerations into all responsibilities.
- **Infrastructure** – Develop and improve infrastructure to eliminate fatalities and serious injuries for users of all modes.
- **Healthy, Livable Communities** – Plan, design, and implement safe systems. Support enforcement and emergency medical services to improve the safety and livability of communities, including improved health outcomes.
- **Technology** – Plan, prepare for, and implement technologies (existing and new) that can affect transportation safety for all users, including pilot testing innovative technologies as appropriate.
- **Collaborate and Communicate** – Create and support a collaborative environment for transportation system providers and public and private stakeholders to work together to eliminate fatalities and serious injury crashes.
- **Strategic Investments** – Target safety funding for effective engineering, emergency response, law enforcement, and education priorities.

The deployment of AVs will need to be carefully coordinated with pedestrian, bicycle, and transit systems to ensure that the introduction of AVs support these modes and do not make it more difficult or less convenient to walk, bike, or take transit. The University of Oregon is working on a literature review now on the impacts of new mobility technologies (the sharing economy and AVs). We anticipate that the transportation network company (TNC) model will likely be similar for the eventual roll out of AVs. The growth of TNCs in the last few years has impacted travel behavior and preliminary research suggests TNCs are reducing transit ridership. In a recent Boston-area study, researchers found weekly or monthly transit pass holders are substituting TNCs for transit more frequently, and that those “who ride transit more often are more likely to drop it for ride hailing, even while doing so at a huge cost differential, and even when they have already paid for the transit (Gehrke, Reardon, & Felix, 2018).” TNCs may also be replacing trips that otherwise would have been made by walking and biking. Using weighted data, researchers at UC Davis found that only 39% of trips made using Uber and Lyft would otherwise have been made by car, i.e. drive alone, carpool, or taxi (Clewlow & Mishra, 2017). The majority of trips would otherwise not have been made at all, or would have been made by walking, biking, or transit. If AVs follow the patterns we are beginning to see emerge with TNC usage, these trends could be worsened by AVs since a ride in a TNC-operated fully autonomous vehicle that does not include a driver will likely be cheaper than the cost of an average ride today. On the other hand,

new mobility services like TNCs, and eventually AVs, could theoretically boost ridership if they help solve the first-mile/last-mile problem and serve as a complement to transit.

### **2018 Oregon Public Transportation Plan Goals (DRAFT) implemented by the Oregon Department of Transportation and local governments**

- **Goal 1 – Mobility - Public Transportation User Experience.** People of all ages, abilities, and income levels move reliably and conveniently between destinations using an affordable, well-coordinated public transportation system. People in Oregon routinely use public transportation to meet their daily needs.
- **Goal 2 – Accessibility and Connectivity - Getting from Here to There.** Riders experience user-friendly and convenient public transportation connections to and between services and travel modes in urban, suburban, rural, regional, and interstate areas.
- **Goal 3 – Community Livability and Economic Vitality.** Public transportation promotes community livability and economic vitality by efficiently and effectively moving people of all ages to and from homes, jobs, businesses, schools and colleges, and other destinations in urban, suburban, and rural areas.
- **Goal 4 – Equity.** Public transportation provides affordable, safe, efficient, and equitable transportation to jobs, services, and key destinations, improving quality of life for all Oregonians.
- **Goal 5 – Health.** Public transportation fosters improved health of Oregonians by promoting clean air, enhancing connections between people, enabling access to services such as health care and goods such as groceries, and by giving people opportunities to integrate physical activity into everyday life through walking and bicycling to and from public transportation.
- **Goal 6 – Safety and Security.** Public transportation trips are safe; riders feel safe and secure during their travel. Public transportation contributes to the resilience of Oregon communities.
- **Goal 7 – Environmental Sustainability.** Public transportation contributes to a healthy environment and climate by moving more people with efficient, low-emission vehicles, reducing greenhouse gases and other pollutants.
- **Goal 8 – Land Use.** Public transportation is a tool that supports Oregon’s state and local land use goals and policies. Agencies collaborate to ensure public transportation helps shape great Oregon communities providing efficient and effective travel options in urban, suburban, and rural areas.
- **Goal 9 – Funding and Strategic Investment.** Strategic investment in public transportation supports the overall transportation system, the economy, and Oregonians’ quality of life. Sustainable and reliable funding enables public transportation services and infrastructure to meet public needs.
- **Goal 10 – Communication, Collaboration, and Coordination.** Public and private transportation providers and all levels of government within the state and across state boundaries work collaboratively and foster partnerships that make public transportation seamless regardless of jurisdiction.

Preliminary modeling suggests that the demand for parking will decrease significantly – AVs will not need to park in the same places we want to park our cars today. That change provides an opportunity for redevelopment of parking lots and structures to other uses. With the potential increased density

comes an opportunity to improve and encourage more walking and biking. AV policies, programs, and revenue structure should be designed to support Oregon's Bicycle and Pedestrian Plan.

### Oregon Bicycle and Pedestrian Plan implemented by the Oregon Department of Transportation.

- **Goal 1 – Safety.** Eliminate pedestrian and bicyclist fatalities and serious injuries, and improve the overall sense of safety of those who bike or walk.
- **Goal 2 – Accessibility and Connectivity.** Provide a complete bicycling and pedestrian network that reliably and easily connects to destinations and other transportation modes.
- **Goal 3 – Mobility and Efficiency.** Improve the mobility and efficiency of the entire transportation system by providing high quality walking and biking options for trips of short and moderate distances. Support the ability of people who bike, walk, or use mobility devices to move easily on the system.
- **Goal 4 – Community and Economic Vitality.** Enhance community and economic vitality through walking and biking networks that improve people's ability to access jobs, businesses, and other destinations, and to attract visitors, new residents, and new business to the state, opening new opportunities for Oregonians.
- **Goal 5 – Equity.** Provide opportunities and choices for people of all ages, abilities, race, ethnicities, and incomes in urban, suburban, and rural areas across the state to bike or walk to reach their destinations and to access transportation options, assuring transportation disadvantaged communities are served and included in decision making.
- **Goal 6 – Health.** Provide Oregonians opportunities to become more active and healthy by walking and biking to meet their daily needs.
- **Goal 7 – Sustainability.** Help to meet federal, state, and local sustainability and environmental goals by providing zero emission transportation options like walking and biking.
- **Goal 8 – Strategic Investment.** Recognize Oregon's strategic investments in walking and biking as crucial components of the transportation system that provide essential options for travel, and can help reduce system costs, and achieve other important benefits.
- **Goal 9 – Coordination, Cooperation, and Collaboration.** Work actively and collaboratively with federal, state, regional, local, and private partners to provide consistent and seamless walking and biking networks that are integral to the transportation system.

## **GREENHOUSE GAS EMISSION REDUCTION**

Oregonians are concerned about climate change and have set environmental goals to reduce greenhouse gas (GHG) emissions. One of the most salient questions about AVs and other new mobility technologies is what impact they are likely to have on vehicle miles traveled (VMT) as VMT is directly related to both GHG emissions and congestion; preliminary modeling results from the consulting firm Fehr & Peers suggest that AVs could lead to a 14-31% increase in vehicle distance traveled<sup>1</sup>. Travel behavior outcomes, including the choices that people make regarding frequency of travel (trip generation), and mode of travel (mode share), have direct impacts on VMT. Research conducted by Greenblatt and Shaheen, Clewlow and Mishra, and others suggests that AVs could lead to an increase

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<sup>1</sup> Fehr & Peers. (Undated). *How will autonomous vehicles influence the future of travel?* Retrieved from

in the total of number of trips taken for a variety of reasons (Clewlow & Mishra, 2017; Greenblatt & Shaheen, 2015). AVs could increase the number of trips taken by those who are currently unable to drive, such as elderly persons or persons with disabilities (Greenblatt & Shaheen, 2015). This could have the effect of adding more vehicles to the transportation network compared to current scenarios. It is worth noting that an increase in trips by populations who may currently be experiencing latent demand issues could help achieve another important outcome of increasing equitable access.<sup>2</sup> The policies, programs, and revenue structure adopted by the state of Oregon will be important to ensuring that Oregon achieves its greenhouse gas emissions reduction goals.

