



Division of Legislative Services
RESEARCH REPORT



Autonomous Vehicles: Legislative Developments across U.S. States

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Executive Summary

Since the creation of the first automobile in 1886, Benz Patent Motorwagen, which was a three-wheeled vehicle powered by an internal combustion engine, the automobile industry has redefined what functionalities an automobile should have, and more recently, what or who controls the vehicle's functions. Previously, the responsibility of the driving functions for a motor vehicle have always been defined as the human who is physically present behind the wheel of that motor vehicle. However, with recent advancements in technology such as cameras, radar and lidar sensors, and high computing software such as artificial intelligence, almost all driving functions for certain vehicles have gradually shifted to an automated driving system.

Autonomous features that are currently available in many motor vehicles today such as automatic emergency braking and lane-keep assist were created to improve safety by reducing human error, a factor the National Highway Traffic Safety Administration (NHTSA) estimates resulted in the loss of [40,990 people in 2023](#). Autonomous features, according to the [American Automobile Association](#) (AAA), may prevent 37 million crashes, 14 million injuries, and 250,000 deaths over the next 30 years. While significant academic literature exists that illustrates a direct relationship between autonomous features and improvement in safety, few studies examining the safety of self-driving vehicles that operate without human control have been conducted.

The introduction of this technology has the potential to reshape commerce, transportation industry, and the legal frameworks surrounding insurance and traffic safety. The technology is also relatively new which has raised various safety concerns and has driven states to redefine the parameters of insurance claims and liabilities. Furthermore, the technology has caught the attention of the commercial and transportation industry, with autonomous freight and robotaxi fleets already in operations in select jurisdiction.

This expansion of autonomous vehicles has driven many states to enact legislation addressing the many challenges with the testing and deployment of autonomous vehicles. Among the various legislation that have been passed, states have defined what is an autonomous vehicle, who is deemed the driver of autonomous vehicle, what insurance and liability coverages are required, what safety protocols must be followed, and how interactions of autonomous vehicles should be with first responders.

This research report explores how autonomous vehicles are defined and what technology is necessary that enables autonomous vehicles to function without a human driver present. In doing so, the report identifies states that have enacted legislation addressing or regulating autonomous vehicles, which includes states that have authorized testing of autonomous vehicles and authorized commercial deployment of autonomous vehicles. In addition, the report compares how states define liability coverages and what safety protocols states are utilizing to ensure the safe testing or deployment of autonomous vehicles. Furthermore, the report also examines autonomous trucks and identifies what states have authorized testing or deployment of autonomous trucks.

Delaware Activities on Autonomous Vehicles

Executive Order 14

In September 2017, Governor John Carney issued [Executive Order 14](#) establishing an [Advisory Council on Connected and Autonomous Vehicles](#) consisting of 13 members from state agencies, academia, and the private sector. The Council was directed to develop recommendations for innovative tools and strategies that can be used to prepare Delaware's transportation network for automated vehicles. Following the issuance of Executive Order 14, the council met monthly from December 2017 to July 2018 and divided into 4 subcommittees each focusing on different areas relating to automated vehicle deployment. In September 2018, the Council published their [report](#) highlighting several recommendations including recommendations on data privacy, infrastructure, and potential state legislation.

Senate Bill 258 and Senate Bill 46

[SB 258](#) introduced in 2024 prohibited any autonomous vehicle with a weight of 10,001 pounds or over from being operated on Delaware's roads for testing purposes without a human safety operator being physically present within the autonomous vehicle. Senate Substitute 1 of the bill also required that the human safety operator hold a valid commercial driver license that is valid for the vehicle being driven. Additionally, SS 1 clarified that a violation of this act would render the vehicle's registered owner responsible for paying the fines and directs the Department of Transportation (DelDOT) to submit a report evaluating the performance of autonomous vehicle technology. SB 258 passed the Senate but was not brought to the House floor for consideration.

Similarly, [SB 46](#) introduced in 2025 prohibited the testing or operation of an autonomous heavy-duty commercial vehicle from being tested without a human driver present in the vehicle.

Both bills have failed to pass and have been met with criticism from the Autonomous Vehicles Industry Association for not providing any legal path towards autonomy of heavy-duty vehicles. During the hearing of SB 46 in the [House Transportation Committee](#), members of the committee expressed support of the bill raising concerns around the potential decline in employment from the trucking industry and safety concerns on allowing full autonomy of trucks in Delaware, given Delaware's unique climate and road conditions. Opponents of both bills expressed that the bills would stifle innovation and that the bills don't incorporate any legal or regulatory framework for a future where testing could be conducted without a human operator physically present in the vehicle.

University of Delaware and DelDOT

In April 2017, the University of Delaware collaborated with Delaware's Department of Transportation to produce a [report](#) analyzing the impact and readiness of Delaware in relation to the deployment or testing of autonomous vehicles.

Understanding Automated / Autonomous Vehicles

Motor vehicles today are much more advanced than 10 years ago due to the advancement of technology and the utilization of technology within these vehicles. The average car today contains many technological components that offer drivers convenience and security. Features like automatic emergency braking, lane-centering assist, adaptive cruise controls, and surround-view cameras have shifted some of the driving tasks from the human driver to a computerized system, ultimately giving motor vehicles more autonomy. The majority of vehicles currently on public roads are able to achieve some degree of autonomy but still require, of varying degree, human control.

