

**Legislating Autonomous Vehicles in Washington:
An Analysis of Current Autonomous Vehicle Law
with Recommendations for Washington**

Presented by
University of Washington School of Law
Technology Law and Public Policy Clinic, 2017-2018
Professor Bill Covington
Elliott Okantey
Samuel Kim
Isaac Prevost
Jillian Stanphill

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Preface

This report was created for the Washington State Transportation Commission (WSTC) by Professor William Covington and students Samuel Kim, Elliott Okantey, Isaac Prevost, and Jillian Stanphill of the University of Washington School of Law’s Technology Law and Public Policy Clinic for the 2017-2018 academic year. It was written at the request of Washington State Transportation Commission Executive Director Reema Griffith.

The report provides actionable advice on how Washington State can approach the testing and deployment of autonomous vehicles (“AV”), and to highlight issues for the WSTC to consider in the near future. We examined the current regulatory schemes of states including Arizona, California, Florida, Georgia, Michigan, Ohio, and New York—offering examples of how state governments may approach and adopt AV technology. This report also discusses how Washington currently regulates AVs, and what questions the state may want to consider based on differing approaches taken in other states.

Our analysis means to give the WSTC more information about regulatory models for AV technology while providing questions to keep in mind as AV technology becomes commonplace. The questions that we identified as a priority for the WSTC to consider in the near future include:

- Registration and Title – does the AV manufacturer have to register with the state and have to report information to the state?
- Insurance and Liability – what insurance is the manufacturer required to have before putting an AV on the road?
- Permitting and Testing - what do manufacturers need demonstrate before they can test and operate AV on public roads?
- Rules of the Road – does the AV have to follow existing rules of the road, are they exempted from certain laws, or are they subjected to additional laws?

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I. Introduction

This report means to offer actionable advice on how Washington State can approach the testing and deployment of autonomous vehicles (“AV”) and to highlight the issues the state should consider in the next few years. The conversation about AVs often jumps decades into the future, focusing on visions of smart cities and technology dramatically different from our own. In those visions, perhaps no one owns a car, and instead calls an AV on demand. Every person might own an AV, as to finally catch-up on sleep as fully-autonomous car drives them to work, seamlessly. Some predictions contend that AVs will increase congestion, where others predict that AVs can solve the “last-mile” problem—boosting use of public transit. The future of AVs remains unknown, but the opportunity for state governments to maintain involvement with testing and addressing concerns about AVs already arrived.

The role that AVs will ultimately play in our society remains unknown at this point. The exact level of autonomy these AVs will be capable of is also unknown. The amount of interaction they may require from humans, if any, is unclear at this time. Finally, we can only speculate how consumers would react to giving up car ownership and calling an AV from a roaming fleet. Many factors in AV technology are unknown, but states already see AVs tested on public highways. The first wave of AV technology is deployed, and various state governments take different approaches for how to interact with this technology.

In this paper, we first provide an overview of where Washington’s laws currently stand with AV technology. The testing of AVs is permitted through a self-certification process that simply confirms whether the manufacturer holds minimum levels of liability insurance. The second portion of this paper discusses how other states adopted varying regulatory models for AVs. California chose a detailed regulatory framework, meant to supervise and foster the public deployment of AV technology. New York maintains a stricter approach, placing a variety of requirements on any potential testing. Alternatively, Ohio sought to promote the development of the technology with minimal regulation and state support for smart infrastructure that will interact with the AVs. These regulatory models have benefits and concerns that Washington State can learn from as it considers managing AV technology. The varying laws and regulations often concern the following categories:

- Registration and Title – does the AV manufacturer have to register with the state?
- Insurance and Liability – what insurance is the manufacturer required to have when they put an AV on the road? Does the law specify how they are liable in the case of any accidents or damage?
- Permitting and Testing - what do manufacturers need demonstrate before they are allowed to test and operate an AV on public roads?
- Rules of the Road – does the AV have to follow existing rules of the road or are they exempted from certain laws?

In the final section of the paper, we discuss learnable lessons for these states, the issues Washington State may want to address as soon as possible, and the issues Washington should watch over the next few years.

II. Survey of Several States

A. Washington

Executive Order 17-02 of June 2017

Governor Jay Inslee signed Executive Order 17-02 in June 2017 tasking relevant agencies with supporting the safe testing and operation of autonomous vehicles in Washington.¹ The Executive Order includes two main provisions: (1) a work group to further the purposes of the executive order, “assess state government’s role in cultivating the safe development of automated technology in vehicles and public roads,” and “examine emerging automated transportation technology” across various modes of transportation.² The other main provision, (2) enables pilot programs conducting safe testing and operation of autonomous vehicles.³

Work Group

The work group includes designees from the Office of the Governor, as well as representatives from relevant agencies such as the Departments of Transportation, Commerce, and Licensing; the Transportation Commission; and the Office of Regulatory Innovation and Assistance.⁴ The work group can request updates on pilot programs, propose changes or clarifications to state policies to the Governor, and was tasked with collaborating with various stakeholders, including industry representatives, local governments, legislators, and federal agencies.⁵

Pilot Programs and Self-Certification

The executive order authorized pilot programs for conducting safe testing and operation of autonomous vehicles.⁶ Companies operating and testing autonomous vehicles in Washington must submit a self-certification to the Department of Licensing confirming that they meet specific requirements, depending on whether the pilot program conducts testing with or without a human operator.⁷

Entities that conduct pilot programs for testing autonomous vehicles **with a human operator** in the vehicle must notify the Department of Licensing of the program, and self-certify to the Department that they meet the following requirements:⁸

- The vehicle has to be operated or monitored by a trained employee, contractor, or other person authorized by the testing entity.
- The vehicle has to be monitored, and an operator has to have the ability to direct the vehicle’s movement if assistance is required.

¹ Executive Order 17-02, Autonomous Vehicle testing & Technology in Washington State and Autonomous Vehicle Work Group,” Governor Jay Inslee, June 7, 2017.

² *Id.*

³ *Id.*

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

- The individuals operating control over the vehicle have to hold a valid United States driver license.
- The owner of the vehicle must attest to proof of financial responsibility in the amount of \$25,000 for personal injury to one person, or \$50,000 for personal injury to two or more people, the coverage minimums prescribed by RCW 46.30.020.⁹

Entities conducting pilot programs for the safe testing and operation of autonomous vehicles **without human operators** present in the vehicle, must notify the Department of Licensing, and submit self-certification of the following requirements to the Department:

- Vehicles have to be equipped with an automated driving system that performs all aspects of the driving task on a part- or full-time basis and is capable of bringing the vehicle to a safe condition in the event of a system failure.
- Vehicles must be capable of being operated in compliance with Washington State motor vehicle laws relevant to the vehicle’s operations design limits.
- Vehicle owners must attest to proof of financial responsibility in the amount of \$25,000 for personal injury to one person, or \$50,000 for personal injury to two or more people, the minimum coverage levels prescribed by RCW 46.30.020.

No Definitions of Applicable Terms in Executive Order

Executive Order 17-02 establishes the circumstances under which people can operate and test autonomous vehicles, but it does not define critical terms such as “autonomous vehicles” or “autonomous vehicle technology,” nor does it define what these systems do.¹⁰

HB 2970 Work Group

HB 2970, enacted during the 2018 legislative session, created an executive-legislative work group to be convened by the Washington State Transportation Commission (Transportation Commission) that will continue the work begun by the Governor’s work group.¹¹ In addition to the agency heads that were on the previous work group, the HB 2970 work group will include two members of each party from each chamber in the legislature, as well as the Insurance Commissioner and the heads of the State Patrol and the Traffic Safety Commission.¹² The Transportation Commission can also invite additional relevant stakeholders.¹³

HB 2970 tasked this work group with following developments in autonomous vehicle technology; exploring approaches to the modification of state policy, rules, and laws for safety;

⁹ *Id.*

¹⁰ Executive Order 17-02, June 7, 2017.

¹¹ HB 2970, § 1.

¹² *Id.*

¹³ *Id.*

and to “prepare the state for the emergence and deployment of autonomous vehicle technology.”¹⁴

The work group will also disseminate information to interested stakeholders, engaging the public and informing policy makers through surveys and focus groups.¹⁵ The Transportation Commission must report to the Governor and the relevant committees of the legislature on the work group’s progress and the Transportation Commission’s recommendations by November 15 of every year.¹⁶ The Transportation Commission’s recommendations can include proposed changes to state laws and rules regarding the emergence and deployment of autonomous vehicle technology.¹⁷ The work group’s statutory mandate expires on December 31, 2023.¹⁸

Executive Order’s Self-Certification Process Still in Effect

Although HB 2970 created a work group to replace the one convened under Executive Order 17-02, the self-certification requirements for conducting pilot programs for testing and conducting autonomous vehicles remain in effect.¹⁹ Seven companies have self-certified to the Department of Licensing:

- Dooblai, LLC, based in Bellevue, Washington
- May Mobility, based in Michigan
- Navya, Inc., a French robotaxi developer
- NVIDIA Corporation, which is working on artificial intelligence and vehicle software and sensors
- Simple Solutions, based in California
- TORC Robotics, a Blacksburg, Virginia-based company
- Waymo, LLC, owned by Google’s parent company Alphabet, Inc.²⁰

Other Applicable Washington Law:

Vehicle Registration and Title

Washington law already requires that parties who own and/or bear responsibility for vehicles, must be established through vehicle registration. In order for a vehicle to be operated on the public highways of the state, the vehicle must have current and proper registration through the Department of Licensing, and the vehicle must display license plates.²¹ A person cannot operate a registered vehicle without a certificate of title for the vehicle.²²

¹⁴ HB 2970, § 1(2)(a)-(b).

¹⁵ HB 2970, § 1(2)(c)-(d).

¹⁶ HB 2970, § 1(3)(a).

¹⁷ HB 2970, § 1(3)(b).

¹⁸ HB 2970, § 2.

¹⁹ Washington Department of Licensing, “Autonomous vehicles: Self-certification for testing in Washington state,” <http://www.dol.wa.gov/vehicleregistration/autonomous-self-cert.html>

²⁰ Tom Banse, “Meet the Companies Testing Self-Driving Vehicles in the Pacific Northwest,” My News Network, May 18, 2018. <http://nwnewsnetwork.org/post/meet-companies-testing-self-driving-vehicles-pacific-northwest>

²¹ RCW 46.16A.040(2).

²² RCW 46.12.520.

Insurance

Drivers may not operate a motor vehicle without owning insurance under a motor vehicle liability policy of at least \$25,000 for bodily injury to one person, or at least \$50,000 for bodily injury to two or more people.²³ The vehicle can also be self-insured, covered by a certificate of deposit, or by a liability bond.²⁴ Among the information that Executive Order 17-02 requires testing entities to confirm is that they have these minimum insurance coverage amounts. Washington might consider requiring different levels of insurance coverage for autonomous vehicles since the technology is still relatively new and its risks are still being understood.

Civil Liability

Existing theories of products liability law such as manufacture negligence, design defect, manufacturing defect, failure to warn, and breach of express or implied warranty are sufficiently advanced to assign liability for damages resulting from the failure of an autonomous vehicle.²⁵

Current tort law developed as to assign liability from damages resulting from autonomous vehicle driver negligence.²⁶ The human operator of an autonomous vehicle would bear liability if the driver causes an accident while the vehicle's autonomous driving system is not activated, if the human operator resumes control of an autonomous vehicle and then causes an accident, or if the human operator engages the vehicle's autonomous mode in a negligent manner.²⁷ Additionally, Washington's negligence law assigns comparative or contributory fault.²⁸ Therefore, the manufacturer and the human operator could share fault if evidence indicates that they each caused some part of the damage that results.