### **2017 ORS 468A.205 Policy: Greenhouse gas emissions reduction goals**

- (1) The Legislative Assembly declares that it is the policy of this state to reduce greenhouse gas emissions in Oregon pursuant to the following greenhouse gas emissions reduction goals:
  - (a) By 2010, arrest the growth of Oregon’s greenhouse gas emissions and begin to reduce greenhouse gas emissions.
  - (b) By 2020, achieve greenhouse gas levels that are 10 percent below 1990 levels.
  - (c) By 2050, achieve greenhouse gas levels that are at least 75 percent below 1990 levels.
- (2) The Legislative Assembly declares that it is the policy of this state for state and local governments, businesses, nonprofit organizations and individual residents to prepare for the effects of global warming and by doing so, prevent and reduce the social, economic and environmental effects of global warming.
- (3) This section does not create any additional regulatory authority for an agency of the executive department as defined in ORS 174.112 (“Executive department” defined). [2007 c.907 §2]

Note: See note under 468A.200 (Legislative findings).

### **Oregon Statewide Transportation Strategy (2013) implemented by the Oregon Department of Transportation**

The Statewide Transportation Strategy Vision imagines a future Oregon that features:

- **Improved public transportation service, bicycling and walking** – Throughout the state, Oregonians have better access to a range of transportation options (e.g., transit, carpool, bicycling, walking). Communities feature well-lit walking paths, bicycle facilities, and more frequent transit service. Improvements in bicycling and walking facilities help encourage physical activity and foster reduced obesity rates and overall improvements in public health. Carsharing services provide households with a convenient way to forgo vehicle ownership entirely and save money.

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<sup>2</sup> Latent demand refers to “the activities and travel that are desired but unrealized because of constraints.” (Clifton & Moura, 2017)



- **Fuel-efficient / alternative energy vehicles** – Great strides in technology allow for the widespread adoption of cleaner and more efficient vehicles by Oregon residents. Vehicles powered by electricity, compressed natural gas (CNG) and locally-produced biofuels are able to travel hundreds of miles without recharging or refueling, and are supported by an extensive network of fueling and charging stations. Heavy-duty freight vehicles have evolved from diesel fuel to liquefied natural gas (LNG), and commercial aircraft run largely on biofuels. These changes improve air quality dramatically while reducing dependency on foreign oil.
- **Enhanced information technology** – People can use technology to easily plan and update their travel routes using multiple modes as needed such as public transportation, bicycling and walking in addition to personal vehicles. Improved communication systems enable individuals and organizations to meet and collaborate virtually, while reducing the need for physical travel. In-vehicle communications technologies and collision avoidance systems in cars and trucks greatly reduce the number and severity of crashes, resulting in saved lives, reduced damage, improved travel time reliability, and elimination of hundreds of hours of roadway delay each year. New vehicle-to-vehicle communications advancements allow cars and trucks to drive closer together and use less space on the roadway, resulting in more efficient use of existing infrastructure.
- **More efficient movement of goods** – Fewer personal vehicles on Oregon roadways frees capacity for the transportation of goods that support a growing economy. When possible, goods are moved by more efficient modes such as rail and water. New technologies allow freight vehicles to emit lower emissions. Urban consolidation centers allow for more efficient distribution of freight deliveries to final destinations in urban areas.
- **Walkable mixed-use communities** – Within Oregon cities, a large share of residents live in walking distance of jobs, stores, services, entertainment, and transit stops. Because of this mix of uses in a geographically small area, commute times are shorter, limiting time spent in traffic. Residents of such communities are afforded increased opportunities to “buy local,” supporting local businesses. Communities across the state are recognized for vibrancy, livability, and safety.

## LAND USE

AVs will change how we develop land, from reduced demands for parking and subsequent opportunities for infill, the changing nature of retail (rise of e-commerce and increasing demand of experiential retail), to the changing nature of employment (increased demand for warehousing uses for e-commerce goods delivery). AV policies, programs, and revenue structure should support Oregon’s statewide land use goals.

[Oregon Land Use Planning Goals](#) implemented by the Department of Land Conservation and Development and local governments.

- **Goal 1 – Citizen Involvement.** To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.
- **Goal 2 – Land Use.** Planning – To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.
- **Goal 3 – Agriculture.** To preserve and maintain agricultural lands.

- **Goal 4 – Forest Lands.** To conserve forest lands by maintaining the forest base and to protect the state’s forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.
- **Goal 5 – Natural Resources, Scenic and Historic Areas, and Open Spaces.** To protect natural resources and conserve scenic and historic areas and open spaces.
- **Goal 6 – Air, Water and Land Resources Quality.** To maintain and improve the quality of the air, water and land resources of the state.
- **Goal 7 – Areas Subject to Natural Hazards.** To protect people and property from natural hazards.
- **Goal 8 – Recreational Needs.** To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.
- **Goal 9 – Economic Development.** To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon’s citizens.
- **Goal 10 – Housing.** To provide for the housing needs of citizens of the state.
- **Goal 11 – Public Facilities and Services.** To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.
- **Goal 12 – Transportation.** To provide and encourage a safe, convenient and economic transportation system.
- **Goal 13 – Energy Conservation.** To conserve energy. Land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles.
- **Goal 14 – Urbanization.** To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside of urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.
- **Goal 15 – Willamette River Greenway.** To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

*Note: Goals 16 – 19 are coastal goals and not included in this list.*

## **ECONOMIC DEVELOPMENT**

AVs will significantly change how Oregonians run and operate their businesses. While the state does not have a statewide economic plan, Business Oregon’s Strategic Plan Priorities are informative for the development of AV policies, programs, and revenue structure.

### **[Business Oregon Strategic Plan Priorities \(2018 – 2022\)](#)**

- **Innovate Oregon’s Economy.** Expand Oregon’s research and development capacity and Increase access to capital for high-growth startups.
- **Grow Small- and Middle-Market Companies.** Increase access to new sales markets, enhance competitiveness of small and middle-market manufacturing companies, attract businesses and

FDI to grow target industries, and prioritize infrastructure investments to directly promote business growth.

- **Cultivate Rural Economic Stability.** Enhance local economic development capacity in distressed rural communities, promote an environment that supports entrepreneurship and small business growth, expand business development to include non-traded sector companies and organizations, and connect rural communities to urban markets through targeted infrastructure investments
- **Advance Economic Opportunity for Underrepresented People.** Connect people of color, immigrant populations, and native/tribal communities to jobs and foster wealth creation for underrepresented populations.
- **Ensure an Inclusive, Transparent, and Fiscally Healthy Agency.** Be transparent, accountable, and a good steward of public resources, be a sustainable, cohesive agency where all employees feel valued and understand how they contribute to the mission, and be a welcoming agency that empowers employees and is inclusive of Oregon's cultural diversity.