However, technological advancement has enabled many automakers to develop systems capable of full driving automation, which is the control of all **dynamic driving tasks**¹ (DDT) without any input from a conventional human driver under specific **operational design domains**² (ODD). This variation in autonomy prompted the [Society of Automotive Engineers](http://www.sae.org) (SAE) International, a group of international automotive experts, to define six levels of operation as highlighted below.



SAE J3016™ LEVELS OF DRIVING AUTOMATION™

Learn more here: sae.org/standards/content/j3016_202104

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	SAE LEVEL 0™	SAE LEVEL 1™	SAE LEVEL 2™	SAE LEVEL 3™	SAE LEVEL 4™	SAE LEVEL 5™
What does the human in the driver's seat have to do?	You are driving whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering			You are not driving when these automated driving features are engaged – even if you are seated in "the driver's seat"		
	You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety			When the feature requests, you must drive	These automated driving features will not require you to take over driving	

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	These are driver support features			These are automated driving features		
What do these features do?	These features are limited to providing warnings and momentary assistance	These features provide steering OR brake/acceleration support to the driver	These features provide steering AND brake/acceleration support to the driver	These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met	This feature can drive the vehicle under all conditions	
Example Features	<ul style="list-style-type: none"> • automatic emergency braking • blind spot warning • lane departure 	<ul style="list-style-type: none"> • lane centering OR • adaptive cruise control 	<ul style="list-style-type: none"> • lane centering AND • adaptive cruise control at the same time 	<ul style="list-style-type: none"> • traffic jam chauffeur 	<ul style="list-style-type: none"> • local driverless taxi • pedals/steering wheel may or may not be 	<ul style="list-style-type: none"> • same as level 4, but feature can drive everywhere in all conditions

Figure 1. Source (Society of Automotive Engineers International)

¹ Those include steering, braking, acceleration, object and hazard detection, traffic sign and signal recognition, and right-of-way judgments.

² Specific operating domain(s) in which an automated function or system is designed to properly operate, including geographic area, roadway type, speed range, environmental conditions (weather, daytime/nighttime, etc.), and other domain constraints.

Levels of Autonomy

As highlighted in the SAE's classifications of **autonomous vehicles (AV)**, the level of autonomy of an AV depends on two factors:

- 1) What level of control is required, if any, from a human driver to operate or drive the vehicle.
- 2) Under what conditions can the vehicle operate when the autonomous features are engaged or enabled.

From these two factors, six levels of vehicle automation can be deciphered with levels 0 to 1 making up the majority of vehicles on public roads, and vehicles that are in level 3 to 5 making up most of what is considered an autonomous vehicle. For AVs that fall between levels 3 to 5, there is further gradational difference in the level of autonomy. Vehicles that are in level 3 autonomy allow for some DDTs to be operated by the vehicle's **automated driving system (ADS)**, the control system or the hardware and software of an automated vehicle. However, for level 3 AVs, it requires attentiveness from the human driver and can require that the human driver take control of the DDTs. Level 4 AVs, however, do not require that the ADS alert the human driver to take over control of DDTs. What differentiates level 3 AVs from level 4 AVs is their ODDs or the specific conditions that an AV can operate under, which includes road types, weather, time of day, geographical boundaries, speed range, and other domain constraints. While AVs in level 3 often face heavy constraints on their operational capabilities, AVs in level 4 have more defined boundaries and conditions that they can operate safely under. There is currently no uniform policy in place that describes what the ODD should be for AVs. Manufactures often test their AVs under very narrow ODDs and gradually expand the ODD as the ADS is able to gain competence or as the technology that enables autonomous features improves.

Technology for AVs

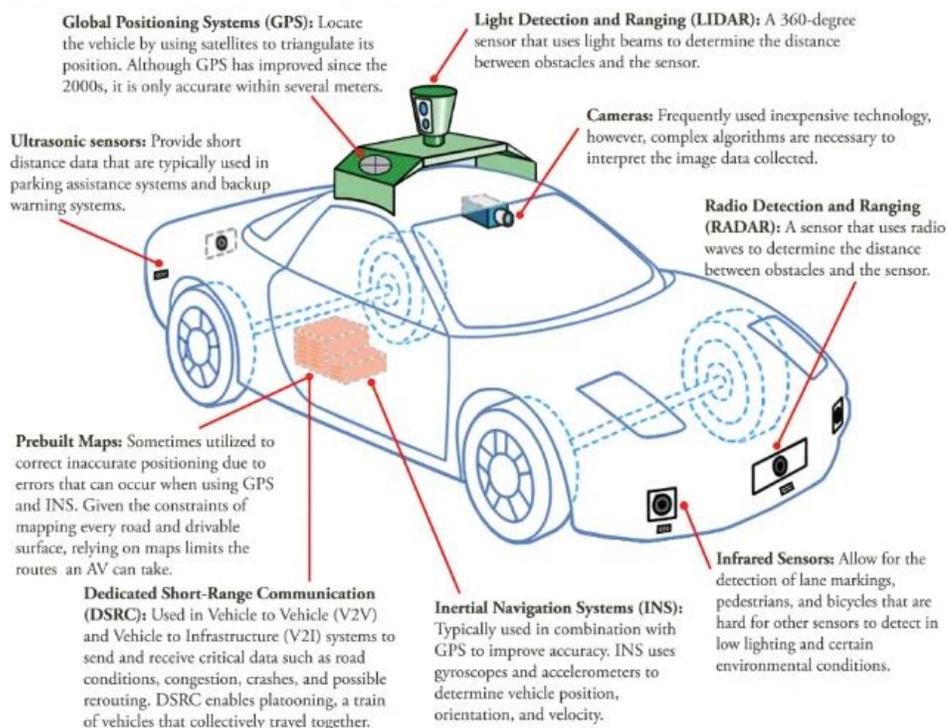


Figure 2. Source ([University of Michigan](#))