Legislators can modify Washington law to establish when manufacturers, third-party "upfitters," the human operator, or other parties are liable or eligible to be joined in lawsuits to determine liability after an accident.

Cybersecurity

The data and networks on which autonomous vehicles rely must exhibit heightened security in order to prevent data breaches and system hacks. Autonomous vehicles may be vulnerable to threats such as data thieves hacking in and stealing personal and financial data, spoofer presenting incorrect information to a vehicle, and hackers executing a denial of service attack

²³ RCW 46.30.020, RCW 46.29.090.

²⁴ RCW 46.30.020.

²⁵ See John Villasenor, *Who is at Fault When a Driverless Car Gets in an Accident?*, The Atlantic, (April 25, 2014).

²⁶ "Autonomous Vehicle Law Report and Recommendations to the ULC," University of Washington School of Law Technology Law and Public Policy Clinic, Autonomous Vehicles Team, 2015-2016.

²⁷ *Id.*

²⁸ RCW 4.22.005.

that shuts down a car by shutting down its computer system.²⁹ Automated vehicles will also be uniquely vulnerable to additional threats because they rely on information from a variety of sources to make the necessary continuous operational and navigational decisions, generating massive amounts of data.³⁰ Hackers could shut down a vehicle, or take over a vehicle and direct it in directions or conditions that go against the wishes of the operator.³¹ Beyond malicious data and security breaches, whoever owns the data generated by autonomous vehicles could intentionally sell this data, putting sensitive information into the hands of parties that operators and passengers of autonomous vehicles may never have contemplated.³² The networks used to connect autonomous vehicles would also be vulnerable, including those financial networks which process tolls and parking payments, roadway sensors, cameras, traffic signals, electrical grids, and personal home networks.³³

Existing federal and state law provide some tools to address some threats to autonomous vehicle security. The federal Computer Fraud and Abuse Act makes malicious hacking illegal.³⁴ The Washington Cybercrime Act also provides some statutory protection from attack. A person is guilty of computer trespass (a class C felony) if a person intentionally and without authorization gains access to a computer system or electronic database of another.³⁵ A computer trespass in the second degree exists (gross misdemeanor) if a person intentionally accessed a computer system without authorization in circumstances not constituting first degree.³⁶ Electronic data service interference is when a person maliciously and without authorization causes the transmission of data, data programs, or other electronic command that intentionally interrupts or suspends access to or use of a data network or data service.³⁷ The charge of electronic data tampering exists, as well as electronic data theft.³⁸

Using the Computer Fraud and Abuse Act and the Washington Cybercrime Act to pursue a wrongdoer may help, but these are tools meant to deal with an unlawful act, after the fact. A breach of computer systems or data could cause damage that we are better off preventing in the first place. Legislators could require testing entities to include in their self-certifications to the

²⁹ Derek Dominic and Andre Weimerskirch, "Assessing Risk: Identifying and Analyzing Cybersecurity Threats to Automated Vehicles," M City, https://mcity.umich.edu/wp-content/uploads/2017/12/Mcity-white-paper_cybersecurity.pdf.

³⁰ In 2016, the vehicles being tested by Waymo's predecessor were generating one gigabyte of data per second. This equates to a feature length high definition movie's worth of data every five seconds. *See* <http://business.financialpost.com/technology/the-real-prize-and-threat-of-the-driverless-car-revolution-is-data-the-car-knows-a-lot-about-you>.

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ 18 U.S.C. § 1030.

³⁵ RCW 9A.90.040 (1)-(2).

³⁶ RCW 9A.90.050.

³⁷ RCW 9A.90.090.

³⁸ RCW 9A.90.080, RCW 9A.90.100.

Department of Licensing those practices employed protective of the security for the autonomous vehicle's systems and data.

Electronic Data Recorders

Electronic data recorders remain common in modern vehicles. Washington requires manufacturers to create the ability to transmit information to a central communications system or an external device. RCW 46.35.020(1). The information recorded or transmitted by a recording device cannot be “retrieved, downloaded, scanned, read, or otherwise accessed” by anyone beside the owner unless there is a court order, the owner has given consent for a specific instance of access, or for improving safety as long as the owner's identity is not disclosed in connection with the retrieved information. *See* RCW 46.35.030(1).

Rules of the Road

The provisions of Title 46 of the Revised Code of Washington, relating to motor vehicles, cover “all persons operating vehicles upon the public highways of this state”³⁹ These provisions include rules of the road established in 46.61 RCW. This statute includes rules on obedience and the effect of traffic laws; traffic signs, signals, and markings; right of way rules; the rights and duties of pedestrians; and speed restrictions, among many other rules.⁴⁰ The rules may apply to autonomous vehicles more directly if there were explicit language requiring autonomous vehicles tested and operated in the state be able to comply with RCW 46.61. Legislators could state this explicitly in both statute and regulations. The phrase “persons operating vehicles” could be defined to include autonomous vehicles with or without an operator onboard by statute, or Executive Order 17-02 could be modified to also require that the self-certification must include confirmation that the autonomous vehicle can comply with those laws.

Washington Current Law Conclusion

Much of existing Washington law could apply to autonomous vehicles, but Washington has new policies and structures, and this state would be well-advised to consider modifications and additions to its existing autonomous vehicle policies. The changes that Washington already implemented are contained in Executive Order 17-02 and HB 2970. Entities that will test autonomous vehicles are required to submit self-certification to the Department of Licensing, and the recently created legislative-executive work group will follow the development of autonomous vehicle technology and propose changes or additions to policy, laws, and rules. These changes to Washington policy allow for light oversight without requiring an exhaustive permitting process before entities can test vehicles.

Many provisions in existing law will be adequate for autonomous vehicles, but Washington law may need to be changed or updated to deal with other areas of autonomous vehicle-related

³⁹ RCW 46.08.030.

⁴⁰ RCW 46.61.

policy. Neither Executive Order 17-02 nor HB 2970 define “autonomous vehicles,” or any other terms that are necessary to discuss and understand what autonomous vehicle owners, operators, and manufacturers can do in Washington. Washington law on licensing, registration, and titling apply to autonomous vehicles. So, too, does Washington’s current law on insurance liability coverage, but more study is required to understand exactly what levels of insurance coverage are necessary to support the safe operation of this emerging technology.

Existing civil liability law is capable of assigning liability if an autonomous vehicle is involved in an accident, but the state needs to understand if any parties should be able to be joined in a lawsuit or exempted from or provided a defense against certain legal claims. In the area of cybersecurity, it is illegal to maliciously hack into a computer system or electronic database, and information recorded on electronic data recorders can only be accessed by the owner unless a court orders otherwise. Areas of law that might already apply to autonomous vehicles should be examined and modified if necessary, and Washington should look to the policies of other states and entities as it looks to facilitate the safe testing and operation of autonomous vehicles on Washington’s public roads.

B. New York

Generally

New York is a late-comer when it comes to the acceptance of autonomous vehicles (“AV”) and AV legislation. The state’s introductory AV bill, SB 2005, was passed on April 1, 2017. This bill allowed for permitted testing and demonstrations for a period of one year. This testing period was recently renewed for another year, expiring in April 1st 2019.⁴¹

The permitted testing is a mutual experiment between the New York state and AV manufactures and operators, as both parties are seeing what type of legislation will work for New York and whether or not AVs are “right” for New York. SB 2005 covers what permitting entails, what insurance is required, and the specific condition for testing. However, SB 2005 provides few definitions, and few provisions on licensing and insurance/liability.

Definitions

SB 2005 defines just two AV-related terms:

1. “Autonomous vehicle technology”: the hardware and software that are collectively capable of performing part or all of the dynamic driving task on a sustained basis.⁴²
2. “Dynamic driving task”: all of the real time operational and tactical functions required to operate a vehicle in on-road traffic, excluding the strategic functions such as trip scheduling and selection of destinations and waypoints.⁴³

⁴¹ A09508C, Part H (2018 Bill)

⁴² SB 2005, Part FF (2017)

⁴³ *Id.*

As legislation develops in New York, the definition section should develop concurrently. Defining only two terms is not enough.

Licensing and Registration

For licensing, SB 2005 requires that “a natural person holding a valid license for the operation of the motor vehicle's class be present within such vehicle for the duration of the time it is operated on public highways.”⁴⁴

Moreover, there is a requirement that the motor vehicle utilized in such demonstrations and tests complies with all applicable federal motor vehicle safety standards and New York state motor vehicle inspection standards.⁴⁵

Testing and Permitting

Most of SB 2005's AV-related language pertains to permitting and testing. To receive a permit, the AV must have a human operator in the vehicle. Additionally, the tests “shall only take place under the direct supervision of the New York state police.”⁴⁶ This requirement could be costly, as the AV company or manufacturer would have to cover the cost of the required police escort.

Insurance and Liability

New York requires the motor vehicle have “...at a minimum, financial security in the amount of five million dollars.”⁴⁷ This means that there needs to be a \$5 million insurance policy in place before an AV can be operated.

SB 2005 does not define what liability is, nor does it establish who will be liable if there is an accident with an AV during test or demonstrations.

Conclusion

As seen above, there is much missing from the New York legislation. It lacks a solid definition section that defines key terms and gives guidance to key AV players what category they fall into. Moreover, SB 2005 significantly lacks information on whom to place liability on.

SB 2005 is both a critical step in AV development in New York, but some of its provisions may also stifle AV innovation in the state. The \$5 million insurance requirement is likely adequate to account for the risks of operating AVs on New York roads, but it may prevent smaller AV-developers from competing in the state. Of greater concern is the requirement for police escorts at the expense of manufacturers, which may prevent would-be competitors from testing in New York at all. Moreover, since the New York legislature has only extended the permitting regime up to April 1, 2019, even the largest players in the AV space may decide to test in other states that provide more certainty about the ability to test vehicles in the future, rather than waiting to see if New York's permitting regime will be further extended or evolve into a more permanent licensing system.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

C. Arizona

Generally

Arizona Governor Ducey signed an Executive Order in 2015 beginning Arizona's journey as a favorable environment to autonomous vehicle (AV) testing.⁴⁸ The Executive Order allowed for AV testing on college campuses with a driver in the vehicle, or with a person outside the vehicle in remote control.⁴⁹ The Executive Order also established the creation of a Self-Driving Vehicle Oversight Committee.⁵⁰ The Committee was fully selected by the Governor and it had no specified duties. The Committee could propose legislation to improve self-driving operations.⁵¹

Due to the success of the self-driving programs in Arizona, Governor Ducey released a new Executive Order in April, 2018.⁵² This new Executive Order expanded the AV program to have fully autonomous vehicles on Arizona public roads without a "driver" present in the vehicle.⁵³

A pedestrian fatality caused by an Uber autonomous vehicle in March 2018 has caused Uber to cease its AV operations in Arizona, but other firms are still enjoying the state's friendly regulatory environment for the testing and development of AVs.⁵⁴

Definitions

The newest Executive Order has defined a few key terms necessary to the advancement of AV testing and operations:

Automated Driving System - The hardware and software that are collectively capable of performing the entire dynamic driving task on a sustained basis, regardless of whether it is limited to a specific operational design domain.⁵⁵

Drive - This definition refers to the meaning contained in §28-101(21) of the Arizona Revised Statutes.⁵⁶ In the ARS, to drive is "to operate or to be in actual physical control of a motor vehicle."⁵⁷ Drive is defined in the Transportation chapter.