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**APPENDIX E:**  
PUBLIC COMMENT



Jul 12, 2018

Dear Governor Kate Brown,

RE: Multiple Issues of the Task Force on Autonomous Vehicles (AV)

I have concern there is no representation from our Oregon Pedestrian and Bicycle community advocacy groups on the legislatively created Autonomous Vehicle Taskforce. I realize this Task Force Committee was legislatively driven & ODOT appointed, but our state needs your leadership for vulnerable road users' voice within the Task Force's products.

I urge you to consider adding the Pedestrian Bicycle Postscript perspective that includes Bicycle and Pedestrian viewpoints. We have a wealth of people to serve to create an addendum regarding Autonomous Vehicles with this perspective in mind: Oregon Bicycle and Pedestrian Advisory to Oregon Department of Transportation, the Street Trust, Oregon Walks, OPAL, Community Cycling Center and others.

Given that the first round of Task Force Agenda and Memorandi are now appearing...there are deficiencies which show the void of not having all the important players at the table. The Pedestrian/Bicycle/Vulnerable Road user viewpoint is missing in every material packet presented on the ODOT website.

- 1) Subcommittee on Cybersecurity and Long-Term Policy, Oregon Task Force on Autonomous Vehicles has no reference to the US Senate Bill 1885 - AV START Act which is in committee in DC.
- 2) There is NO mention of Visioning Systems or Pedestrian/Bicycle/Vulnerable Road User Protection:
  - A. Insurance and Liability Subcommittee 1 Materials June 6
  - B. Law Enforcement and Crash Reporting Subcommittee Materials June 7
  - C. <https://www.oregon.gov/ODOT/Programs/Pages/CAV.aspx>
3. One mention of 'Pedestrian'
  - A. Licensing and Registration Subcommittee 2 Material June 12
  - B. Automated Vehicle 101 materials ODOT
  - C. The Drive toward Change: Use Cases for AV ODOT

There is no discussion of ORS 811.065 safe passing distance for bicyclists (or pedestrians). This is a sad comment and potentially a liability for the state for the exclusion of this pedestrian / bicycle / vulnerable road user point of view at this high policy level. I am appreciative of the experience of the Chair Tim Tannenbaum from Washington County & his background with his police officers on bicycles. But again, the materials on the ODOT web illustrate the failure to be in the discourse. Given that Pedestrians and Bicyclists have the greatest vulnerability for injury and death on our roadways, it seems the Oregon task force committee should correct the exclusion of these road users.

#### Federal Issues

In an advisory from Chair Elaine Chao of the US Department of Transportation, she states: "Entities are encouraged to have a documented process ... are expected to be able to detect and respond to other vehicles (in and out of its travel path), pedestrians, bicyclists, animals, and objects that could affect safe operation of the vehicle... should also include the ability to address a wide variety of foreseeable encounters, including emergency vehicles, temporary work zones, and other unusual conditions...that may impact the safe operation..."

#### Where Death Occurs

As you should be aware, Governors Highway Safety Association report in late 2017 found 82% of pedestrian fatalities occurred outside of intersections. These **midblock crossing deaths are now the new normal**. This is a new revelation



A. J. Zelada

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heightens the importance of vision systems that must include maximum awareness systems for any detection.  
(<https://www.ghsa.org/resources/spotlight-peds17>)

## The Public Awareness of Autonomous Vehicle Deaths

The League of American Bicyclists, has been monitoring the AV Start which the US House just passed months ago in a version within the Federal Aviation Authorization bill. The Senate is to take up this concern now. We want the inclusion the Vision tests (in the vernacular of safety standards: to see construction workers on the road, blind people crossing intersections, police directing traffic, first responders as well as our large population of pedestrians and bicyclists). Attached is the League of American Bicyclists statement that will apprise you of our pedestrian/bicyclist perspective and the needed AV START inclusion of the Vision Test.

For example, 'The crash in Tempe, as well as preliminary studies in San Francisco and Pittsburgh, show that automated vehicles on the road are not always able to detect and respond to vulnerable road users such as bicyclists, pedestrians and people in wheelchairs. In San Francisco, automated vehicles were found to engage in four of the five driver behaviors most likely to cause vulnerable road user fatalities and injuries including: running red lights, rolling through stop signs, making dangerous right turns, and not yielding to pedestrians in crosswalks. A survey by Bike Pittsburgh of its members received a number of comments on near-misses by autonomous vehicles, and of incidences of AVs not following the state's four foot safe passing law. In addition, recent articles in IEEE Spectrum and in Slate magazine report that detecting bicyclists is one most difficult problem ADS technology faces and testing for bicyclists lags behind other automated driving system technology tests.' ~ from the League of American Bicyclists.

I hope you see that this AV Task Force committee needs leadership beyond the present AV Task Force's cockpits view that disregards Transportation including the bicyclist, the pedestrian and vulnerable road users.

Thank you for taking these matters seriously. And thank you for your service with this important state wide issue.

Sincerely,

A. J. Zelada, OD  
Member, Board of Directors  
League of American Bicyclists

Former Member and Chair, 2008-2013  
Oregon Bicycle and Pedestrian Advisory to  
Oregon Department of Transportation

Attachments:  
League of American Bicyclists' Concern of AV Visioning Omission  
Letter from Advocates for Highway Safety & Auto Safety  
AV\_Fact\_Sheet\_final(1)-1.pdf

cc: Oregon Task Force Members on Autonomous Vehicles  
Jonathan Maus, BikePortland.org  
Oregon Bicycle and Pedestrian Advisory Committee to ODOT



A. J. Zelada \_\_\_\_\_

## **League of American Bicyclists Concern of AV Visioning Omission.**

(copy sent to Oregon Senators Wyden and Merkley)

We are writing to strongly urge you to oppose efforts to attach the pending AV START Act (S. 1885) to the Federal Aviation Administration (FAA) Reauthorization Act (S. 1405), which is expected to be considered on the Senate Floor soon after the upcoming recess. Giving the AV START Act a “ride” on the FAA bill would be ironic at best and lethal at worst.

The safety deregulation built into the AV START Act and the precise and thorough way aviation handles autonomous systems is a study in stark contrast. The FAA has rigorous protocols for ensuring the safety of automation in the air, and examples of the success of effective standards and oversight of automated systems fly over our heads every single day.

Conversely, the AV START Act, in its current form, shockingly exempts potentially millions of these self-driving vehicles from meeting existing safety regulations. The failures of this experimental technology have been tragically demonstrated in a number of crashes which have resulted in at least three deaths. The National Transportation Safety Board (NTSB) has several open investigations which will produce findings likely to have a direct bearing on the AV START Act. The bill should not be advanced, especially as a rider on the FAA bill, until those investigations are complete and critically-needed changes are made to ensure safety.

The AV START Act will likely set policy on driverless cars for decades to come. As such, comprehensive safeguards, sufficient government oversight and industry accountability are essential. The bill, in its current form, fails to provide these minimal safety protections. The reasonable improvements outlined below will address known and foreseeable problems with driverless car technology. Moreover, they will help to bolster public trust in this nascent technology which has already shown to be deficient. We ask for your support for the following commonsense improvements:

- Limit the size and scope of exemptions from federal safety standards;
- Require minimum performance standards such as a “vision test” for driverless technologies, cybersecurity and electronics system protections, and distracted driving requirements when a human needs to take back control of a vehicle from a computer;
- Provide for adequate data collection and consumer information;
- Compel all AVs to capture comprehensive crash data in a format that will aid investigators such as the NTSB and the National Highway Traffic Safety Administration (NHTSA);
- Ensure access and safety for members of all disability communities which have differing needs;
- Subject Level 2 (partially-automated) vehicles to all safety critical provisions;
- Prohibit manufacturers from unilaterally “turning off” vehicle systems such as the steering wheel and gas pedal which is not allowed under current law;
- Maintain the right of states and localities to protect their citizens by regulating the AV system in absence of federal regulations; and,
- Provide NHTSA with sufficient resources and authorities.