While design details for AVs varies, most AVs have cameras, and sensors such as lidars and radars that create an internal map of the AV's surroundings. The software is then able to utilize the data collected from the sensors and cameras and plot a path that then triggers the vehicle's acceleration, braking, and steering. This technology, however, owes its limitation to various environmental factors. Weather, for example, has been a critical issue for most developers of AVs due to its unpredictability. Rain, snow, fog, and glare can disrupt how the AV perceives the road and what decision the software makes to operate the AV. These factors are the limitations for AVs and are often overlooked when assessing the credibility of studies attesting their safety.

Safety

This limitation and the potential for AVs to crash has driven AV developers to create a **minimal risk condition (MRC)** within the software of AVs. MRC is when an AV comes to a complete stop and is triggered only when the ADS detects a failure, or the ADS fails to complete a trip. While this feature has the potential to prevent any impending accidents, it also has the potential to [halt traffic](#), [stop at rail road intersections](#), or [prevent emergency responders from attending to a scene](#).

Nonetheless, Waymo, a ride-hailing service company which launched its first self-driving car project in 2009 and has been one of the leading developers of AVs, completed an external audit on the safety of their vehicles that ran from 2018 to 2024 with Swiss Re, a reinsurance company. The study analyzed the Waymo vehicles' ADS performance across 25.3 million fully autonomous miles in 4 cities: San Francisco, CA, Phoenix, AZ, Los Angeles, CA, and Austin, TX. Additionally, the study obtained data from Swiss Re on the latest-generation human-driven vehicles³ (HDV) and matched Waymo's ODD by only including claims from vehicles located in the four cities being tested.

Their findings revealed that the Waymo ADS outperformed latest-generation HDV benchmarks by having 85% reduction in property damage claims, and 92% reduction in bodily injury claims. According to the study, Swiss Re found that during the 6-year study, Waymo's vehicles were subject to nine property damage insurance claims and two bodily injury claims. When compared to human drivers, using insurance data to provide an estimate, Swiss Re found that human drivers would have likely faced 78 property damage claims and 26 bodily injury claims for an equivalent amount of driving exposure in the deployed driving regions.

The study, however, is limited in its methodological approach of comparing real observations of Waymo vehicles compared to human benchmarks that were derived from large data sets. Specifically, the latest-generation HDV benchmark are based on estimated miles derived from "vehicle years⁴" and average vehicle-miles-traveled (VMT), not *actual* miles driven. Another limitation for the study is that the vehicles were tested under specific ODDs and therefore cannot be compared to human drivers that drive in all conditions. The study recognizes this limitation and notes that the human benchmarks were given an edge in terms of safety due to operational differences. Particularly, Waymo vehicles were tested primarily on surface streets while human benchmarks included freeways which are generally safer, making the human benchmark appear safer.

³ Vehicles with model years 2018-2022 that contain some ADS technology driven by humans.

⁴ Exposure basis used in insurance metrics

Federal Law and Regulations

The primary actors in issuing regulations of autonomous vehicles are the United States Department of Transportation (USDOT) and the National Highway Traffic Safety Administration (NHTSA). In 2016, NHTSA adopted the SAE framework for defining autonomous vehicles through the issuance of a [guidance](#). Since the issuance of the guidance in 2016, the NHTSA has released three more documents outlining non-regulatory approaches to automated vehicle technology safety, those include the following: Automated Driving Systems (ADS) [2.0](#), [3.0](#), and [4.0](#). While these guidelines are not enforced, they encourage states to adopt certain regulatory frameworks when producing policy on ADSs. For example, ADS 2.0 encourages states to adopt certain guidelines regarding applications to test ADSs on public roadways, permission for entities to test ADSs on public roadways, and liability and insurance. Ohio, for example, in an executive order⁵ to launch DriveOhio, a program for autonomous vehicles, encourages companies to produce a safety self-assessment as established by NHTSA⁶.

Additionally, in the 2.0 guidance, USDOT outlined a vision of responsibilities for states and the federal government in regulating autonomous vehicles. Under USDOT's vision, the federal government would be responsible for regulating the safety design and performance aspects of motor vehicles and motor vehicle equipment, while states responsibilities should include regulation of the human driver and vehicle operations⁷. The Department also "strongly" encourages states not to regulate the safety design and performance aspects of ADS technology and recommends that states should consult NHTSA prior to seeking to make regulations on safety designs on ADS technology.

Furthermore, in 2020 the NHTSA launched the [Automated Vehicle Transparency and Engagement for Safe Testing \(AV TEST\) Initiative](#) which is a collaboration between states, local governments, and private sector to provide the public with direct and easy access to information about testing of ADS-equipped vehicles, and regarding state activities on legislation, and regulations. Additionally, the NHTSA has issued a [Standing General Order](#), requiring car manufacturers of automated vehicles and operators to report to the agency certain crashes involving vehicles equipped with automated driving systems. If NHTSA finds [defect](#) in the automated vehicles involved in the crash, NHTSA would then require that unsafe vehicles be taken off public roads or the defects are remedied. As of publications of this report, the federal government has attempted to pass legislation⁸ addressing autonomous vehicles but no legislation has passed.