Dynamic Driving Task - All of the real-time operational and tactical functions required to operate a vehicle in on-road traffic, excluding the strategic functions such as trip scheduling and selection of destination and waypoints, and including without limitation: i) lateral vehicle motion control via steering; ii) longitudinal motion control via acceleration and deceleration; iii) monitoring the driving environment via object and event detection, recognition, classification,

⁴⁸ AZ Exec. Order, Self-Driving Vehicle Testing and Piloting in the State of Arizona; Self-Driving Vehicle Oversight Committee, 2015-09.

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² AZ Exec. Order, Advancing Autonomous Vehicle Testing and Operating; Prioritizing Public Safety, 2018-04.

⁵³ *Id.*

⁵⁴ Aarian Marshall and Alex Davies, Wired Magazine, "Uber's self-driving car saw the woman it killed, report says," May 24, 2018. <https://www.wired.com/story/uber-self-driving-crash-arizona-ntsb-report/>,

⁵⁵ *Id.* at (1)(a).

⁵⁶ *Id.* at (1)(b).

⁵⁷ AZ Rev. Stat., Transportation Definitions, §28-101(21).

and preparation; iv) object and event response execution; v) maneuver planning; vi) enhancing conspicuity via lighting, signaling, and gesturing.⁵⁸

Fully Autonomous Vehicle - A motor vehicle that is equipped with an automated driving system to function as Level Four or Five system under SAE J3016. Such a vehicle may be designed to function solely by use of the automated driving system, or when the automated driving system is not engaged, to permit operation by a human person.⁵⁹

Minimal Risk Condition - A low-risk operating mode in which a fully autonomous vehicle operating without a human person achieves a reasonably safe state. An example of this is when an AV is brought to a complete stop, upon experiencing a failure of the the automated driving system that render the vehicle unable to perform the entire dynamic driving task.⁶⁰

Operational Design Domain - A description of the specific operating domain(s) in which an autonomous driving system is designed to properly operate, including but not limited to roadway types, speed range, environmental conditions (weather, daytime/nighttime, etc.), and other domain constraints.⁶¹

Person - Shall have the meaning ascribed to it in §1-215(28) of the Arizona Revised Statutes.⁶² This statute defines person to “[include] a corporation, company, partnership, firm, association or society, as well as a natural person.” When the word "person" is used to designate the party whose property may be the subject of a criminal or public offense, the term includes any jurisdiction, political subdivision, or a public or private corporation, or partnership or association may lawfully own any property. When the word "person" is used to designate the violator or offender of any law, it includes corporation, partnership or any association of persons.”⁶³

SAE J3016 - *The Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Vehicles* published by SAE International in September 2016.⁶⁴ “SAE J3016 is the US DoT’s [Department of Transportation’s] official reference for defining the five levels of vehicle autonomy”.⁶⁵

Licensing and Registration & Insurance and Liability

The Executive Order states that the fully autonomous vehicle should “meet all applicable certificate, title registration, licensing and insurance requirements,” but has no further specifications on if those are different then a normal vehicle.⁶⁶ The minimum level of financial

⁵⁸ AZ Exec Order, Advancing Autonomous Vehicle Testing and Operating; Prioritizing Public Safety, 2018-04, at (1)(c).

⁵⁹ *Id.* at (1)(d).

⁶⁰ *Id.* at (1)(e).

⁶¹ *Id.* at (1)(f).

⁶² *Id.* at (1)(g).

⁶³ A.R.S. §1-215(28).

⁶⁴ AZ Exec. Order, Advancing Autonomous Vehicle Testing and Operating; Prioritizing Public Safety, 2018-04, at (1)(h).

⁶⁵ SAE International, U.S. DoT chooses SAE J3016 for Vehicle-Autonomy Policy Guidance, September 20, 2016, <http://articles.sae.org/15021/>

⁶⁶ AZ Exec. Order, Advancing Autonomous Vehicle Testing and Operating; Prioritizing Public Safety, 2018-04, at (3)(d).

responsibility required in Arizona is \$10,000 in property damage and \$15,000 for bodily injury liability of one person (\$30,000 for two or more people).⁶⁷

Testing and Permits

An applicant must submit a written statement to the Arizona Department of Transportation to receive testing permission. The AV must follow all federal law and federal motor vehicle safety standards. The AV must also follow all traffic and motor vehicles safety regulations in Arizona.⁶⁸

Arizona has neither required any new safety standards nor ordered that Uber discontinue testing in the wake of the fatal Uber autonomous vehicle crash in Tempe, Arizona on March 18, 2018.⁶⁹ Both Uber and Toyota have chosen to cease testing in Arizona, but the public statement released by Arizona's Director of Policy and Communications for the Department of Transportation simply said the current regulations were enough and that Arizona has no place to issues any new ones.⁷⁰

Conclusion

Arizona seeks to be a friendly state for AV technology and it has created a light regulatory structure around testing. The Tempe accident and the resulting cessation in AV testing may indicate some concerns with this model, but it is worth paying attention to how the AV industry approaches testing and deployment in Arizona in the upcoming years.

D. Florida

Generally

Florida was among the earliest states to enact autonomous vehicle ("AV") related legislation in 2012. The legislature declared its intent to "encourage the safe development, testing, and operation" of AVs in the state, finding that Florida neither prohibits nor specifically regulates the operation of AVs in the state. 2012's HB 1207 defined some basic terms, established who may operate an AV, and authorized AV testing under certain conditions, among other things.

In 2016, Florida's legislature allowed AVs to be operated on Florida roads for purposes other than testing and removed a requirement that a person be present in the vehicle during operation. Another piece of legislation that year also defined driver-assisted truck platooning technology, and authorized the Department of Transportation to study the use and safe operation of that technology. In total, Florida's AV law authorizes testing with few barriers, and it contemplates not only personally owned vehicles, but also creates a path to researching how autonomous technology can be applied to commercial trucking.

⁶⁷ Arizona Department of Transportation, Mandatory Transportation, <https://www.azdot.gov/motor-vehicles/faq/vehicle-services/mandatory-insurance>

⁶⁸ AZ Exec. Order, Advancing Autonomous Vehicle Testing and Operating; Prioritizing Public Safety, 2018-04, at (3)(a-c).

⁶⁹ New York Times, *Self-Driving Uber Car Kills Pedestrian in Arizona, Where Robots Roam* <https://www.nytimes.com/2018/03/19/technology/uber-driverless-fatality.html>

⁷⁰ Reuters, Arizona says not time to rein in self-driving cars after Uber fatality, March 20, 2018, <https://www.reuters.com/article/us-autos-selfdriving-uber-toyota/arizona-says-not-time-to-rein-in-self-driving-cars-after-uber-fatality-idUSKBN1GW2GG>

Definitions

The chapter of Florida law that defines various types of motor vehicles now also defines any vehicle that is equipped with autonomous technology as an “AV.”⁷¹ “Autonomous technology” is defined as technology installed on a motor vehicle that can drive the vehicle without a human operator’s active control or monitoring.⁷² The term does not include vehicles with active safety systems or driver assistance systems - such as electronic blind spot assistance, crash avoidance, emergency braking, parking assistance, adaptive cruise control, unless any of these systems on their own or with other systems enable the vehicle to drive without a human operator’s active control or monitoring.⁷³

A person is deemed the operator of an AV that is operating in autonomous mode when that person causes the autonomous technology to engage, “regardless of whether the person is physically present in the vehicle while the vehicle is operating in autonomous mode.”⁷⁴

Licensing and Registration

Anyone who has a valid driver’s license is allowed to operate an AV in autonomous mode on Florida roads.⁷⁵

Motor vehicles are required to register with the Florida Department of Transportation (FDOT), and there are certain conditions that an AV registered in Florida must meet.⁷⁶

AVs operated in Florida must meet applicable federal standards and regulations. If the regulations promulgated by the National Highway Traffic Safety Administration conflict with this section, the federal regulations supersede.⁷⁷ In addition to meeting federal standards, an AV had to have the following, as articulated in the legislation enacted in 2012:

1. A means to engage and disengage the autonomous technology that is easily accessible to the operator;
2. A means to visually indicate inside of the vehicle that the vehicle is in autonomous mode;
3. A means to alert the vehicle’s operator if a technology failure affecting the vehicle’s safe autonomous operation is detected while the vehicle is operating autonomously so the operator knows to take control of the vehicle;

⁷¹ § 23.316.003(2), Fla. Stat. (2018).

⁷² *Id.* The actual language is as follows: “[T]echnology installed on a motor vehicle that has the capability to drive the vehicle on which the technology is installed without the active control or monitoring by a human operator.

⁷³ *Id.*

⁷⁴ § 23.316.85(2), Fla. Stat. (2018).

⁷⁵ § 23.316.85(1), Fla. Stat. (2018).

⁷⁶ “[E]very owner or person in charge of a motor vehicle that is operated or driven on the roads of this state shall register the vehicle in this state.” § 23.320.02, Fla. Stat. (2018).

⁷⁷ § 23.319.145(2), Fla. Stat. (2018).

4. The capability to be operated in compliance with applicable traffic and motor vehicle laws.⁷⁸

These conditions for AVs registered in Florida were changed in 2016. Currently, an AV still has to comply with applicable federal standards, and it “shall” have a safety system to alert the operator if an autonomous technology failure is detected while the autonomous technology is engaged. When that alert is given, the system has to require the operator to take control of the AV. If the operator does not or is unable to take control, the system must be capable of bringing the AV to a complete stop.⁷⁹

Testing and Permitting

The 2012 legislation allowed AVs to be operated on Florida roads for testing of the technology. The testing would have required a human operator to be in the vehicle so that the operator could take control of the vehicle if it was being tested somewhere besides a closed course.⁸⁰ That language was stricken from Florida law in 2016. Currently, AVs can be operated on the road for more than just testing without the requirement of having a human operator who could intervene in the event of a system failure.⁸¹

Insurance and Liability

Under the 2012 legislation, testing entities had to submit to the Department of Highway Safety and Motor vehicles an instrument of insurance, surety bond, or self-insurance in for \$5 million.⁸² This prerequisite for testing was removed from the statute in 2016. Florida’s minimum insurance requirements would likely apply in the absence of the \$5 million requirement for testing entities: \$10,000 in property damage liability per accident, and \$10,000 of personal injury protection.⁸³

The Office of Insurance Regulation is authorized to approve a premium discount on insurance rates if the insured vehicle is equipped with either retrofitted or factory-installed autonomous driving technology.⁸⁴ This would make sense if Florida and the insurers there believe that AV technology greatly reduces the risk of costly accidents. This provision would also functionally lower the cost of driving an AV, depending on the extent of the discount.

Florida also exempts the original manufacturer of a vehicle that a third party upfitter converts into an AV. The original manufacturer would “not be liable for injuries caused by the converter.” Instead, the converter would “have a defense to and be dismissed from, any legal action brought

⁷⁸ CS/HB 1207, Engrossed 1, Section 4(1), 2012 Legislature.

⁷⁹ § 23.319.145(1), Fla. Stat. (2018).

⁸⁰ CS/HB 1207, Engrossed 1, Section 5(1), 2012 Legislature.

⁸¹ HB 7027, Engrossed 1, Section 7, 2016 Legislature.

⁸² *Id.*

⁸³ Uniform Law Commission, Highly Automated Vehicles Act, Drafting Committee, Insurance Appendix, “Minimum Auto Liability/Financial Responsibility Requirements” document.