Some critics of these changes claim they would stifle innovation or hamper technological progress. But what they will actually do is provide essential protections for AV occupants as well as everyone sharing the roads with them for many years to come. Our diverse group of safety, public health, bicyclists, pedestrians, smart growth, consumer and environmental groups, law enforcement and first responders, disability communities and



A. J. Zelada \_\_\_\_\_

families affected by motor vehicle crashes support these sensible improvements that must be made before the bill moves forward.

It would be egregious to push the AV START Act through by tacking it onto a must-pass bill. Doing so would circumvent the regular legislative process and cut it off from full debate, discussion, transparent consideration, and the offering of amendments. The artificial urgency to advance this bill is disconnected from the reality that AVs are still potentially decades away. In fact, just last week Bill Ford Jr., Executive Chairman of Ford Motor Company, said *“There's been a lot of over-promising and I think a lot of misinformation that's been out there. It's really important that we get it right, rather than get it quickly.”*

Yet, industry interests seeking to sell - not just test - unproven systems continue to perpetuate this false premise. We urge you to allow the NTSB to finish their recommendations so that you can benefit from their expertise to help inform you in your decision-making process and insist on the adoption of the urgently-needed safety requirements in the bill.

Thank you for your consideration.

Sincerely,

A. J. Zelada, OD  
Member, Board of Director  
League of American Bicyclists

Former Member and Chair, 2008-2013  
Oregon Bicycle and Pedestrian Advisory to  
Oregon Department of Transportation



A. J. Zelada \_\_\_\_\_

**Letter from Advocates for Highway & Auto Safety, July 10, 2018 (copy)**

<http://saferoads.org/2018/07/10/groups-urge-senate-committee-to-address-av-cybersecurity-vulnerabilities/>

July 10, 2018

The Honorable John Thune, Chairman  
The Honorable Bill Nelson, Ranking Member  
Committee on Commerce, Science, and Transportation  
United States Senate  
Washington, DC 20510

Dear Chairman Thune and Ranking Member Nelson:

In preparation for tomorrow's hearing "Complex Cybersecurity Vulnerabilities: Lessons Learned from Spectre and Meltdown," we write to highlight the critical problems related to the cybersecurity of connected and autonomous vehicles (AVs). As these cars will be "computers on wheels," it is absolutely essential that strong protections be in place to safeguard against potentially catastrophic instances of vehicle hacking. We respectfully request that this letter be included in the hearing record.

Given recent high-profile cyberattacks and the tremendous threat that hacking will pose to connected and automated cars, we are very concerned that these potential risks are not being adequately addressed. In 2015, hackers demonstrated their ability to take over the controls of a sport utility vehicle (SUV) that was traveling 70 miles-per-hour on an Interstate outside of St. Louis, MO. By accessing the vehicle's entertainment system using a laptop computer, hackers located miles away from the vehicle were able to send disruptive commands to the SUV's dashboard functions, steering, brakes, and transmission. This incident is likely just a preview of the types of hacking that will be possible as vehicles become even more reliant on complex electronic systems and outside communications.

Moreover, there is a very real and dangerous possibility that instances of hacking will not only affect one individual vehicle, but could very well impact entire fleets or model lines – posing a severe risk to occupants of the hacked vehicles as well as other road users. These attacks could also clog roads, stop the movement of goods and hinder the response of emergency vehicles. Of additional concern, there are a number of tragic examples of conventional vehicles being used as weapons by terrorists. The potential for remote hacking of connected and automated vehicles by these malicious actors could have unimaginable implications for our national security. Moreover, these risks will only be exacerbated as commercial motor vehicles, specifically large trucks and buses, become more reliant on autonomous systems and are used in platoons.

Currently, Section 14 of the American Vision for Safer Transportation through Advancement of Revolutionary Technologies (AV START) Act (S. 1885), only requires manufacturers to have a cybersecurity plan in place. This is woefully inadequate and has no requirements that any protections be implemented. Instead, the legislation should be improved to direct the National Highway Traffic Safety Administration (NHTSA) to issue a minimum performance standard for all AVs (including SAE Level 2 vehicles). The agency should be required to issue this final rule within a reasonable deadline of three years after enactment. In fact, the July 6, 2018 edition of *Science Magazine* included [an article penned by Joan Claybrook and Shaun Kildare](#) which called for a cyber standard and suggested that regulators "look across industries and adapt standards from other modes and fields (banking, military, aviation, etc.) to ensure that AVs have a means for detecting and responding to an attack appropriately and preventing a widespread threat to safety."

Further, we support the establishment of a method for sharing cybersecurity problems and vulnerabilities among manufacturers so that all systems can be updated accordingly. To mitigate against widespread impacts,



A. J. Zelada

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establishing a method of quickly identifying issues and disseminating that information across all participants is critical.

The public recognizes the acute threat of cybersecurity attacks on vehicles, and for good reason. A poll conducted by Morning Consult earlier this year showed that 67 percent of adults responded that they were somewhat or very concerned about cyber threats to driverless cars. An ORC International poll from January 2018 showed that 81 percent of respondents supported the United States Department of Transportation issuing rules to protect against hacking of cars that are being operated by a computer.

We urge you to include the need for robust protections against vehicle hacking in tomorrow's timely discussion. Furthermore, the pending AV START Act should not be enacted into law without requirements that sufficiently account for the reality of cybersecurity threats, including hacking into driverless cars. Thank you for your consideration of our position. We look forward to continuing to work with you to ensure the safety of all road users.

Sincerely,

Catherine Chase, President  
Advocates for Highway and Auto Safety

Joan Claybrook, President Emeritus  
Public Citizen and Former NHTSA Administrator

Jason Levine, Executive Director  
Center for Auto Safety

Jack Gillis, Executive Director  
Consumer Federation of America

Rosemary Shahan, President  
Consumers for Auto Reliability and Safety

John M. Simpson, Privacy and Technology  
Project Director, Consumer Watchdog

cc: Members of the Committee on Commerce, Science, and Transportation

*Letter copy submitted to Gov. Kate Brown, Jul 12, 2018 by AJZ*



A. J. Zelada

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## AV START Vision Test

**Background:** In 2017, The Senate Commerce Committee passed S. 1885, the “American Vision for Safer Transportation through Advancement of Revolutionary Technologies” (AV START) Act. The goal of the bill is to establish an interim framework for the deployment of self-driving technology before it is mature enough to enable specific new federal safety standards. While the League of American Bicyclists (the League) supports the development of this technology and agrees that it has the potential to greatly reduce the traffic injuries and fatalities attributed to distracted driving, speeding and other behaviors, we also believe that these vehicles must be able to pass some basic safety standards before being deployed in large numbers on our streets.

The League calls for a standardized performance test, or “vision test,” that measures an automated vehicle’s ability to recognize and respond to vulnerable road users, including bicyclists, pedestrians and people with disabilities.

**Vision Test Safety Standard:** Set a federal standard ensuring that Automated Vehicles would be able to detect and respond to people biking, walking and using wheelchairs, as well as construction workers in work zones, first responders providing assistance and law enforcement officers directing traffic;

- Test the ability to detect and respond to roadway infrastructure designed for bicycling and walking including: shared lane markings (sharrows), crosswalks, including those that use art, pavers, or other non-standard paving; bike lanes, whether striped or buffered (with paint or physical barriers); and advisory bike lanes;
- Test the ability to detect bicyclists coming up along the passenger side of the vehicle, stopped alongside a row of parked cars, or signaling a left turn from the opposite side of the road.