Federal Motor Vehicle Safety Standards (FMVSS) and Automated Vehicles

NHTSA is the primary authority for enforcing and issuing FMVSS such as design mandates for brake hoses, seat belts, airbags, and any related equipment or feature that falls into the category of crash avoidance. However, since many FMVSS were designed for vehicles operated by a human driver with conventional vehicle components such as steering wheels and pedals, many highly automated vehicles do not provide these

⁵ [2018 Bill Text OH E.O. 4](#)

⁶ [Automated Driving Systems: A Vision for Safety](#) (p.16)

⁷ [Automated Driving Systems: A Vision for Safety](#) (p.ii)

⁸ [S.1798](#), [H.R. 4376](#), [H.R. 3388](#)

components. As such, manufactures that offer level 4 automation have either conformed with FMVSS by offering within their automated vehicles conventional manual controls, or have sought exemptions under 49 C.F.R. [Parts 555](#) and [591](#).

Under 49 C.F.R. Parts 555, manufacturers can apply for an exemption from one or more parts of FMVSS providing that the exemption would, “make easier the development or field evaluation of new motor vehicle safety or impact protection.” Additionally, 49 C.F.R. Parts 555 allows only 2,500 vehicles from the automaker to receive the exemption. In 49 C.F.R. Parts 591, NHTSA grants exemptions to foreign vehicles that do not fully comply with FMVSS for the purpose of research and demonstrations. According to [NHTSA](#), Parts 591 has opened the doors for 347 imported ADS-equipped vehicles for operations in 295 projects across 31 states. In 2025, NHTSA expanded this exemption to apply to domestically manufactured vehicles.

Currently NHTSA is in the process of developing six rules related to automated vehicles, which can be found in **Appendix C**.

State Legislation

As of February 2026, there are 36 states including D.C. that allow testing or deployment of autonomous vehicles on their public roads. Of those states, 10 allow for testing only ([D.C.](#), [Hawaii](#), [Maine](#), [Maryland](#), [Massachusetts](#), [Michigan](#), [New York](#), [Ohio](#), [Vermont](#), [Washington](#)).

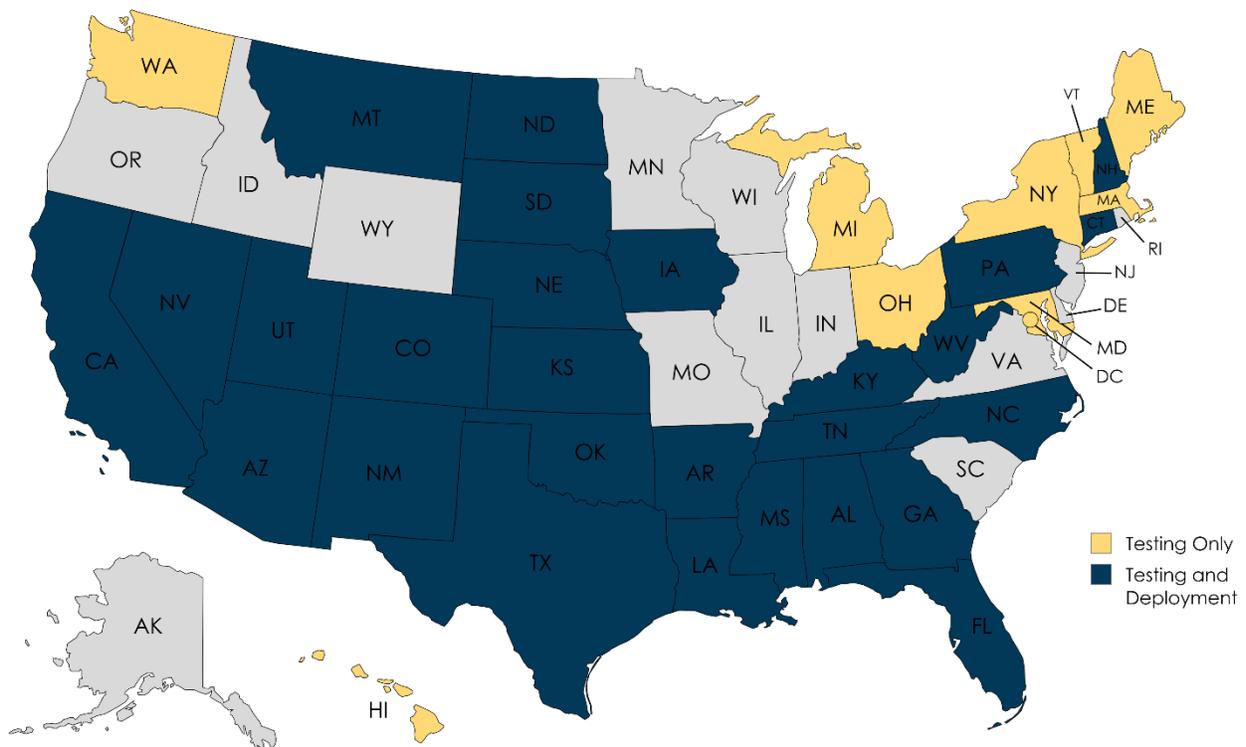


Figure 3. States Authorizing Testing or Deployment of AVs.