⁸⁴ §37.627.0653(6), Fla. Stat. (2018).

against the original manufacturer. The original manufacturer would still be liable if the injury was caused by an alleged defect that was present in the vehicle as it was originally manufactured.⁸⁵

Additional Provisions of Law

In-car Video Exception for AVs

Florida does not allow a vehicle that is actively displaying moving television broadcasts or pre-recorded video content visible from the driver's seat while the vehicle is in motion.⁸⁶ In 2016, an exception was added for vehicles equipped with AV technology that are being operated in autonomous mode.⁸⁷

Driver-Assistive Truck Platooning Technology

Florida enacted another bill in 2016 that tasks FDOT with studying the use and safe operation of driver-assistive truck platooning technology (DATPT). DATPT is technology that uses sensors, wireless vehicle-to-vehicle communications, active safety systems, and specialized software to link the safety systems and synchronize the acceleration and braking between vehicles, while leaving each vehicle's driver in command of each vehicle's steering and systems command.⁸⁸

FDOT, in consultation with the Department of Highway Safety and Motor Vehicles, can conduct pilot projects to test the use and safe operation of vehicles that are equipped with DATPT.⁸⁹ The manufacturers of such vehicles have to submit an instrument of insurance in the amount of \$5 million before engaging in a pilot project.⁹⁰

Conclusion

Florida was among the earliest states to enact AV legislation. At its core, that legislation defined a few basic terms, mandated insurance and a human operator for testing, and applied the existing licensing and registration process. In 2016 the legislature withdrew manufacturing requirements for registered AVs, allowed them on the road for testing and regular operation, and repealed the general \$5 million insurance requirement for testing AVs. The legislature also updated provisions of law pertaining to screens that show video while a vehicle is in motion with the autonomous mode engaged, and enacted a flexible structure for the testing of truck platooning technology. Many provisions of the Florida Statutes have created a permissive environment for the testing and operation of AVs with few specific requirements or restrictions.

⁸⁵ § 23.316.86, Fla. Stat. (2018).

⁸⁶ § 23.316.303(1), Fla. Stat. (2018).

⁸⁷ CS/HB 7061, Engrossed, 2016 Legislature.

⁸⁸ § 23.316.003(20), Fla. Stat. (2018).

⁸⁹ § 23.316.0896(1), Fla. Stat. (2018).

⁹⁰ § 23.316.0896(3), Fla. Stat. (2018).

E. Georgia

Generally

Georgia enacted two pieces of autonomous vehicle (“AV”) related legislation in 2017: SB 219 creating the main statutory framework for the operation of completely driverless vehicles, and HB 472, which creates an exception to the state’s rules on vehicles following too closely for truck platooning. Georgia law defines several terms such as “automated driving system,” “minimal risk condition,” and “dynamic driving task,” while also providing several examples of the type of functions that would constitute a dynamic driving task. Although Georgia law does not prescribe a permitting or testing process, it does specify that an AV may be operated without a human operator on board under certain conditions. These requirements include annual vehicle registration through the existing registration system, insurance requirements above the minimums required of conventional vehicles, and compliance with seat belt and child car seat laws. Finally, Georgia law prohibits the enactment of any rules or laws that limit authority to operate AVs beyond those in this particular section of the Official Code of Georgia.

Definitions

“Automated driving system” is defined as “the hardware and software that are collectively capable of performing the entire dynamic driving task on a sustained basis, regardless of whether it is limited to a specific operational design domain.”⁹¹

A “dynamic driving task” is “all of the real-time operational and tactical functions required to operate a vehicle in on-road traffic.”⁹² This includes, but is not limited to: lateral vehicle motion via steering; longitudinal motion control through acceleration and deceleration; monitoring of the driving environment through object and event detection, recognition, classification, and response preparation; object and event response execution; maneuver planning; and “enhancing conspicuity via lighting, signaling, and gesturing.”⁹³ Despite the technical nature of this language, it describes functions as commonplace as steering to the left and right, going faster or slower, watching where you are headed relative to other vehicles and objects in the environment, and doing things that help other drivers see you or what you are doing.

A “fully autonomous vehicle” is a vehicle equipped with an automated driving system that is capable of performing all aspects of the dynamic driving tasks without a human driver without ever requesting that a driver “assume any portion of the dynamic driving task.”⁹⁴

“Minimal risk condition” is a mode “in which a fully autonomous vehicle operating without a human driver achieves a reasonably safe state, such as bringing the vehicle to a complete stop” in

⁹¹ Ga. Code. Ann. § 40-1-1(5.1) (2018).

⁹² Ga. Code. Ann. § 40-1-1(5.2) (2018).

⁹³ Ga. Code. Ann. § 40-1-1(5.2)(A)-(F) (2018).

⁹⁴ Ga. Code. Ann. § 40-1-1(17.2) (2018).

the event of a failure of vehicle's autonomous system that keeps it from conducting dynamic driving tasks.⁹⁵

The definition of the “operator” of a vehicle is expanded from “any person who drives or is in actual physical control of a motor vehicle,” to now include any person “who causes a fully autonomous vehicle to move or travel with the automated driving system.”⁹⁶

Georgia statute also defines the term “operational design domain.” This is defined as a description of the specific operating domains in which an automated driving system is designed to effectively operate.⁹⁷ This includes, but is not limited to “geographic limitations, roadway types, speed range, and environmental conditions such as weather and limited visibility.”

Licensing and Registration

Among those who are exempt from the usual requirement to hold a driver's license, Georgia law now includes a fully autonomous vehicle or the operator of a fully autonomous vehicle with the automated driving system engaged.⁹⁸

The requirements for allowing a fully vehicle to be operated without a human driver present in the vehicle include registering the vehicle according to the Georgia's annual vehicle registration process.⁹⁹

Testing and Permitting

Georgia's law is permissive in that it establishes that fully autonomous vehicles may be operated if certain conditions are met, but Georgia has not legislated requirements for permitting the testing of these vehicles. That has not prevented testing, however. Closed course testing has been happening at Georgia Tech since 2017.¹⁰⁰ More significantly, Atlanta issued a Request for Information (RFI) to “solicit strategies that could allow the City to enable the testing and deployment of autonomous vehicle systems” in late 2016.¹⁰¹ Even without a specific legislative language explicitly allowing for testing, SB 219's general allowances for AVs to operate on roads also allow for testing. Waymo's recently announced plans to test in Atlanta were attributed to the bills Georgia passed in 2017.¹⁰² The Southern Political Report reported that it was “[t]hanks to the legislation passed during the 2017 legislative session . . . that [Waymo] is free to

⁹⁵ Ga. Code. Ann. § 40-1-1(27.1) (2018).

⁹⁶ Ga. Code. Ann. § 40-1-1(38) (2018).

⁹⁷ Ga. Code. Ann. § 40-1-1(37.1) (2018).

⁹⁸ Ga. Code. Ann. § 40-5-21(13) (2018).

⁹⁹ Ga. Code. Ann. § 40-8-11(5) (2018).

¹⁰⁰ Scott Henry, “Driverless cars are coming to Atlanta. Are we ready?,” Atlanta Magazine, August 2017.

¹⁰¹ City Of Atlanta, Request for Information, FC 9338, Autonomous Vehicle Demonstration, October 21, 2016. <http://procurement.atlantaga.gov/wp-content/uploads/2016/10/FC-9338-RFI-Document.pdf>

¹⁰² Patrick Hickey, “Self driving cars make their way to Georgia,” Southern Political Report Online, January 31, 2018. <https://www.southernpoliticalreport.com/2018/01/31/self-driving-cars-make-their-way-to-georgia/>

use the city’s crowded streets as a testing ground”¹⁰³ Notably, that legislation makes no mention of testing.¹⁰⁴ Although Waymo has been testing in other locations without a driver behind the wheel, the human operators would be behind the wheel for testing in Atlanta.¹⁰⁵

Insurance and Liability

An AV may be operated in Georgia if the vehicle is covered by insurance valued at 250 percent of the coverage required for conventional vehicles.¹⁰⁶ The minimum coverage limits for vehicles that fit 12 or fewer passengers is \$300,000, and is \$500,000 for a vehicle that fits more than twelve passengers.¹⁰⁷ 250 percent of those rates means that an AV with capacity for 12 or fewer passengers must have \$750,000 in insurance coverage, and AVs that fit more than 12 passengers must have \$1.5 million in insurance coverage. As of January 1, 2020, these coverage requirements will revert back to the previous minimums.¹⁰⁸

Additional Provisions of Law

Following Distance for Truck Platooning

Georgia law prohibits drivers from “following a vehicle more closely than is reasonably prudent.”¹⁰⁹ HB 472 added language to Georgia law that says that provision will not apply to “the operator of any non-leading vehicle traveling in a coordinated platoon.”¹¹⁰ This means that the first vehicle in a platoon of autonomous trucks would have to leave standard following distance, but the trucks within that platoon could be automated to follow each other more closely.

Duties in the Event of an Accident

In the event of an accident involving a fully autonomous vehicle with the autonomous system engaged, the vehicle is deemed to have met procedural requirements for hit and run accidents, striking fixtures, or striking unattended vehicles, and to have satisfied requirements to report accidents resulting in injury, death, or property damage to other parties if the vehicle remains on the scene and the vehicle operator contacts local law enforcement to report the accident.¹¹¹

Additional Requirements for Operating Fully Automated Vehicles

¹⁰³ *Id.*

¹⁰⁴ S.B. 219, Georgia Legislature, 2017 Legislative Session.

¹⁰⁵ Andrew J. Hawkins, “Waymo’s self-driving minivans are coming to Atlanta,” *The Verge*, January 22, 2018. <https://www.theverge.com/2018/1/22/16919716/waymo-self-driving-minivan-atlanta>.

¹⁰⁶ Ga. Code. Ann. § 40-8-11(4) (2018).

¹⁰⁷ Ga. Code. Ann. § 40-1-166 (2018).

¹⁰⁸ Ga. Code. Ann. § 40-8-11 (2018).

¹⁰⁹ Ga. Code. Ann. § 40-6-49 (2018).

¹¹⁰ Ga. Code. Ann. § 40-6-49(e) (2018).

¹¹¹ Ga. Code. Ann. §§ 40-6-270 - 273.1 (2018), § 40-6-279 (2018).

Georgia law imposes three requirements in addition to the aforementioned registration and insurance requirements for the operation of fully automated vehicles. First, the vehicle must be capable of following Georgia’s rules of the road at the time of its manufacture, and must be certified as in compliance with applicable safety standards by the manufacturer.¹¹² Second, the vehicle must be able to remain on the scene of the accident and the operator must be able to contact local law enforcement, as discussed previously.¹¹³ Third, if the vehicle’s automated driving system experiences failure that “renders the system unable to perform the entire dynamic driving task relevant to its intended operational design domain,” it must be able to achieve a “minimal risk condition.”¹¹⁴

Vehicle Occupant Safety Restraint Systems

It is the responsibility of the occupants of a fully autonomous vehicle to comply with legal requirements to use seat belts and child car seats.¹¹⁵

No Additional Restrictions can be Adopted

Georgia law states that AVs are governed by several particular sections of its state code, and no rules or regulations related to the operation of fully autonomous vehicles that limit the authority to operate such vehicles can be adopted.¹¹⁶

F. Michigan

Generally

Michigan has been one of the front runners in autonomous vehicle legislation. The state has been highly receptive to automobile and technology companies, inviting them to come and test their autonomous vehicles within state lines.

Michigan enacted SB 169 in 2013, which permits “testing of automated vehicles by certain parties under certain conditions.”¹¹⁷ This legislation opened the doors for companies to test their AVs in Michigan. The legislature supplemented SB 169 by enacting SB 995 and 996 in 2016, which allow for AVs to be operated without a person in the vehicle, under certain circumstances.

Definitions

In SB 995, there is a comprehensive definition section. There are three key actors that Michigan sees in the AV space.