**Why It Matters:** Pedestrian and bicyclists make up 17 percent of all roadway fatalities despite being responsible for 12 percent of the trips. Strong testing of automated vehicle technology has the potential to help reduce these risks, but only if vehicle manufacturers are held accountable to build and test their vehicles to recognize and respond to vulnerable users.

- Detecting bicyclists is one of the most difficult problems automated driving systems have, and yet what little public information on automated vehicle testing exists suggest that testing for bicyclists lags behind other automated driving system technology tests.
- Automated Vehicles in San Francisco were found to engage in four of the five driver behaviors with the highest results in vulnerable user fatalities, including: running red lights, rolling through stop signs, failure to yield to pedestrians in crosswalks, and dangerous right turns (AVs did not speed.) Each of these four behaviors observed in AVs could be improved by AVs meeting minimum standards to detect and respond to all roadway users, signage, and markings.



## **League of American Bicyclists Concern of AV Visioning Omission.**

(copy sent to Oregon Senators Wyden and Merkley)

We are writing to strongly urge you to oppose efforts to attach the pending AV START Act (S. 1885) to the Federal Aviation Administration (FAA) Reauthorization Act (S. 1405), which is expected to be considered on the Senate Floor soon after the upcoming recess. Giving the AV START Act a “ride” on the FAA bill would be ironic at best and lethal at worst.

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Some critics of these changes claim they would stifle innovation or hamper technological progress. But what they will actually do is provide essential protections for AV occupants as

well as everyone sharing the roads with them for many years to come. Our diverse group of safety, public health, bicyclists, pedestrians, smart growth, consumer and environmental groups, law enforcement and first responders, disability communities and families affected by motor vehicle crashes support these sensible improvements that must be made before the bill moves forward.

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Thank you for your consideration.

Sincerely,

A. J. Zelada, OD  
Member, Board of Director  
League of American Bicyclists

Former Member and Chair, 2008-2013  
Oregon Bicycle and Pedestrian Advisory to  
Oregon Department of Transportation

April 30, 2018

Dear Chair Lt Timothy Tannenbaum,

RE: Two Issues

- A. Vulnerable Road Users' Representation
- B. AV Start Bill, US Congress

I have concern there is no representation from our Oregon Pedestrian and Bicycle community advocacy groups on the Autonomous Vehicle Committee.

I urge you to consider adding the Pedestrian Bicycle perspective given we already have experience of the visioning system has failed and produced a very public awareness of a pedestrian death.

We have a wealth of people to serve in this capacity:

Oregon Bicycle and Pedestrian Advisory to Oregon Department of Transportation  
Street Trust  
Oregon Walks  
OPAL  
Community Cycling Center

In an advisory from Chair Elaine Chao from the Department of Transportation states: "Entities are encouraged to have a documented process for assessment, testing, and validation of their ADS's OEDR capabilities. When operating within its ODD, an ADS's OEDR functions are expected to be able to detect and respond to other vehicles (in and out of its travel path), pedestrians, bicyclists, animals, and objects that could affect safe operation of the vehicle. An ADS's OEDR should also include the ability to address a wide variety of foreseeable encounters, including emergency vehicles, temporary work zones, and other unusual conditions...that may impact the safe operation of an ADS."

Given that Pedestrians and Bicyclists have the greatest vulnerability for injury and death on our roadways, it seems the committee should correct this exclusion of perspectives from road users. I am appreciative of your own experience in Washington county concerning your officers on bicycles.

'The crash in Tempe, as well as preliminary studies in San Francisco and Pittsburgh, show that automated vehicles on the road are not always able to detect and respond to vulnerable road users such as bicyclists, pedestrians and people in wheelchairs. In San Francisco, automated vehicles were found to engage in four of the five driver behaviors most likely to cause vulnerable road user fatalities and injuries including: running red lights, rolling through stop signs, making dangerous right turns, and not yielding to pedestrians in crosswalks. A survey by Bike Pittsburgh of its members received a number of comments on near-misses by autonomous vehicles, and of incidences of AVs not following the state's four foot safe passing law. In addition, recent articles in IEEE Spectrum and in Slate magazine report that detecting bicyclists is one most difficult problem ADS technology faces and testing for bicyclists lags behind other automated driving system technology tests.' ~ from the League of American Bicyclists.

The League of American Bicyclists, has been monitoring the AV Start which the US House just passed last week in a version within the Federal Aviation Authorization bill. The Senate is to take up this concern in later



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May. We want the inclusion the Vision tests (in the vernacular of safety standards in order to see construction workers on the road, blind people crossing intersections, police directing traffic, first responders as well as our large population of pedestrians and bicyclists).

As you should be aware, Governors Highway Safety Association report in late 2017 found 82% of pedestrian fatalities occurred outside of intersections. These midblock crossing deaths are now the new normal. This is a new revelation which heightens the importance of vision systems that must include maximum awareness systems for any detection. (<https://www.ghsa.org/resources/spotlight-peds17>)

Attached is the League of American Bicyclists statement that will apprise your committee members a pedestrian/bicyclist perspective, AV START Vision Test.

Thank you for taking these two serious matters to the committee. And thank you for your service with this important state wide issue.

Sincerely,

A. J. Zelada, OD

Member, Board of Directors  
League of American Bicyclists

Member, Board of Directors  
Street Trust (formerly the Bicycle Transportation Alliance BTA)

Former Member and Chair, 2008-2013  
Oregon Bicycle and Pedestrian Advisory to  
Oregon Department of Transportation



A. J. Zelada

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**Oregon Task Force on Autonomous Vehicles**  
**Joanie Deutsch, Executive Director, Northwest, TechNet**

August 14, 2018

Chair Tannenbaum and Members of the Task Force:

On behalf of the member companies of TechNet, thank you for the opportunity to provide public comment on the subcommittee recommendations. TechNet represents more than 85 of the nation's leading technology companies. Our diverse membership includes dynamic startups to the most iconic companies on the planet. Also included in our membership are leaders in autonomous vehicle development.

The development of autonomous vehicles will enable tremendous societal benefits by improving vehicle safety and access to transportation for disabled people, the elderly, and others who cannot currently drive themselves. Fully autonomous vehicles will improve safety by reducing the severity and frequency of automobile accidents and will mitigate other inefficiencies of current motor vehicle use, such as congestion.

We support policies that encourage the safe deployment of fully autonomous vehicles on public roads in the United States.

As the task force is deliberating on the recommendations being presented today from the subcommittees, we appreciate your taking our comments into consideration prior to the vote.

We support the Law Enforcement and Crash Reporting recommendations that current Oregon laws are sufficient to cover most possible law enforcement interactions with autonomous vehicles, with the recognition that in the future statutes may need to adapt as technology continues to develop. We also support the recommendation to wait for guidance from the federal government regarding event data recorders, in recognition of state and federal roles in regulating motor vehicles.

We support the Cybersecurity and Long-Term Policy recommendation to encourage manufactures to participate in industry information sharing entities.

We have strong concerns with subcommittee recommendations that provide no pathway to autonomous vehicle deployment. Federal guidance already supports deployment and the model state policy written by the American Association of Motor Vehicle Administrators references deployment.



The recommendation to limit Oregon to testing permits significantly sets the state back behind California and other states. The governing statute in California in 2012 allowed the state Department of Motor Vehicles to issue both testing and deployment regulations.

A number of states have issued deployment regulations and self-certification regulations and structures, which Oregon could look to as examples. Nine states have already expressly authorized driverless deployment through legislation, and two more have done so through Executive Orders.