Under both testing pilot programs and deployment regulations, requirements to test or operate an automated vehicle include meeting the following:

- All applicable traffic and motor vehicle safety laws
- All applicable Federal Motor Vehicle Safety Standards or applicable exemptions granted; and
- All applicable traffic control devices

States Definitions of AVs

State motor vehicle codes often use multiple terms to refer to autonomous vehicles such as automated driving system (ADS), ADS-equipped vehicle, automated motor vehicle, autonomous vehicle, highly automated vehicle, driverless-capable vehicle, and fully autonomous vehicle. While not all states use all the terms highlighted above for the purpose of regulation, majority of states utilized a mix of the terms to establish a layered regulatory framework. The various terms also speak to the components involved in vehicle automation such as the technology, equipment, and the different levels of automation.

In almost all states identified, the term “autonomous vehicle” is used as a general category under which automated technologies are governed. Automated driving systems (ADS) is a term used to carve out and define only the control system or the hardware and software of an automated vehicle. In its definition, ADS also includes the capability of the control system to perform the entire DDT within the specified or limited ODD. Some states include within the definition of ADS other characteristics of autonomous vehicles, such as:

- Whether the ADS system can achieve minimal risk condition⁹ with or without a conventional human driver; and
- Whether the ADS system is specifically capable of performing levels 3-5 DDT as specified in the SAE International J3016.

Within this framework, some states further distinguish between the degree or level of automation or operational capability. Terms like “highly automated vehicles,” “fully automated vehicles,” and “driverless-capable vehicles,” function to provide gradational definition on the specific capability of certain automated vehicles. Some states include specific SAE International levels within the definition of these terms, while other states include the levels of automation within the definition of ADS (Hawaii, Montana, Texas, and Utah define some or all levels separately). As of February 2026, 23 states reference the SAE International J3016 when defining the level of automation regulated. By referencing the SAE International automation levels, states are able to achieve technical clarity. However, given that SAE International is a private organization, and the potential for future revisions to the definitions could occur, states often provide specific language that specifies the version and date of SAE automation definitions.

Testing Authorizing States

Safety and Operation Requirements

In states that only allow for the testing of autonomous vehicles, permits and application to that states’ respective authority (in most cases Department of Transportation) must be submitted and can be approved if

⁹ A stable and stopped condition to which a person or an automated driving system may bring an automated motor vehicle to reduce the risk of a collision when a given trip cannot or should not be continued (Tex. Transp. Code § 545.45)

conditions on safety, insurance requirements, and the registration of vehicles are met in accordance with the regulation. Additionally, some states in the testing phase of autonomous vehicles require some human supervision of the automated vehicle while others mandate that a human driver or “remote operator” be present when an ADS is engaged. D.C., Vermont, Ohio, and Hawaii require that a vehicle be able to achieve a minimal risk condition if an automated vehicle fails or if the human driver fails to respond to a request to take over driving of the vehicle.

Duties Following Crash/Accident | Law Enforcement Interactions

While states that allow for the operation and deployment of automated vehicles detail certain procedures to comply with following a crash or accident, states that only allow for testing have minimal procedures.

Hawaii¹⁰ requires that the entity conducting the testing of automated vehicle produce a report detailing the number of crashes and the descriptions of the conditions leading to the crash. Additionally, Hawaii requires that the entity “provide immediate notice” to the nearest police office.

Ohio¹¹ requires that following a crash or accident an entity must cooperate with “any law enforcement agency request for information about the incident, including sharing any non-proprietary data recorded and preserved by the vehicle or the company pertaining to the incident and maintaining a record of all other information until the conclusion of any investigation by law-enforcement.”

Washington¹² requires that the entity notify the Department of Licensing of any collisions involving autonomous motor vehicles during testing on any public roadways and any moving violations.

Vermont¹³ requires that the Traffic Committee make automated vehicle test permits available to law enforcement and municipalities within the geographic scope of the ODD designated in the permit.

Liability and Insurance

In all states, including D.C., that allow for the testing of automated vehicles, liability and insurance requirements must be met. Massachusetts is the only state that does not have liability coverage laid out clearly in code, public law, or administrative code, seven states require a \$5 million liability coverage, and three states require automated vehicles have the same liability coverage for nonautomated vehicles.

State	Liability Coverage	Code
California	\$5 million	Cal Veh Code § 38750
D.C.	\$5 million	D.C. Code § 50-2352.01
Hawaii	Prior to commencement of testing, a permitted manufacturer or other entities must produce evidence of commercial automobile insurance as required by the Hawaii Revised Statutes Chapter 431, Article 10C.	HAR 19-150

¹⁰ [HAR 19-150](#)

¹¹ [2018 Bill Text OH E.O. 4](#)

¹² [Rev. Code Wash. \(ARCW\) § 46.92.010](#)

¹³ [23 V.S.A. § 4203](#)