1. “Motor vehicle manufacturer”: a person that has manufactured and distributed motor vehicles in the United States that are certified to comply with all applicable federal motor vehicle safety standards and that has submitted appropriate manufacturer identification information to the National Highway Traffic Safety Administration as provided in 49

¹¹² Ga. Code. Ann. § 40-8-11(a)(1) (2018).

¹¹³ Ga. Code. Ann. § 40-8-11(a)(2) (2018), §40-6-279 (2018).

¹¹⁴ Ga. Code. Ann. § 40-8-11(a)(3) (2018).

¹¹⁵ Ga. Code. Ann. § 40-8-11(a)(5)(b) (2018).

¹¹⁶ Ga. Code. Ann. § 40-8-11(a)(5)(c) (2018).

¹¹⁷ SB 169

CFR part 566. As used in this section, section 665a, and section 665b only, motor vehicle manufacturer also includes a person that satisfies all of the following:¹¹⁸

- a. This “person” (the company) complies with federal law, has tested AVs for 1,000,000 miles on public roads with a test driver, and \$10 million insurance.¹¹⁹
2. “Manufacturer of automated driving systems”: a manufacturer or subcomponent system producer recognized by the secretary of state that develops or produces automated technology or automated vehicles.¹²⁰
3. “Upfitter”: a person that modifies a motor vehicle after it was manufactured by installing automated technology in that motor vehicle to convert it to an automated vehicle. Upfitter includes a subcomponent system producer recognized by the secretary of state that develops or produces automated technology.¹²¹
4. “Operator”: a person, other than a chauffeur, who does either of the following:¹²²
 - a. Operates a motor vehicle upon a highway or street.
 - b. Operates an automated motor vehicle upon a highway or street.

Licensing and Registration

In SB 169, an individual operating an AV should be licensed to operate a motor vehicle.¹²³ Moreover, although not directly stated, the language in SB 169 suggests that an “operator” should be licensed under SB 169 as an “operator.”

The operator or corporation that owns the AV must register with the secretary of the state to receive a special registration plate. The language states that, “the secretary of state may issue a registration plate upon application and payment of the proper fee to an individual, partnership, corporation, or association...”¹²⁴

While registration is required under SB 169 to operate AVs, registration is not required for dealers owning AVs to move and operate an AV if the vehicle displays a special dealer-plate issued by the secretary of state.¹²⁵

Testing and Permitting

There is no permitting system present in Michigan to the best of our knowledge. This makes sense as Michigan is further ahead in AV legislation and only registration is needed in order to receive a special AV plate.

Under SB 995, prior to testing, the manufacturer of the AV needs to show proof of insurance to the Secretary of State of Michigan.

- Before beginning research or testing of an automated motor vehicle or any automated technology installed in a motor vehicle under this section, the manufacturer of automated technology performing that research or testing shall submit proof satisfactory to the

¹¹⁸ SB 995, Sec. 2b(7)

¹¹⁹ SB 995, Sec. 2b(7)(b)

¹²⁰ SB 995, Sec. 2b(5)

¹²¹ SB 995, Sec. 2b(11)

¹²² SB 169, Sec. 36(a)(b)

¹²³ SB 169, Sec. 665(2)(c)

¹²⁴ SB 169, Sec. 244(11)

¹²⁵ SB 169, Sec. 244(4)

secretary of state that the vehicle is insured under chapter 31 of the insurance code of 1956, 1956 PA 218, MCL 500.3101 to 500.3179.¹²⁶

Moreover, Michigan allows AV operators to test platooning technology on the streets and highways.¹²⁷ Lastly, Michigan allows AV operators to test without a person in the vehicle.¹²⁸

Insurance and Liability

In terms of insurance, Michigan requires “Motor vehicle manufacturers” to carry a \$10 million insurance policy before they can operate AVs on Michigan streets and highways.¹²⁹ Practically, the operator of an AV must provide proof of insurance to the secretary of state prior to operation and testing of an AV.¹³⁰

When it comes to liability, Michigan has a good body of legislation that addresses various parties in the AV space. Michigan has passed SB 998, which shields liability for mechanics and repair shops on fixing AVs. Moreover, SB 997 provides immunity for automated technology manufacturers when modifications are made without the manufacturer’s consent.

Conclusion

Overall, Michigan is an AV-friendly state. First, it clearly defines all players in the AV space, from small to big companies and manufacturers. Second, Michigan clearly outlines the liability of each player, which gives notice and clear expectations for what an operator, for instance, may or may not be liable for. Third, for those companies who wish to test platooning and AVs without people in the car, legislation permitting those activities are already in place in Michigan. Lastly, Michigan’s insurance requirement of \$10 million is on the higher end of what many states have required; however, this seems to be a protectionist policy, as it incentivizes its home manufacturers (i.e., GM) to stay in Michigan and keep the smaller players out of Michigan.

G. Ohio

Generally

Ohio introduced H.B. No. 608 (2016) to allow autonomous vehicles (AV) to be tested in the state.¹³¹ Ohio has also provided details for the adoption of this disruptive technology and created programs to build the framework with an Executive Order that created “Drive Ohio”.¹³² Ohio has focused on “smart infrastructure” and making themselves desirable in mainly two ways: minimal laws and easy testing standards. Ohio hopes to attract AV manufacturers with smart infrastructure, including a 35 mile stretch of highway designed and marketed for AVs. Manufacturers may find testing on public roads to be a more enticing option than testing on

¹²⁶ SB 995, Sec 665

¹²⁷ SB 995, Sec. 643(9)

¹²⁸ SB 996

¹²⁹ See *supra* note 3.

¹³⁰ SB 169, Sec. 665(1)

¹³¹ Ohio H.B. No. 608 (2016)

¹³² Ohio Exec. Order 2018-01 (2018)

private courses since testing on an AV-testing specific area of public highway could give manufactures real testing data in a potentially-safer environment.¹³³

Ohio has also recently announced a competition for a statewide framework to “guide current and future autonomous and connected vehicle deployment” and a “framework for data storage, management and security” amongst other things.¹³⁴ Ohio’s focus strikes some balance between being a front runner for AV manufacturers and thinking about constituent data and safety. This approach also blends private companies with the public sector by opening this competition to private data management, engineering, and security companies.¹³⁵ The winner will be the state’s new contractor for the installment of all the programs the framework requires.¹³⁶

Definitions

Autonomous Vehicles - “A motor vehicle that is equipped with technology that is capable of operating the motor vehicle without the active control of a human operator.”¹³⁷

Autonomous technology - “Technology that is installed on a motor vehicle and that has the capability to assist, make decisions for, or replace an operator.”¹³⁸

Proof of financial responsibility - “Proof of ability to respond in damages for liability, on account of accidents occurring subsequent to the effective date of such proof, arising out of the ownership, maintenance, or use of an autonomous vehicle in the amount of one million dollars because of bodily injury to or the death of any person, or injury to the property of others, in any one accident.”¹³⁹

Licensing and Registration

In order to operate an autonomous vehicle, one must have a valid driver’s or commercial driver’s license.¹⁴⁰ The vehicle itself must have an autonomous vehicle license plate displayed that is issued by the registrar department.¹⁴¹ There are no specialized permits required to be an autonomous test vehicle except the displayed license plate issued by the registrar of the licensing department.¹⁴²

Insurance and Liability

The manufacturer oversees an insurance policy that will sufficiently provide proof of financial responsibility through the testing under the House Bill. It requires the following:¹⁴³

“[a] manufacturer that registers an autonomous vehicle shall furnish and maintain proof of financial responsibility with respect to the autonomous vehicle by filing with the

¹³³ *Id.*

¹³⁴ Drive Ohio, Search for Smart Mobility Infrastructure Team Narrowed to Four Candidates, March 2018, <http://drive.ohio.gov/news/ohio-search-for-smart-mobility-infrastructure-team-narrowed-to-four-candidates/>

¹³⁵ *Id.*

¹³⁶ Drive Ohio, <http://drive.ohio.gov/>

¹³⁷ Ohio H.B. No. 608 (2016)

¹³⁸ *Id.* at 2.

¹³⁹ *Id.* at 3.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ Ohio H.B. No. 608 (2016)

registrar of motor vehicles one of the following: (a) A certificate of insurance as provided in section 4509.46 or 4509.47 of the Revised Code; (b) A policy of liability insurance, a declaration page or liability bond if the policy or bond complies with sections 4509.49 to 4509.61 of the Revised Code.”

Conclusion

Ohio is fostering AV development in the state with minimal regulations and a proactive effort to build the necessary infrastructure and cybersecurity framework. The potential successes of their various programs and whether the minimal licensing and testing requirements cause any concerns will be worth monitoring in upcoming years.

H. California

Introduction

The State of California has embraced AV testing in a manner that is consistent with a state that is home to a significant portion of the technology industry. This environment is highly favorable to testing and has been accompanied by a regulatory structure that provides a model for how state governments can permit and monitor AV development.

The California state government passed legislation in 2012 amending the state Vehicle Code to permit AV testing and designated the Department of Motor Vehicles (DMV) as the agency that would handle regulations and requirements.¹⁴⁴ These regulations have developed over the past few years and have seen significant expansions in 2018, when the DMV adopted three distinct types of AV licenses:

1. AV testing with a driver on board.
2. AV testing without a driver on board.
3. Public deployment of AVs, both with or without a driver on board.

The testing permits (#1 and #2) include a reporting requirement, stipulating that manufacturers must file yearly reports about their testing and file separate reports following any vehicle accident. This state analysis provides a comprehensive overview of California’s regulatory model and the information generated from AV testing.

Definitions

California’s laws and regulations provide many useful definitions for AVs, the testing process, and the deployment on public roads. An autonomous vehicle is “any vehicle equipped with autonomous technology that has been integrated into that vehicle.”¹⁴⁵ An operator is “the person who is seated in the driver’s seat, or, if there is no person in the driver’s seat, causes the autonomous technology to engage.” The manufacturer is the company that originally manufactures the vehicle or the person that modifies the vehicle to include autonomous technology.¹⁴⁶

¹⁴⁴ Cal. Veh. Code § 38750(c).

¹⁴⁵ Cal. Veh. Code § 38750(a)(2)(A).

¹⁴⁶ Cal. Veh. Code § 38750(c)(4) (defining operator); Cal. Veh. Code § 38750(c)(5) (defining manufacturer).

The DMV’s regulations for testing specifically create definitions for vehicles used in testing.¹⁴⁷ Testing is defined as “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.”¹⁴⁸ The Code also defines various terms such as Autonomous Mode, Autonomous Vehicle Test Driver, Conventional Mode (the vehicle when it is under the physical control of a person), Operational Design Domain (the domain in which an AV is designed to properly operate), Passenger, and Remote Operator.¹⁴⁹ The regulations are a good resource for a variety of definitions, primarily focused to the specifics of testing an AV.

The “disengagement” of an AV is defined as:¹⁵⁰

[A] deactivation of the autonomous mode when a failure of the autonomous technology is detected or when the safe operation of the vehicle requires that the autonomous vehicle test driver disengage the autonomous mode and take immediate manual control of the vehicle, or in the case of driverless vehicles, when the safety of the vehicle, the occupants of the vehicle, or the public requires that the autonomous technology be deactivated.

This term is used to specify what information an AV manufacturer must report to the DMV in their annual report.¹⁵¹

Deployment is defined as “the operation of an autonomous 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.”¹⁵² This definition is part of the permitting rules for an AV that is being deployed for public use on public roads, instead of simply being tested.¹⁵³

California’s Regulatory Approach to Autonomous Vehicles

The State of California (the State) has actively supported the development of AV technology. The regulatory structure provides an early example of what a comprehensive regulatory structure meant to foster that technology can look like.