It is not necessary for Oregon to wait for federal legislation or new federal standards to establish a framework for autonomous vehicle deployment.

Simply put, without a pathway to deployment, there is no incentive for companies to test in the state under many of these recommendations. Therefore, the likelihood that any meaningful testing occurs in Oregon in the next few years would be very low.

To that end, the Cybersecurity and Long-Term Policy recommendation for an independent workforce study is of little use if the state does not allow use of autonomous vehicles in a commercial capacity.

The Licensing and Registration subcommittee recommendation regarding the self-certification to state traffic laws should acknowledge that occasionally, the greater good demands cautiously taking an action that is not strictly consistent with the law. For example, a vehicle crossing a double yellow line when a lane of traffic is blocked in order to keep traffic flowing when there is no safety imperative to remain stopped.

Some of the subcommittee recommendations are inconsistent with the recommendations of another. The recommendation from the Liability and Insurance subcommittee regarding event data recorders is inconsistent with the Law Enforcement and Crash Reporting recommendation to wait for guidance from the federal government regarding event data recorders. As previously stated, we support the approach provided through the Law Enforcement and Crash Reporting recommendation in this respect.

With respect to liability concerns, existing regulatory and tort systems are designed to adapt to new technologies and have successfully adapted to many new technologies in the past.

Existing liability principles are designed to be applied on a case-by-case basis. These principles have been applied to countless new and transformational technologies in the past. There's no reason to believe that these principles cannot be similarly applied to autonomous vehicles and generate fair outcomes. While existing liability principles can effectively and fairly allocate liability, when a person

or entity is found liable, they should have sufficient financial resources to compensate injured parties.

To provide additional assurance that injured parties will be compensated, a few states have adopted higher insurance requirements. We recommend that the Insurance and Liability subcommittee recommendation for higher insurance requirements sunsets in a couple of years, which would be similar to the state of Georgia's approach (which sunsets December 31, 2019). As autonomous vehicles become more widely available to individual consumers, the insurance coverage requirements should become more aligned with the requirements for conventional vehicles.

From a regulatory perspective, the National Highway Traffic Safety Administration (NHTSA) regulates design, construction, and performance of all autonomous vehicles. All federal motor vehicle safety standards that apply to conventional vehicles apply to autonomous vehicles. Historically, new vehicle technologies have been introduced into commerce long before NHTSA issues a federal safety standard specific to that technology. Before there is a federal motor vehicle safety standard governing a new technology, NHTSA protects public safety through its enforcement authority. For example, electronic stability control (ESC) was introduced more than 10 years before NHTSA issued a safety standard. During that time, millions of vehicles were equipped with ESC before NHTSA issued a federal safety standard, which drastically improved vehicle safety. According to NHTSA crash data, ESC reduced fatal single-vehicle crashes by 55 percent.

As a whole the recommendations do not provide any timeline for allowing driverless testing in the state.

We are concerned that well-intentioned state policy frameworks will unintentionally stifle innovation and impede the safety benefits of this technology. We encourage this task force to avoid recommending policies that will create or maintain barriers to the testing, development, and deployment of this technology and the benefits that come with it.

Thank you.



August 15, 2018

Autonomous Vehicle Task Force

**RE: HB 4063 Autonomous Vehicle Regulatory Recommendations**

Dear Honorable Rep. McLain, Rep. Boles, Sen. Monroe, Sen. Girod & Members of the Committee:

The Technology Association of Oregon (TAO) is a technology trade association that seeks to establish Oregon as a world-class, inclusive innovation-based economy. We work with over 470 tech and tech-enabled companies in Oregon, ranging from some of the largest technology companies in the world to early-stage startups. We have offices in Eugene, Bend, and Portland and offer services around the state. Our programs focus on helping companies to grow and remain competitive, and we have a particular emphasis on inputs to growth such as talent, capital, and the business environment.

AVs will improve safety on the roads – computers don't text, drive under the influence or get distracted. AVs will also improve mobility options for those with disabilities. Having AVs on the road and in use will also reduce congestion and improve the commute for all those on the road.

TAO appreciates the hard work that the task force has done to study the various issues surrounding smart AV regulation. The American Association of Motor Vehicle Administrators (AAMVA) urges states to "[d]evelop strategies for testing and deployment of HAVs." if Oregon wants to be welcoming of new technology, state law must create a path for commercial operation of AVs, including AVs without human drivers

The last full task force meeting focused on testing recommendations where it was declared that the focus of the proposed regulations was to be testing, not deployment. This is problematic for several reasons. One, self-driving cars are here. Already millions of miles have already been driven by AVs. During the course of testing only one person has been killed by a self-driving car. Contrast this with national drunk driving statistics that state that 28 people a day die from drunk driving. Additionally, there is no shortage of places across the country to test, Oregon is behind. If Oregon wants to get ahead, it needs to encourage deployment, not resist it.

Moreover, recommendations for deployment can be developed quickly, even absent additional federal guidelines. Other states including both Washington and California have already developed a regulatory structure for deployment and present a guide for Oregon to follow.



TECHNOLOGY  
ASSOCIATION  
OF OREGON

Finally, we are concerned that despite the large size of the task force, that industry experts and practitioners with deep knowledge of the issues at hand are underrepresented. For example, two of the four subcommittees do not have any members with backgrounds in technology. Adding representatives with strong understanding of the technology will facilitate progress on deployment recommendations.

Our view is that adopting testing regulations alone is insufficient. The task force ought to also adopt regulations paving the way for commercial deployment.

Sincerely yours,

A handwritten signature in black ink that reads "Skip Newberry". The signature is written in a cursive style with a long horizontal flourish at the end.

Skip Newberry

President & CEO, Technology Association of Oregon



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THE VOICE OF THE  
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TechNet Northwest | Telephone 360.584.6041  
P.O. Box 7914, Olympia, WA 98507  
[www.technet.org](http://www.technet.org) | @TechNetUpdate

**Oregon Task Force on Autonomous Vehicles**  
**Joanie Deutsch, Executive Director, Northwest, TechNet**

May 23, 2018

Chair Tannenbaum and Members of the Task Force:

On behalf of the member companies of TechNet, thank you for the opportunity to provide public comment. TechNet represents over 70 of the nation's leading technology companies. Our diverse membership includes dynamic startups to the most iconic companies on the planet. Also included in our membership are leaders in autonomous vehicle development, including Waymo (formerly the Google Self Driving Car Project), General Motors, Uber, and Lyft, to name a few.

These comments are also on behalf of the Technology Association of Oregon, who unfortunately couldn't be here for the public comment period.

The development of autonomous vehicles will enable tremendous societal benefits by improving vehicle safety and access to transportation for disabled people, the elderly, and others who cannot currently drive themselves. Fully autonomous vehicles will improve safety by reducing the severity and frequency of automobile accidents and will mitigate other inefficiencies of current motor vehicle use, such as congestion.

We support policies that encourage the safe deployment of fully autonomous vehicles on public roads in the United States.

HB 4063 charged this task force with developing recommendations regarding the deployment of autonomous vehicles on Oregon highways. The bill specified that not only does the proposed legislation need to be consistent with federal law and guidelines but also required it address the issues of licensing and registration; law enforcement and accident reporting; cybersecurity; and insurance and liability.

The legislation permitted the task force to study and consider potential long-term effects of autonomous vehicle deployment, yet specified that it be addressed in future legislation.

We are concerned that well-intentioned state policy frameworks will unintentionally stifle innovation and impede the safety benefits of this technology. We encourage this task force to avoid recommending policies that will create or maintain barriers to the testing, development, and deployment of this technology and the benefits that come with it.