Maine	\$5 million	Administrative Code
Maryland	\$5 million	Administrative
Michigan	The manufacturer of automated driving systems or upfitter performing that research or testing shall submit proof satisfactory to the secretary of state that the vehicle is insured under chapter 31 of the insurance code	MCLS § 257.665
New York	\$5 million	(PART (FF) lines 43 -44)
Ohio	Proof of the company's motor vehicle insurance or other financial responsibility to operate a motor vehicle in Ohio under Ohio law covering each vehicle and operator	2018 Bill Text OH E.O. 4
Vermont	\$5 million	23 V.S.A. § 4203
Washington	\$5 million	Rev. Code Wash. (ARCW) § 46.30.050

Deployment/Commercial Deployment States

Safety and Operation Requirements

In the 27 states that allow for the deployment of automated vehicles, human operators are not required to be physically present in the vehicle (refer to [Appendix A](#)), with some states adding specific requirements to entities should they need to deploy vehicles with no human driver¹⁴. These requirements include that an automated vehicle must be able to achieve a minimal risk condition and that the entity submits a law enforcement interaction plan. Thirteen states allow level 4 or 5 automated vehicles to operate without a licensed driver, the remaining states however, did not specify the level of automation or addressed this type of requirement¹⁵. Additionally, in all states that have authorized deployment of automated vehicles, all automated vehicles are required to be registered and titled in the state. Other states have more operation and safety conditions highlighted below:

Arizona¹⁶ requires a transportation network company vehicle (10 years or more from the year of manufacturing) to meet vehicle safety and emissions standards and have at a minimum annual brake and tire inspection that is performed by a qualified third party.

California¹⁷ requires automated vehicles to have a data recorder that captures all information regarding all vehicle functions that are controlled by the ADS at least 30 seconds before a collision. Additionally, automated vehicles are required to establish a communication link between the vehicle and a remote operator and allow

¹⁴ [Kansas](#) requires a human driver to be physically present in every “driverless-capable vehicle” for the first 12 months.

¹⁵ These are states that did not include in their definitions of “fully autonomous vehicles” SAE levels or did not reference SAE automation levels in any of their codes or regulations.

¹⁶ [Arizona](#)

¹⁷ [California](#)

two-way communication between remote operators and passengers. The automated vehicle is also required to be able to display or transfer vehicle owner or operator information in the event of a collision or accident.

Kansas, Mississippi, Oklahoma, South Dakota, and West Virginia¹⁸ require in addition to registering and titling an automated vehicle that the automated vehicle display manufacturer’s certification label.

Kentucky¹⁹ requires, from July 15, 2024, until July 31, 2026, that fully autonomous vehicles that weigh more than 62,000 pounds have a human driver operating the vehicle.

Louisiana²⁰ allows only autonomous commercial motor vehicles to operate without a human driver physically present.

Nevada²¹ requires an autonomous vehicle network company to inspect fully autonomous vehicles used to provide transportation services annually.

Pennsylvania²² requires inspection for highly automated vehicles and notes, “nothing...shall be construed to exempt an entire highly automated vehicle from the periodic inspection of vehicles,” under the section required for nonautomated vehicles.

Duties Following Crash/Accident

Twenty states lay out procedural protocols automated vehicles must conform to following a crash or accident. The requirements include that the automated vehicle or the operator of the automated vehicle (remote operator) contact law enforcement agency to report the accident or that the automated vehicle has a device mechanism that automatically alerts law enforcement in the event of an accident. The automated vehicle must also remain at the scene of the accident and be able to disclose insurance and registration documents.

Nevada²³ requires any person responsible for the testing of an automated vehicle to report the crash to the Department if the crash results in personal injury or property damage estimated to exceed \$750.

Liability and Insurance

Because automated vehicles are on a spectrum of autonomy with some of the driving tasks often controlled by the human driver or the automated system, determining liability in the event of a crash is challenging. Furthermore, most automated vehicles currently available for the public to purchase are at a level 2 automation, meaning that the majority of the driving tasks require a physical human present and require the attentiveness of the physically present human to operate some of the driving tasks. Additionally, level 2 automated vehicles have the ability to disengage driving and alert the physically present human driver to take

¹⁸[Kansas, Mississippi, Oklahoma, South Dakota, West Virginia](#)

¹⁹[KRS § 186.763](#)

²⁰[La. R.S. § 32:400.6](#)

²¹[Nev. Rev. Stat. Ann. § 706B.170](#)

²²[75 Pa.C.S. § 4103](#)

²³[Nev. Rev. Stat. Ann. § 482A.095](#)

over operations of a vehicle²⁴. Under these cases, the physically present human driver is held liable under the condition that (1) the automated driving system alerted the human driver to take control, and (2) the automated driving system is operating in accordance with manufacturer design.

In contrast, vehicles at a level 4 or 5 autonomy don't require a physically present human driver and are able to undertake all the DDTs of an automated vehicle. These vehicles are often operated under an on-demand vehicle network, a digital network that dispatches autonomous vehicles to connect passengers to fully autonomous vehicles for transportation. These networks are operated under a commercial entity that has remote operators ready to take control of a level 4 or 5 autonomous vehicle should the vehicle require human operation. Liability standards under level 4 or 5 vehicles are more complicated because many actors are involved in the making of the vehicles such as manufacturers, software developers, suppliers, vehicle owners, or vehicle occupants.

In addressing liability issues, states provide a provision that clearly states that when an autonomous vehicle, in most cases those with a level 4 or 5 autonomy level, is *engaged*²⁵ the automated driving system is considered the operator or driver of the vehicle. In establishing this, liability could be transferred to the *owner*²⁶ of the vehicle or the original manufacturer provided that the crash or accident resulted due to a defect in the technology system of the vehicle²⁷.