The State formally created the framework for AV licensing and testing in 2012 legislation. Prior to that, the state had no prohibitions or regulations regarding the testing of AVs. In the 2012 legislation, the State said it “desire[d] to encourage the current and future development, testing, and operation of autonomous vehicles on the public roads of the state.”¹⁵⁴ Additionally, they hoped to “...[create] appropriate rules intended to ensure that the testing and operation of autonomous vehicles in the state are conducted in a safe manner.”¹⁵⁵ The State directed the DMV

¹⁴⁷ 13 CCR § 227.02(a)

¹⁴⁸ 13 CCR § 227.02(o).

¹⁴⁹ 13 CCR § 227.02.

¹⁵⁰ 13 CCR § 227.50.

¹⁵¹ *Id.*

¹⁵² 13 CCR § 228.02.

¹⁵³ 13 CCR § 228.

¹⁵⁴ 2012 Cal SB 1298 Section 1(c).

¹⁵⁵ *Id.*

to oversee and promulgate rules regarding the testing of AVs, including applications, certifications, standards, and insurance requirements.¹⁵⁶

The DMV conducted public workshops at the end of 2013 to solicit input on the testing and development regulations for AVs.¹⁵⁷ Their first permit for AV testing, which included a driver in the car, went into effect in September 2014.¹⁵⁸ The move towards permitting cars with no driver on board began in December 2015, when the DMV released a first draft of deployment regulations.¹⁵⁹ They subsequently went through various revisions and public comment periods, culminating in a final regulatory package in January 2018 which was approved by the Office of Administrative Laws in February of that year.¹⁶⁰ The additional permits went into effect on April 2, 2018.¹⁶¹ These new permits allow for a) testing of AVs with no human in the car and b) the deployment of publicly-used AVs, including those with and without a driver.

Licensing and Registration for Testing AVs

The DMV first permitted the testing of AVs with a human in the car in September 2014. Testing must be conducted by the AV manufacturer, which is defined as the company that originally manufactures the vehicle or the person that modifies the vehicles to include autonomous technology.¹⁶² The manufacturer must also comply with California's Employer Pull Notice Program, which involves the DMV reviewing the driving records of any company's new drivers.¹⁶³

In order to operate on public roads, the manufacturer must provide the DMV with:¹⁶⁴

- the make, model, and model year of the vehicle.
- the full vehicle identification number, or other identifying information if such is not available.
- the license plate number and state of issuance.

The AV must be registered in California during the test or have manufacturer or distributor plates (handled by Occupational Licensing for car dealers, manufacturers, distributors, and transporters).¹⁶⁵ The manufacturer must also file additional documents, including: the California Certificate of Title, Statement of Facts that certifies the AV will be operated for testing purposes only, and a brief of the technology and functional capabilities.¹⁶⁶ Certain vehicles are currently

¹⁵⁶ Cal. Veh. Code § 38750(d)-(e).

¹⁵⁷ "Testing of Autonomous Vehicles with a Driver" dmv.ca.gov.

<https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/testing>.

¹⁵⁸ *Id.*

¹⁵⁹ "Milestones in the Development of the Driverless Testing and Deployment Regulations" dmv.ca.gov.

https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/milestones_regulations.

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² Cal. Veh. Code § 38750(c)(5)

¹⁶³ 13 CCR § 227.24 (requiring AV manufacturers to comply with CVC 1801.1); Cal. Veh. Code 1808.1 (regulating Employer Pull Notice Program).

¹⁶⁴ 13 CCR § 227.16.

¹⁶⁵ "Application Requirements for Autonomous Vehicle Tester Program- Testing with a Driver" dmv.ca.gov.

https://www.dmv.ca.gov/portal/dmv/detail/vehindustry/ol/auton_veh_tester.

¹⁶⁶ *Id.*

excluded from the possibility of being licensed for testing, including trailers, motorcycles, and vehicles with a gross vehicle weight of 10,001 or more pounds.¹⁶⁷

The manufacturer must also provide the DMV with insurance information and evidence of the manufacturer's ability to pay any judgments against them (this is discussed further in the **Insurance & Liability** section).¹⁶⁸ The biennial fee for a manufacturer to become an AV tester is \$3,600 paid at the time of application and it is non-refundable. The fees cover a permit for 10 vehicles and 20 drivers/operators per application. An additional permit fee of \$50 is required to add an additional 10 vehicles and 20 drivers/operators to a testing permit.¹⁶⁹

The DMV reviews applications for testing within 10 days of submission and will “issue a Manufacturer's Testing Permit after determining that the application is sufficient.”¹⁷⁰ If the application is deemed insufficient, the DMV will notify the manufacturer and ask for corrections.¹⁷¹ The DMV will deny the application only in the case of a manufacture failing to make the corrections after being given a reasonable opportunity to do so (which is not defined in the regulation).¹⁷²

The regulations also specify a variety of reasons the manufacturer’s Deployment Permit can be revoked.¹⁷³ This happens if the manufacturer fails to maintain the necessary insurance, violates California’s AV laws, commits an act or omission that creates a safety risk to the public, or fails to make necessary disclosures.¹⁷⁴

Permitting for AV Testing

Testing permits with a driver

The DMV has issued the permit for testing an AV with a driver since September 2014.¹⁷⁵ The requirements for testing AV in California are as follows:¹⁷⁶

- The testing must be performed by the manufacturer of the vehicle.
- The AV must be operated by a driver who is authorized and certified by the manufacturer
- The manufacturer must maintain a training program for its autonomous vehicle drivers and provide an outline and description of the program with the DMV.
- The DMV permit must be renewed once per year.

As of May 10, 2018, there are 53 AV Testing Permit holders.¹⁷⁷

Driverless testing permit

¹⁶⁷ 13 CCR § 227.28.

¹⁶⁸ 13 CCR § 227.04.

¹⁶⁹ 13 CCR § 227.30.

¹⁷⁰ 13 CCR § 227.20(a).

¹⁷¹ 13 CCR § 227.20(b).

¹⁷² *Id.*

¹⁷³ 13 CCR § 227.42.

¹⁷⁴ 13 CCR § 227.42.

¹⁷⁵ “Testing of Autonomous Vehicles with a Driver” dmv.ca.gov.
<https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/testing>.

¹⁷⁶ 13 CCR § 227.42.

¹⁷⁷ “Testing of Autonomous Vehicles with a Driver” dmv.ca.gov.
<https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/testing>.

The DMV began permitting the testing of AVs without a driver since April 2018.¹⁷⁸ A manufacturer must do the following to conduct driverless testing:¹⁷⁹

- Certify that local authorities where AVs will be tested have been provided written notification.
- Certify the AV complies with requirements including communication link between the vehicle and remote operator, a process to communicate between the vehicle and law enforcement, and an explanation of how the manufacturer will monitor test vehicles.
- Submit a copy of a law enforcement interaction plan.
- Certify the autonomous test vehicle meets all Federal Motor Vehicle Safety Standards (FMVSS) or provide evidence of an exemption from the National Highway Traffic Safety Administration (NHTSA).

A law enforcement interaction plan must include “information that the manufacturer will make available to the law enforcement agencies and other first responders in the vicinity of the operational design domains of the autonomous vehicles that will instruct those agencies on how to interact with the vehicle in emergency and traffic enforcement situations.”¹⁸⁰

Test Driver Requirements

The test driver of a manufacturer’s AV must meet the following requirements:¹⁸¹

- They must either be in immediate physical control of the vehicle or actively monitoring it.
- They must be an employee, contractor or designee of the manufacturer.
- They shall obey all provisions of the Vehicle Code and local regulation applicable to the operation of autonomous and conventional motor vehicles, except when necessary for the safety of the vehicle's occupants and/or other road users.
- They must know the limitations of the vehicle's autonomous technology and be capable of safely operating the vehicle in all conditions under which the vehicle is tested on public roads.

Manufacturers must provide their drivers with a Test Driver Training Program (Training Program) prior to operation.¹⁸² This Training Program must include:¹⁸³

- Instruction on the automated driving system technology to be tested in the manufacturer's vehicles, including behind the wheel instruction.
- Defensive driver training, including practical experience in recovering from hazardous driving scenarios.
- Instruction that matches the level of the AV driver's experience operating the specific type of automated driving system technology consistent with the current technical level.

The manufacturer must comply with certain requirements to license their test driver, including giving the DMV the driver’s name, driver’s license number, and jurisdiction of issuance in

¹⁷⁸ “Milestones in the Development of the Driverless Testing and Deployment Regulations” dmv.ca.gov. https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/milestones_regulations.

¹⁷⁹ 13 CCR § 227.38.

¹⁸⁰ 13 CCR § 227.38(e).

¹⁸¹ 13 CCR § 227.32.

¹⁸² 13 CCR § 227.36.

¹⁸³ 13 CCR § 227.36(a)-(c).

writing.¹⁸⁴ The driver's name must also be included in the permit granted by the DMV.¹⁸⁵ The manufacturer must also have certified to the DMV that:¹⁸⁶

- The autonomous vehicle test driver has been licensed to drive a motor vehicle for the three years immediately preceding application to the department; and, during that time, the driver has avoided certain driving-related violations.
- The autonomous vehicle test driver has completed the manufacturer's autonomous vehicle test driver training program.

Testing Reporting Requirements

A manufacturer that receives a DMV testing permit has certain reporting requirements that they must comply with. These requirements include an annual report summarizing all times an AV had to disengage, as well as a report any time an AV gets in an accident.

The manufacturer must file an annual report with the DMV that summarizes every time an AV had to disengage.¹⁸⁷ Disengagement is defined as a deactivation of autonomous technology due to failure of the technology, when a driver had to intervene in the operation of the car, or when the technology had to be deactivated (for a vehicle with no driver in it).¹⁸⁸ The annual report must include:¹⁸⁹

- A summary of disengagements:
 - An indication of whether the test AV is capable of operating without a driver,
 - The circumstances or testing conditions at the time of the disengagement including:
 - The location.
 - Whether the AV was operating with or without a driver at the time of the disengagement.
 - A description of the facts causing the disengagements, including: weather conditions, road surface or traffic conditions, construction, emergencies, accidents or collisions...
 - The party that initiated the disengagement (autonomous technology, autonomous vehicle test driver, remote operator, or passenger).
- ...The annual report shall include the total number of miles each AV was tested in autonomous mode on public roads each month.

The manufacturers must also file a report any time an AV is involved in a collision on a public road arising from the AV's operation and resulting in the damage of property, bodily injury, or death.¹⁹⁰ The report must be filed within 10 days after the collision.¹⁹¹ In the report, the

¹⁸⁴ 13 CCR § 227.34(a).

¹⁸⁵ *Id.*

¹⁸⁶ 13 CCR § 227.34(b).

¹⁸⁷ 13 CCR § 227.50.

¹⁸⁸ *Id.* at (b).

¹⁸⁹ 13 CCR § 227.50(b)(3)-(4).

¹⁹⁰ 13 CCR § 227.06.

¹⁹¹ 13 CCR § 227.06.

manufacturer shall identify all persons involved in the collision and give a full description of how the collision occurred.¹⁹²

Manufacturers have indicated a variety of issues in their annual disengagement reports.¹⁹³ These include difficulties sensing the environment around the car, problems with how the vehicles maneuver on the road, and hardware and software failures. Some examples:¹⁹⁴

- Failure to see a “no right on red” sign (Waymo);
- Difficulty reacting to illegal / unexpected maneuvers by other drivers (Delphi);
- Uncomfortable breaking for test driver (Driver.ai);
- Failure to analyze all the data the AV collects in real time as it approached the intersection (GM Cruise Automation);
- The AV did not always observe proper following distance (Tesla).