Finally, we were disappointed that while the subcommittees on licensing and registration, and law enforcement and crash reporting, included industry representation; the subcommittees on cybersecurity and long-term policy, and insurance and liability, did not. While we understand that subcommittee meetings are open to stakeholders and other task force members to participate, we suggest task force meetings and subcommittees encourage active participation among stakeholders and task force members alike, and utilize the expertise and experience you currently have here in the state.

We look forward to working with you to craft policies that encourage the safe deployment of fully autonomous vehicles on public roads in Oregon.

Thank you.





## Owner-Operator Independent Drivers Association

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July 31, 2018

Oregon Department of Transportation  
355 Capitol Street NE, MS 11  
Salem, OR 97301-3871

RE: Task Force Long-Term Policy Workshop

Dear Members of the Oregon Department of Transportation Task Force on Autonomous Vehicles:

As the Oregon Department of Transportation's Task Force on Autonomous Vehicles (AV Task Force) continues looking into autonomous vehicles policies and issues including licensing and registration, insurance and liability, law enforcement and accident reporting, and cybersecurity, the Owner-Operator Independent Drivers Association (OOIDA) submits the following comments.

OOIDA is a not-for-profit trade association incorporated in 1973 and is the largest organization representing the interests of independent owner-operators, small business motor carriers, and professional commercial motor vehicle (CMV) drivers. OOIDA is comprised of 161,000 members located in all fifty states and Canada who collectively own and operate more than 240,000 individual heavy-duty trucks, including 1,230 members in Oregon. As such, OOIDA's members have a keen interest in the development and deployment of AVs as these technologies have the potential to drastically change the trucking industry, in particular its workforce. Federal and state governments must take careful and proper steps to ensure that AVs optimally serve both the general public and the industry. Professional drivers will likely be the first to experience the technology's shortcomings or deficiencies outside controlled testing scenarios, creating serious safety concerns for our members and the driving public. OOIDA members and millions more working in other segments of trucking face a particularly uncertain future, as technology might first diminish the quality of their jobs, and then threaten to displace them completely.

U.S. Department of Transportation (DOT) Secretary Elaine Chao has recognized that the introduction of AVs presents a challenge to the 3.9 million drivers currently holding a commercial driver's license (CDL). The Trump administration has emphasized the importance of not only keeping American jobs, but adding more jobs to boost the economy and spur economic growth. Both federal and state governments must take their time evaluating the benefits that AVs offer within the context that commercial drivers deliver 70 percent of all freight worth

\$11.7 trillion<sup>1</sup> while collecting \$726.4 billion in gross revenue.<sup>2</sup> A hurried and misguided introduction of AVs would not only have a negative impact on safety, but would disrupt the trucking workforce by displacing drivers and adversely impacting the economy. OOIDA encourages the AV Task Force to properly analyze these workforce disruptions.

Regardless of their potential, it is important to understand the safety implications automated vehicles will have on public roadways. Despite the various claims that AVs will lead to zero deaths, news articles and case-studies have presented real-world situations, in which automation has devastatingly failed. While AVs might improve safety under certain conditions, they create new risks with possibly fatal outcomes. There is no technology that performs perfectly 100 percent of the time; however an error in an automated commercial vehicle presents a grave concern both for the truck driver and the motoring public. And when failed automation does lead to a crash, who will be held liable? The motor carrier, the driver, or the systems manufacturer? This is just one of many unanswered questions that the introduction of AVs has raised.

OOIDA believes that any process to advance automated truck technology should be completed with total data transparency from all manufacturers. Consumers, industry, and regulators must be fully informed of the actual reliability of autonomous technology. Safety reports from technology developers should be mandatory before large truck and passenger-car drivers are asked to share the road with AVs.

Manufacturers must also provide cybersecurity protection. As more technology is integrated into CMVs and their autonomy increases, the opportunity for cyber-attacks will escalate. AVs are operated by computer software and in some instances outside networks that are connected via the internet. Until recently, hackers have seemed more occupied penetrating computer systems at banks, retailers, and government agencies where they can access more money and data and create substantial disruption. Such attacks on the trucking industry could have disastrous consequences. In 2017, the Transportation Security Administration (TSA) released a report entitled “Vehicle Ramming Attacks: Threat landscape, Indicators, and Countermeasures.” The report detailed that terrorist networks have utilized CMVs to carry out attacks in recent years, including four attacks within the last two years. As AVs enter the marketplace, oversight must be established that require manufacturers to prioritize cybersecurity concerns.

Moving forward, regulators must also consider infrastructure modernization. In their 2017 Infrastructure Report Card, the American Society of Civil Engineers graded the nation’s overall infrastructure as a D+. The rating details that, “...the infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of serious concern with strong risk of failure.” While the state of our nation’s infrastructure is problematic for the current fleet of highway vehicles, it is especially problematic for autonomous technology. AVs depend on cameras and radar systems to detect lane markings, signage, and pavement conditions. Low-quality highway infrastructure will inhibit the productivity of AVs and could

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<sup>1</sup> Bureau of Transportation Statistics, *Transportation Statistics Annual Report 2016*, Department of Transportation (2016) pg. 58

<sup>2</sup> *American Trucking Trends 2016*, American Trucking Association, <http://www.trucking.org/article/ATA-American-Trucking-Trends-2016>

create a significant safety risk, especially in construction zones where markings might be limited or no longer exist. Infrastructure needs must be addressed before the full or partial deployment of AVs.

Additionally, there are a number of other issues which lawmakers and regulators must consider as they develop AV policy, including:

- Automation bias: Automated decision aids are designed to reduce human error, but actually can cause errors in the operation of a system as human drivers become overly reliant upon automation and thus exhibit errors of omission and or commission.
- Ethics: In circumstances where a crash is inevitable, what action will an AV undertake? How will such a system make its choice between striking a school bus or putting itself into a ditch? Critical situations will occur on the roadways every day, thus ethical considerations will be inevitable as accidents involving AVs become a reality. How will scientific models address these situations, especially considering that there is no comprehensive model today that can mirror the underlying cognitive processes of moral judgment and human behavior? Whatever algorithms are utilized will likely affect millions of vehicles at a time, which will increase the impact of any inherent biases or failures, thereby increasing the importance of getting it right.
- Performance and interaction with non-autonomous vehicles: Fully autonomous vehicles are decades away. How will Levels 3 and 4 interact with the other trucks, cars, and buses on the roadways? We have already seen multiple crashes in these scenarios.
- Situational awareness: In the event of a steer-tire blowout or severe weather, how will an AV perform in order to ensure the safety of the driver, if not fully autonomous, and the motoring public? An experienced driver understands when it is best to pullover and wait for a storm to pass. How will AVs handle poor brake performance, construction zones, variable speed limits, detours and routing changes, load securement, etc.?
- Congestion and increased pavement damage: New research demonstrates that AVs will likely increase traffic and VMT, thereby increasing the pavement damage to the nation's already crumbling infrastructure. Additionally, the more vehicles that are on the road, the greater the number of interactions with other vehicles and thus the greater likelihood of being involved in a crash.

We would also note the lack of representation from the small business community on the AV Task Force. OOIDA represents small business truckers, who comprise 90% of the trucking industry, with single truck enterprises accounting for approximately 50% of total carriers in the United States. The omission of small business trucking representative is surprising considering the sheer number of truckers required to meet the needs of our nation and the extremely critical nature of what they do. We appreciate the opportunity to provide comments and would be happy to provide additional information as needed.

Sincerely,

A handwritten signature in black ink that reads "Todd Spencer". The signature is written in a cursive style with a prominent initial "T" and a long, sweeping underline.