Moreover, the advancement of technology has enabled the conversion of nonautomated vehicles to allow for some level 2 to 3 automation capabilities. This has added another layer of liability challenges and at least four states²⁸ have addressed this by removing liability from original manufacturers that have their vehicles retrofitted to enable certain autonomous features.

Refer to [Appendix B. State-by-state outline of liability coverage.](#)

Law Enforcement Interaction Plans

Automated vehicles that operate under a level 4 or 5 automation operate without a physical human present and, thus, are unable to interact with law enforcement should the need arise. To address this, at least 9 states²⁹ require, prior to approval of permits to test or deploy, the owner of the automated vehicle to submit a law enforcement interaction plan to a respective authority. The plan requires the owner or the manufacturer to outline how communication between law enforcement and the remote operator of an automated vehicle is established, and how law enforcement and first responders can engage with and disengage an automated vehicle during a collision or a fire. The following are required to be outlined in a law enforcement interaction plan:

²⁴ [Tesla's \\$243 Million Autopilot Verdict Reveals a Glaring Flaw - Bloomberg](#)

²⁵ [Alabama](#), [Arizona](#), [Florida](#), [Mississippi](#), [Massachusetts](#), [South Dakota](#), [Tennessee](#), [Texas](#), [Utah](#), [West Virginia](#)

²⁶ The owner is often the company or commercial entity operating the on-demand autonomous vehicle network.

²⁷ [New Hampshire](#)

²⁸ [Alabama](#), [Arkansas](#), [Florida](#), [Nevada](#)

²⁹ [Arizona](#) ([Department of Public Safety](#)), [California](#), [Kansas](#), [Kentucky](#), [Mississippi](#), [Oklahoma](#), [Texas](#), [West Virginia](#), [Pennsylvanian](#)

Law Enforcement Interaction Plan Requirements	
How to communicate with a fleet support specialist who is available during the times the vehicle is in operation	AZ, KA, CA (and manufacturer contact number), KY, MS, OK, TX, WA
How to safely remove the vehicle from the roadway	AZ, KA, CA, KY, MS, OK, TX, WA
How to recognize whether the vehicle is in autonomous mode and steps to safely tow the vehicle	AZ, KA, CA, KY, MS, OK, TX, WA
Cities where the vehicle will be in operation	AZ
Any additional information the manufacturer deems necessary regarding hazardous conditions or public safety risks associated with the operation of the autonomous vehicle	AZ, KA, CA, KY, MS, OK, TX, WA
Information on which side of the vehicle is contact information of the fleet support specialist is readily visible	KA, CA (information on vehicle registration, insurance)
Other elements deemed necessary by the authority	MS, OK

Automated Heavy-duty vehicles

Beyond autonomous passenger vehicles, self-driving technology is increasingly being applied to commercial freight transportation through autonomous trucks. Similar to autonomous passenger vehicles, autonomous trucks rely on cameras, sensors, radar, and software to map out the surroundings and navigate roads. Several developers including Aurora, Gatik, and Kodiak Robotics, have developed autonomous trucks aimed at primarily long-haul freight routes. While the technology for ADS is relatively new, interest in autonomous trucking is continuously increasing due to the potential benefits it may provide for the trucking industry, which generates an estimated [\\$906 billion in annual revenue](#). Going driverless would result in considerable savings for the trucking industry potentially mitigating high labor costs as driver's salary are calculated at [26%](#) of the per-mile cost of operating a truck or [40%](#) according to other studies. However, given that trucking plays a critical role in the supply chain and interstate commerce, as well as their size and weight with compared to passenger vehicles, many have raised regulatory and safety concerns with the increasing development of autonomous trucks.

[Torc Robotics](#) initially started testing their automated trucks in 2019 on closed courses in Virginia. By 2020, the company was able to expand into New Mexico, and more recently, in 2026 announced that it will be expanding testing operations in Michigan.

[Aurora Innovation](#), based in Pittsburgh, was the first company to operate a driverless 18-wheeler on an American highway. According to their [fourth quarter 2025 report](#), the company has logged more than 250,000 driverless miles across a 1,000 mile 10-lane network on public roads in Texas, Arizona, and New Mexico and is currently expanding into states in the Sun Belt region.



Figure 5. Aurora Innovation Routes

Texas is the leading state in autonomous heavy-duty vehicles testing primarily due to lax regulations, high freight volumes, and favorable weather conditions. Currently, Texas operates 9 routes that allow for driverless operation of autonomous trucks. These routes are focused on a hub-to hub model, where a human driver first drives a trailer from a customer facility to a hub, and then an autonomous truck takes over for the long-haul highway portion and makes the delivery to another hub where a human driver completes the delivery the remainder of the delivery.