Licensing and Registration for AV Deployment

In April 2018, the DMV opened permit applications for AV deployment for public use (Deployment Permits).¹⁹⁵ These permits include AVs both with and without a driver.¹⁹⁶ This allows AV usage by members of the public, defined as people who are not employees, contractors, or designees of a manufacturer.¹⁹⁷ A publicly-deployed AV is not permitted to be used for commercial purposes, including the charging of fees for transportation services.¹⁹⁸

The DMV’s process for reviewing applications for the Deployment Permit must be completed within 30 days of the receipt of the application, as opposed to 10 days for testing permits.¹⁹⁹ The DMV will grant the deployment permit if the manufacturer has “conducted testing necessary to satisfy the department that the subject autonomous vehicles are safe to operate on public roads.”²⁰⁰

The DMV can refuse an application for the Deployment Permit if a manufacturer violates any provision of the California laws on AVs, or commits an act or omission that creates a safety risk to the public.²⁰¹ If the DMV refuses an application, they must provide written notice to the manufacturer.²⁰² The regulations also permit an appeals process where the manufacturer can make a request for review by the DMV.²⁰³

Permitting of AV Deployment

¹⁹² 13 CCR § 227.06.

¹⁹³ “California DMV Reporting Requirement Highlights AV Shortcomings” GovTech.com. <http://www.govtech.com/fs/automation/California-DMV-Reporting-Requirement-Highlights-AV-Shortcomings.html>.

¹⁹⁴ *Id.*

¹⁹⁵ “Milestones in the Development of the Driverless Testing and Deployment Regulations” dmv.ca.gov. https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/milestones_regulations.

¹⁹⁶ *Id.*

¹⁹⁷ 13 CCR § 228.02(c).

¹⁹⁸ 13 CCR § 228.02(c).

¹⁹⁹ 13 CCR § 228.08.

²⁰⁰ 13 CCR § 228.08.

²⁰¹ 13 CCR § 228.16(a)-(b).

²⁰² 13 CCR § 228.16(c).

²⁰³ 13 CCR § 228.18.

The Deployment Permit covers both AVs with and without a driver. A manufacturer must comply with a long list of requirements to deploy an AV to the public. Some of the requirements require the manufacturer to:²⁰⁴

- Identify the domain in which the AV is designed to operate and certify that it is capable of doing so. The manufacturer must also identify how the AV should react if outside of its domain.
- Identify commonly-occurring concerns such as black ice, and wet road surfaces.
- Certify the vehicle is equipped with an autonomous vehicle data recorder and the technology is designed to detect and respond to roadway situations in compliance with California Vehicle Code and federal safety standards.
- Certify the vehicle meets current industry standards to help defend against, detect and respond to cyber-attacks, unauthorized intrusions or false vehicle control commands.
- Certify the manufacturer has conducted test and validation methods and is satisfied that the vehicle is safe for deployment on public roads.
- Submit a copy of a law enforcement interaction plan.

If the deployed vehicle does not have a driver in it, there are additional requirements that the manufacturer must follow, including:²⁰⁵

- A communication link between the vehicle and the remote operator (if any) to provide information on the vehicle's location and status and allow two-way communication between the remote operator and any passengers.
- The ability to display or transfer vehicle owner or operator information in the event that the vehicle is involved in a crash, collision, or accident or a need to notify law enforcement.
- Any vehicle that is not equipped with manual controls such as a steering wheel, brake pedal, and accelerator pedal, must comply with all applicable Federal Motor Vehicle Safety Standards or prove that an exemption has been approved.

A manufacturer must amend their applications to the DMV within 10 days if any of the following changes occur:²⁰⁶

- The AV can operate at a new level of autonomy, as defined by SAE International's levels of autonomy.
- The AV can operate on a roadway type that is different than when approved in the permit.
- The AV can obtain a maximum speed that is 15 miles per hour or more above the listed speed from the application.
- The AV can operate in new geographic areas.
- The removal of any commonly-occurring or restricted conditions on the AV that were identified in the approved permit.

If manufacturer with a deployment permit identifies a safety-related defect in their AV technology that creates an unreasonable risk, they must provide the department a copy of the

²⁰⁴ 13 CCR § 228.06.

²⁰⁵ 13 CCR § 228.06(b)

²⁰⁶ 13 CCR § 228.10.

report prepared in compliance with the timeframe and requirements specified in 49 CFR Part 573 (the National Highway Traffic Safety Administration’s Defect and Noncompliance Responsibility and Reports).²⁰⁷

The regulations also specify a variety of reasons the manufacturer’s Deployment Permit can be revoked. Revocation can occur with 30 days’ notice if the manufacturer failed to maintain the necessary insurance, the manufacturer submitted incorrect or misleading information in their application, the manufacturer fails to amend their application when needed, or the manufacturer fails to comply with the regulations.²⁰⁸

The deployment permits do not have reporting requirements attached to them. This may require further research to examine the motivations behind the DMV for not including the requirement.

Insurance & Liability for Testing & Deployment

The manufacturer must provide the DMV with evidence of financial responsibility for the operation of the vehicle in the amount of \$5,000,000.²⁰⁹ The requirements are the same for both testing and deployment.²¹⁰ This can be satisfied with an Instrument of Insurance, a surety bond, or a Certificate of Self-Insurance.²¹¹ Each method of satisfying the requirement includes additional specifications for that type of financial responsibility. A manufacturer is also required to provide evidence of their ability to respond to damages under the state’s Vehicle Code in addition to other insurance obligations.²¹² A manufacturer is required to maintain in its autonomous test vehicles a copy of the proof of insurance or copy of the bond in the AV at all times.²¹³

Additional Provisions of Law

The following language from California laws and regulations are highlighted due to the fact that very few states currently address cybersecurity and information privacy in their AV laws.

Cybersecurity Requirement

The DMV requires a deployed AV to have “[a] certification that the autonomous vehicles meet appropriate and applicable current industry standards to help defend against, detect, and respond to cyber-attacks, unauthorized intrusions, or false vehicle control commands.”²¹⁴

Information Privacy

The regulations of the Deployment Permit addresses information privacy. A manufacturer must either:²¹⁵

²⁰⁷ 13 CCR § 228.12.

²⁰⁸ 13 CCR § 228.20.

²⁰⁹ Cal. Veh. Code § 38750(b)(3).

²¹⁰ 13 CCR § 227.06 (for deployment of AVs)

²¹¹ 13 CCR § 227.08 (Instrument of Insurance); 13 CCR § 227.06 (Surety Bond); 13 CCR § 227.06 (Certificate of Self-Insurance).

²¹² 13 CCR § 227.06.

²¹³ 13 CCR § 227.14.

²¹⁴ 13 CCR § 228.06(a)(10).

²¹⁵ 13 CCR § 228.24(a).

- Provide a written disclosure to the driver of an AV, and for AV that do not require a driver, the passengers of the AV, that describes the personal information collected by the autonomous technology that is not necessary for the safe operation of the AV and how it will be used; or,
- Anonymize the information that is not necessary for the safe operation of the AV.

If the information is not anonymized, the manufacturer must obtain written consent from the user of the AV to collect that information.²¹⁶ The manufacturer cannot deny someone the use of the AV because they refuse to give that written consent.²¹⁷

California Conclusion

California stands out among various states with their combination of pro-AV laws and a detailed regulatory structure. While other states hoping to encourage AV deployment choose to adopt few regulations, California has instead extensively expanded their licensing and permitting program for AVs.

The California model provides many takeaways for a state government to consider for AVs, including:

- Reporting requirements can generate substantial the information about ways AVs behave on public roads and interact with infrastructure.
- The Deployment Permit model was enacted in April 2018, so it is worth watching how it develops.
- California has a \$5 million insurance requirement, which is similar to many other states.
- The DMV regulations specify certain privacy and cybersecurity requirements. While little detail is provided, these are likely important issues to think about with any potential deployment of AVs.

California’s comprehensive regulatory structure is most applicable for a state that wants to foster AV usage while also building the legal parameters of what that AV future will look like. If a state hopes to follow that direction, California’s many rules and regulations will be a useful guide.

III. Recommendations for Washington

A. Executive Order, Legislation, or Regulation

1. Legislation

What is it?

Legislation is the enacting of laws by a legislative body through a lawmaking process. The process involves evaluating, amending, and voting on the proposed law. A bill is sponsored by a member of the Senate or the House of Representatives, then it will go to a committee for hearing in its respective house. If the committee passes the bill, it will go on to open session. If it passes there it continues onto the Rules Committee, where it is again passed for a second, and third reading. At the third reading it can be voted on. Once it passes either the House or the Senate, it

²¹⁶ 13 CCR § 228.24(b).

²¹⁷ 13 CCR § 228.24(c).

continues to the other house following the same procedure. Once it has successfully passed both houses, it is sent to the Governor. The Governor can sign the bill into law or veto all or part of it. Once it is signed, it becomes law.

New York's law has been seen by some as heavy-handed with its AV legislation, which has likely limited its ability to attract AV manufacturers. SB 2005 sets out strong insurance and permitting standards, but lacks in its definitions, licensing and registration sections²¹⁸. Legislation that is more even-handed such as California's has been better received by AV manufacturers.

Advantages

The advantages of the legislative process is that there are many opportunities to revise legislation. A law has been well thought out by the end of the legislative process, and many experts and stakeholders have had a chance to have their voices heard on the law coming into effect.

Disadvantages

The disadvantages of this process are the amount of time that this process takes (it can be many years before a bill is even referred to committee), the bill can be vetoed or rejected at many stages, and it must be passed through both houses, along with any amendments made in either house.

2. Regulation

What is it?

A regulation is an official rule created by a government agency to which the legislature delegated some legislative power for a particular purpose. This means that a specific agency can create law related to the goals of their agency and furthering what their agency was created to do. Once the agency has proposes a regulation, the public has a chance to influence the final rule through a notice and comment process. The agency takes those comments into account in the final promulgation of the rule.

California is an example of a state that has used regulation and legislation to create a strong blend of laws that have attracted all major AV manufacturers to the state. California began with legislation that then required regulation from the Department of Motor Vehicles, allowing adaptation to easily change from public comments and expanding goals for the AV program.²¹⁹

Advantages

The advantages of regulation are that the relevant agency is staffed by experts on the subject of regulation, and relationships with the members of the public who will be affected by the

²¹⁸ NY S.B. 2005 (2017)

²¹⁹ Cal. Veh. Code § 38750(c).

regulation. The agency will be able to use their resources to research a problem and create a regulation that will appropriately and realistically remedy the problem the agency is trying to address. Additionally, the notice and comment process allows interested parties to assess the potential effects of the proposed regulation and suggest changes that might make the regulation more workable.

Disadvantages

An agency may have a narrowly tailored view of the problem or reason for the regulation because outside sources may not be being contacted or other solutions may not be examined. This is solved partially by the notice and comment period and regular legislative oversight of the relevant agency. The process of promulgating a regulation can be lengthy, since a regulation takes time to create, edit, improve, and finalize.

3. Executive Order

What is it?

An executive order is a formal order that is issued by the State Governor. It requires agencies statewide to complete actions incorporated in the executive order. An executive order can have the force and effect of law.

Arizona, thus far, has only issued executive orders. It created a thriving AV testing economy, but it leaves prescribes few details for insurance, liability, and permitting.²²⁰ Ohio also issued an executive order to create the “Drive Ohio” program which will focus on cybersecurity, data management and privacy. This leaves a lot to be desired with those areas of AV technology, but the Ohio H.B. 608 establishes licensing, insurance, and permitting requirements.²²¹ The executive order working in tandem with the legislation is working well for Ohio as their AV programs take off.