Todd Spencer  
President & CEO  
Owner-Operator Independent Drivers Association

## **Memorandum to the State of Oregon Task Force on Autonomous Vehicles**

**To:** Subcommittee on Cybersecurity and Long-Term Policy  
**From:** Tyfone, Inc.  
**Date:** July 27, 2018  
**Re:** Legislation language regarding Cybersecurity

Dear members of the subcommittee,

Thank you for the important work you are doing regarding cyber threats that autonomous vehicles on Oregon roads will face in the future. We are concerned about it as well and we would like to respectfully make recommendations for you to consider for the legislation regarding cybersecurity.

We will first provide background of our expertise, followed by the problem statement and conclude with recommendations for you to consider.

### **Background**

Tyfone is an Oregon based cybersecurity company that has customers including the US Department of Defense, Electric Power Research Institute (EPRI), Jaguar Land Rover, and two of the Top 10 Credit Unions in the United States. Tyfone's equity holders include Jaguar Land Rover, In-Q-Tel, and General (Retd) David Petraeus.

The company has over 130 patents related to cybersecurity and our approach to cybersecurity is beginning to be well-recognized in the marketplace, especially for applications in critical infrastructure. An example critical infrastructure application of our technology in partnership with EPRI to protect US electric power infrastructure, can be seen on YouTube here:  
<https://www.youtube.com/watch?v=hbW05Qzsbho>.

### **Problem Statement**

The purpose of this memo is to highlight two problems facing the subcommittee as it relates industry standards.

- (1) Current industry standards vary dramatically and a large majority of them do not have sufficient protections for critical infrastructure applications such as connected and autonomous vehicles.
- (2) At any given point in time not all industry standards are created equal. Given connected and autonomous vehicles will go across multiple industries from cloud companies to car manufactures industry standards are different and are interpreted differently.

### **Recommendations**

Adopt California legislation on cybersecurity with the following two changes:

- (1) Change "...meet appropriate and applicable current industry standards..."  
To "...meet appropriate and applicable critical infrastructure industry standards..."
- (2) Add a final sentence that clarifies what cybersecurity nee "Appropriate and applicable industry standards means standards that maximize data security, privacy and safety of lives."

Thank you!



## Oregon Task Force on Autonomous Vehicles

Internet Association appreciates the opportunity to submit comments from testimony provided at your August 15, 2018 Task Force on Autonomous Vehicles.

Internet Association (IA) represents more than 40 of the world's leading internet companies and advances public policy solutions that foster innovation, promote economic growth, and empower people through the free and open internet.

IA believes the deployment of autonomous vehicles (AVs) will significantly increase the safety of our roads, not just for drivers and vehicles but for pedestrians and bicyclists as well. IA encourages states to reviews their laws, regulations, and standards to lay the groundwork to ensure each state is able to take full advantage of the benefits of AVs.

IA appreciates the hard work the subcommittees and staff have put into developing recommendations, which do provide useful guidance in establishing state laws and regulations for AVs. Identifying national groups that have developed uniform standards or guidelines is useful to ensuring there is consistency, not just across the state, but also across state lines.

House Bill 4063 was very clear in the direction of (3) (a) *The task force shall develop recommendations for legislation to be introduced during the next odd-numbered year regular session of the Legislative Assembly regarding the deployment of autonomous vehicles on highways.* IA has concerns regarding the recommendations and the discussions at the subcommittee level that have focused on testing of AVs but not the deployment of AVs.

The recommendations do provide some guidance regarding deployment, such as stating existing traffic laws are sufficient to cover most traffic enforcement issues. However, the recommendations are silent on what barriers exist that will prevent or limit the full deployment of AVs on the streets and highways of Oregon.

While the work of the Task Force is winding down for its first report to the Legislature, IA encourages the committee to continue its work and focus its attention on barriers to entry. Oregon must ensure all aspects of transportation will be able to participate to fully capture the benefits of AVs.

For example, one of the benefits as discussed in the subcommittee and at the Task Force is the ability for persons with disabilities to be able access transportation. This will allow persons with disabilities to be able to transport themselves to and from medical appointments, the grocery store, or other daily activities, which can be very limited today. Some existing laws allow a public transportation system to be able to provide that service, however, as with most public transit systems, they may be financially limited in their ability to provide that service. Currently Oregon law has not provided a uniform licensing regime to allow Transportation Network Companies (TNCs) to operate throughout the state. This is a barrier to entry for TNCs in the AV market for Oregon. Which will limit equitable access to transportation options for those with disabilities.





IA recommends as the Task Force continues its work it focus on barriers to entry and develop recommendations to address those barriers. IA and its members are willing to work with the Task Force, the Legislature, and the administration in working through these issues and finding solutions.

Thank you for your consideration.

Rose Feliciano

Director, State Government Affairs, Northwest Region



## Oregon Taskforce on Autonomous Vehicles

Forth appreciates the opportunity to provide comments to the Oregon Autonomous Vehicles (AV) Taskforce Meeting on August 15, 2018.

[Forth](#) is a trade association and advocate for electric and advanced mobility, with over 150 members including many major car companies, charging companies, utilities, and public interest groups. Both directly and through our closely affiliated charitable arm, the 501c3 Forth Mobility Fund, we manage the nation's only brand neutral electric vehicle showroom, dozens of ride & drive events, a range of demonstration and pilot projects, and policy advocacy work. Forth also manages the Roadmap Conference, the nation's leading conference on electric and advanced mobility, which ensures we are up to date on the most current research in the field.

Forth has developed and led several demonstration projects in Oregon. Examples include the Community Electric Vehicle Project (C-EV) with [Hacienda CDC](#), an affordable housing complex in Northeast Portland. The project sought to bring a new transportation option to the Cully neighborhood while also evaluating whether an electric vehicle (EV) car share could be a financially sustainable, convenient, affordable, and reliable mode of transport.

Forth also conducted a similar Community Electric Bicycle Project with the Community Cycling Center to serve unlicensed residents as well as an e-bike and scooter program at the [Lloyd EcoDistrict](#). These past projects tested scenarios where providing shared transport to a trusted community partner could provide a needed community transportation option while also introducing the alternative mode to that community through education and exposure. The projects yielded lessons that will help us strengthen future projects.

Forth has also conducted extensive community outreach to assess mobility needs and barriers, both directly and in partnership with [OPAL](#) Environmental Justice. Our work with OPAL is one of the only examples of [community-led assessment](#) of the opportunities and barriers posed by new mobility options in underserved communities. This work was designed to inform future demonstration projects and will provide a base level of education to many of the communities that we aim to serve through this work.

Similarly, testing and deployment of autonomous driving technologies could have an enormously positive impact and an equitable impact on our state and communities, whether rural or urban. Permitting testing and deployment, in a timely manner, would ensure Oregon is on a level playing field with Arizona, California, Florida, Nevada, and Texas, to name just a few.

Autonomous vehicle technology will create opportunities and challenges for Oregon and now is the time to prepare and implement testing and deployment recommendations and policies that will create benefits and mitigate negative impacts caused by this technological shift.

You'll hear from Technology Network (TechNet) and the Internet Association (IA) regarding how Oregon can test and deploy autonomous driving technologies based on experiences of testing and deployment in the states mentioned above.

Oregon has a history of being collaborative, entrepreneurial, and on the forefront of new technologies. By permitting testing and deployment within a prescribed timeframe will ensure Oregon and it's communities are not left behind.

Thank you,

Jeanette Shaw  
Director of Government Relations  
Forth  
[jeanettes@forthmobility.org](mailto:jeanettes@forthmobility.org)