Advantages

An executive order can be immediately enacted and only requires the Governor’s approval. It is an important tool when the state government needs to address an important issue, but requires more information, expertise, or time to allow for a measured legislative or regulatory solution.

Disadvantages

A disadvantage of an executive order is that is only one point of view, the Governor’s. Although the Governor’s staff and the staff of executive agencies are likely to contribute to the drafting of the executive order, the process does not include much public oversight, nor much debate about the merits of implementing one policy or another.

²²⁰ AZ Exec. Order, Advancing Autonomous Vehicle Testing and Operating; Prioritizing Public Safety, 2018-04.

²²¹ Ohio H.B. No. 608 (2016).

4. Recommendation for Washington

We recommend Washington consider the benefits and concerns that aforementioned legislation, regulations, and executive orders offer. Executive orders quickly implement policy goals, but a lengthier stakeholder process may benefit this technology that has future implications for safety on public roads. Regulations vary based on how authority is delegated and how an agency approaches the process. We found legislation is the best process for getting creating policy that is inclusive of many stakeholders and representative of the broader public interest, but at a cost of time, as a slow way to respond specific challenges that arise with an emerging technology.

B. Questions for Washington State to Consider

The survey of various state approaches to autonomous vehicle (AV) technology highlights a range of policy options for Washington. Under current state law, Washington is highly permissive to AV testing, but where the state will go next remains undetermined.

One central question that underlies all AV policy considerations: *What type of AV state does Washington want to be?* Do we want the AV industry to see Washington as the premiere place to test? Alternatively, is the primary public policy goal to prevent a tragic situation like the pedestrian death in Tempe, Arizona from happening here? We can apply a range of policy frameworks to AV technology. Ultimately, questions about AV testing should be guided by a clear vision for what role Washington wants this technology to serve.

As the AV Work Group contemplates various regulatory options, the first wave of questions about AV technology should be focused on understanding what role AV development should have within Washington and what parameters, if any, should be placed on testing. The second wave of questions likely focuses on specifics of AV technology as it becomes more prevalent on public roads. The second wave of questions will also include other states pursuing various strategies and providing potential lessons for Washington to consider.

The First Wave of AV Questions

As testing becomes increasingly common throughout the country, including under Washington law, the initial questions currently facing the State are about the parameters of testing and ensuring that the law is ready to address the new technology.

Are Washington's permitting and licensing requirements enough?

Washington's current self-certification requirements for testing in the state establish a fairly permissive system for AV testing. This permitting system is more formal than that of Georgia, a state that does not have a testing permitting system set up and simply allows the testing to occur—both states, however, remain deferential to letting the AV industry on public roads.²²² California maintains more specific requirements, mandating the DMV review and approve

²²² Patrick Hickey, "Self driving cars make their way to Georgia," Southern Political Report Online, January 31, 2018. <https://www.southernpoliticalreport.com/2018/01/31/self-driving-cars-make-their-way-to-georgia/>

testing permits.²²³ As the work group considers how the State should balance the desire to encourage AV testing and the need to protect public safety, other states can provide valuable examples for how to structure the permitting requirements to either be more or less permissive.

States can also require reports from AV manufacturers as part of their permitting and licensing. California requires an annual report covering every time an AV disengaged and also requires specific reports about any crash.²²⁴ Adding these reports to Washington law is worth considering due to the potential insight they provide about the successes and challenges of testing. Furthermore, if Washington is interested in pursuing AV deployment in future years, these reports could potentially provide metrics for assessing AV readiness.

Are Washington's insurance requirements enough?

Washington's insurance requirement for AV testing is a minimum of \$50,000, which is lower than other states. For example, California and New York require \$5 million in insurance, Michigan requires \$10 million in insurance, and Georgia requires \$750,000 for AVs with fewer than 12 passengers.²²⁵ It is worth considering whether the specific nature of AVs should have an insurance requirement different than a standard vehicle on Washington roads.

What definitions should laws use for AVs?

The Governor's Executive Order and subsequent legislation have not defined key terms such as "autonomous vehicles," "drivers," and many other terms related to this new technology. Many states have provided AV specific definitions in their laws and regulations. As the work group surveys the work of other states, specific attention should be paid to well-written definitions that are applicable to the State's desired regulatory structure.

How much does Washington want to differentiate between driverless testing and testing with a driver?

Washington makes certain differentiations between driverless testing and testing with a driver, but it is worthwhile to look at the specific standards that other states have used for these categories.²²⁶ Certain states have different requirements for each type of testing. For example, California has set up specific regulations dictating test driver qualifications in a car with a driver and requirements for a communication link between a driverless vehicle and a remote operator.²²⁷ Washington may find this differentiation useful, for more parameters around testing.

The Second Wave of AV Questions

The second wave of questions will likely focus on specifics of AV technology as it becomes more prevalent on public roads. The second wave of questions will also be generated as other states regulate AV technology differently, which will provide potential lessons for Washington.

Does Washington want to permit public usage of AVs?

²²³ 13 CCR § 227.20(a).

²²⁴ 13 CCR § 227.50 (annual reports); 13 CCR § 227.06 (crash reports).

²²⁵ Cal. Veh. Code § 38750(b)(3) (California); SB 2005, Part FF (New York); SB 996, note 3 (Michigan); Ga. Code. Ann. § 40-8-11(4) (2018) (Georgia)

²²⁶ Executive Order 17-02, June 7, 2017.

²²⁷ 13 CCR § 227.32 (AV with driver); 13 CCR § 227.38 (driverless AV).

The State may want to monitor the successes and challenges of California’s Public Deployment permit for AVs. It was only introduced in April 2018, so as manufacturers receive the permit, these lessons can help guide the conversation about AV deployment in other states. Additionally, the collection of AV test information through requirements such as annual reports may help provide valuable information on assessing whether AVs are ready for public use. As such, that is one factor for the work group to keep in mind when discussing AV reporting requirements.

Does Washington want to impose cybersecurity & privacy standards?

As AV technology becomes more common, so will questions about the cybersecurity and the protection of user privacy. Few states focus on this topic, but the standards need attention. In California, regulations include privacy requirements that protect passenger information not relevant to the AV’s safe operation.²²⁸ The regulations also include a requirement that AVs meet industry standards for cybersecurity.²²⁹ Ohio has designed “Drive Ohio” a program that has created a competition for private companies to design a state framework for areas of AV technology including cybersecurity, data management and privacy. The winner of the competition will win the contract to actually implement those programs. The work group may want to solicit industry and public input on what privacy and cybersecurity requirements will best fit the State’s desired levels of safety.

What works in other states?

This paper covered a range of approaches that other states are taking towards AV testing: permissive with minimum requirements (Georgia), permissive with an extensive regulatory structure (California), strict with a variety of regulatory requirements (New York), and many other states in between those models. In the next few years, which of these states will attract the AV industry? Where will AVs successfully be deployed on public roads? What are the resulting impacts on public safety? The results of various states’ approaches will potentially yield many possible ideas for how to shape and amend Washington’s AV strategy

IV. Conclusion

The various state regulatory models have benefits and concerns that Washington State should consider for AV technology. In the coming years, these various models will provide lessons on the successes and failures of certain regulatory models. The initial questions that the State faces concern what requirements should be in place when an AV is put on a public road. Specifically, these questions break down into the following categories:

- Registration and Title – does the AV manufacturer have to register with the state and report information on accidents or other testing metrics?
- Insurance and Liability – what insurance is the manufacturer required to have when they put an AV on the road?
- Permitting and Testing - what do manufacturers need demonstrate before they are allowed to test and operate AV on public roads?

²²⁸ 13 CCR § 228.24(a).

²²⁹ 13 CCR § 228.06(a)(10).

- Rules of the Road – does the AV have to follow existing rules of the road or are they exempted from certain laws?

Washington, in considering these questions, addresses the core topic of the best public policy for AV technology. The input provided by the public and experts helps the work group understand the appropriate balance between encouraging innovation, attracting AV companies, and protecting public safety. As Washington State decides what ultimately serves the public interest, the regulatory models from other states can guide us on how to best achieve these goals.

V. Compendium: Model Legislation

Compendium of Other Model and Draft Legislation

In addition to surveying the executive orders, legislation, and regulations of several states, our research also included examination of three models or drafts of comprehensive autonomous vehicle legislation, which are attached.

- I. Attachment 1 is the Uniform Law Commission’s (ULC) updated draft of its Highly Automated Vehicles Act model legislation from February 2018. The ULC’s model legislation gives states a menu of options to choose from for legislative provisions.
- II. Attachment 2 is a model bill from Self-Driving Coalition for Safer Streets from January 2018 that envisions the unfettered driverless operation of fully autonomous vehicles on public roads.
- III. Attachments 3 and 4 are the executive summary and draft itself of a bill drafted by the 2016-2017 Technology Law and Public Policy Clinic autonomous vehicles team. That bill directly addressed some areas of autonomous vehicle policy that Washington Law does not currently address. It predated Executive Order 17-02 and HB 2970, and demonstrates thorough contemplation of policy issues.

A. Uniform Law Commission Model Legislation

The ULC legislation seeks to “explicitly accommodate and specifically regulate automated driving,” with or without a human operator.²³⁰ The February 2018 version of the ULC model legislation does the following²³¹:

- Includes definitions of more than a dozen key autonomous vehicle operation-related terms.
- Establishes when a person is required to hold a driver’s license.
- Sets Vehicle Registration standards.
- Requires that autonomous vehicle equipment be “reasonably safe.”
- Mandates insurance while allowing states to set those standards.
- Imposes penalties for failure to comply with provisions of the Act.

²³⁰ Highly Automated Vehicles Act, Uniform Law Commission, February 2018.

²³¹ *Id.*

B. Legislation from Self-Driving Coalition of Safer Streets (AV Industry)

The Self-Driving Coalition for Safer Streets is a coalition started by industry players such as Ford, Lyft, Volvo Cars, Uber, and Waymo. Their model legislation goes beyond enabling testing, and instead envisions fully autonomous vehicle operation. It includes the following provisions:

- Definitions for terms such as “fully autonomous vehicle,” “human driver,” and “autonomous vehicle network.”
- Licensing and insurance provisions that rely on existing state structures.
- Requires that autonomous vehicles remain on the scene of accidents and report accidents as required by state law.
- Allows on-demand autonomous vehicle networks to operate under existing state provisions.²³²

C. 2016-2017 Autonomous Vehicle Team Draft Legislation, Technology Law and Public Policy Clinic, University of Washington School of Law

The work of the 2017-2018 Clinic Autonomous Vehicle Team was influenced by legislation drafted by the 2016-2017 Autonomous Vehicle Team. This draft legislation included:

- Definitions for terms such as “other autonomous vehicle entity,” dynamic driving task,” and “self-driving system.”
- Codification of the Society of Automotive Engineers (SAE) levels of autonomy.
- A multi-agency committee for safety and cybersecurity.
- Procedures for issuing vehicle testing permits.
- Rules for operating vehicles based on their level of autonomy.
- Privacy and data security provisions.
- Detailed insurance and liability provisions.
- Exemption for people under the influence who are being transported by a highly automated vehicle.²³³

²³² Model Legislation for Autonomous Vehicles (2018), Self-Driving Coalition for Safer Streets, January 2018.

²³³ 2016-2017 University of Washington School of Law, Technology Law & Public Policy Clinic, Autonomous Vehicle Group, Draft Autonomous Vehicle Legislation.