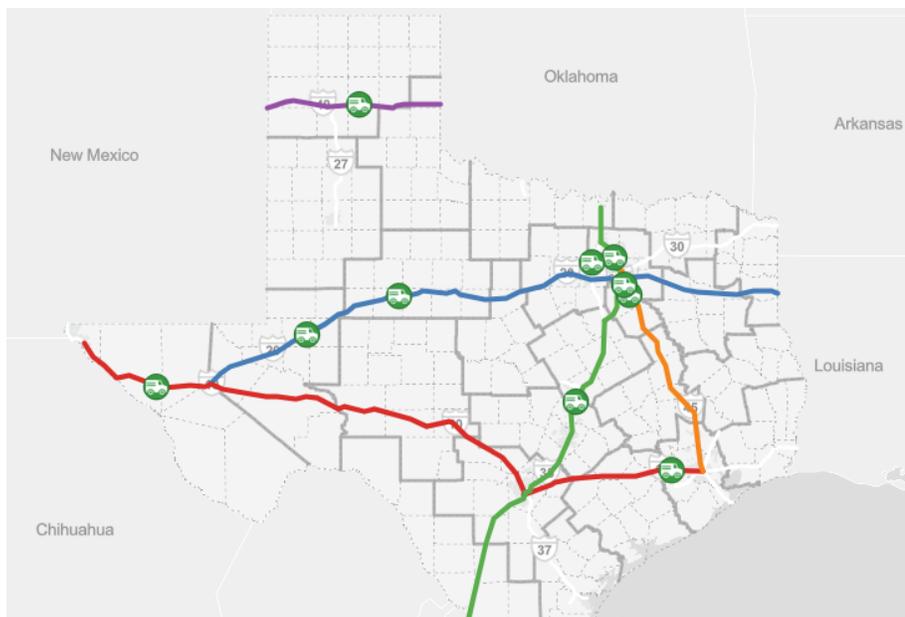


Figure 6. Autonomous Vehicle Deployment ([Connected and Autonomous Vehicles \(CAV\) Task Force](#))

Uniform Law Commission Model Legislation

The Uniform Law Commission, which provides states with nonpartisan drafts of legislation, developed the [Uniform Automated Operation of Vehicles Act](#) (UAOVA) in 2019 providing a standardized legal framework for the deployment of automated vehicles at level 3 to 5 automation. UAOVA focuses on creating a framework for automated vehicles by integrating automated vehicles with existing state motor vehicle codes. The ULC recognizes that many states with laws on automated vehicles exclude automated vehicles from certain provisions established in their vehicle codes and, thus, is creating a “hybrid act to map an existing vehicle code onto automated vehicles.”

Definitions

Like the NHTSA and several U.S. states, the ULC adopted some terms and definitions outlined in the SAE J3016 (2018), particularly the following terms or definitions: automated driving system, dedicated automated vehicle, dynamic driving task, minimal risk condition, operate. The ULC also takes a different approach from some states in defining who the driver is in automated vehicle. The ULC takes the driver to be the automated driving provider (ADP) or the, “person that makes a declaration recognized by [relevant state agency] under section 6,” whereas, some states take the automated driving system³², when engaged, to be the driver or operator.

Interstate Applicability

The ULC recognizes the interstate nature of motor vehicles and therefore adopted a provision that addresses this. Specifically, the ULC clarifies that if state X and state Y adopt this Act, then both states are able to agree that the ADP is the driver of the automated vehicle. However, in cases where state Y does not adopt this Act, the ULC states that state Y can use existing definitions of drive, driver, and operate as these definitions tend to be “written and interpreted broadly.” By state X adopting this Act, state X is thus able to achieve a clearer rule on who the driver is within its own borders.

Registration of an Automated Vehicle

The ULC adopts similar legal frameworks for automated vehicle registration compared to existing law on conventional motor vehicles. However, the ULC adds an additional rule for automated vehicles. First, the ADP, which is the manufacturer or entity that meets the requirements under section 6, must declare to the relevant state agency that it is an automated driving provider. The ADP is then required to designate its automated vehicles as, “associated automated vehicles,” and only then, can the owner of the automated vehicle register the car. This ensures that every automated vehicle has a legally designated driver, even in the absence of any human control.

³² The ULC’s approach provides a much clearer definition on who the driver is in an automated vehicle. States that designate the automated driving system as the driver leave room for interpretation on who can be held liable for the vehicle. An automated driving system is defined as, the hardware and software that are collectively capable of performing all aspects of the dynamic driving task within its operational design domain, if any, including achieving a minimal risk condition, without any intervention or supervision by a conventional human driver

Limitations of ULC's UAOVA

While the UAOVA provides a uniform legal framework for the deployment of automated vehicles, the Act does not provide a framework for the testing of automated vehicles. Additionally, the act does not define an operational design domain or geofencing which are integral components of an automated vehicle that is both in deployment and testing. Furthermore, the absence of any specific law enforcement procedures or procedures following a crash provides further limitations of the UAOVA. While not explicitly addressed in the UAOVA, ULC in a [presentation slide](#) stated that, “the existing legal system [around the law of products liability] can cover problems that arise in initial deployment...[and] that the drafting committee opted not to try to take on tort reform or adopt or change the law of products liability as it relates to these vehicles.” The ULC states that the scope of the UAOVA on responsibility or liability is limited to responsibility for violations of the motor vehicle code.



Division of Legislative Services RESEARCH REPORT

APPENDIX A. State-By-State Licensed Driver Requirements ([back to section](#))

State	Requires licensed driver?	Code/Regulation/EO
Alabama	Yes if not able to achieve minimal risk condition	Code of Ala. § 32-9C-5
Arizona	Level 4 and Level 5 vehicles do not require licensed driver only if a law enforcement plan is submitted and a written statement to the Department of Transportation is provided: minimal risk condition	A.R.S. § 28-9702
Arkansas	Yes, during the first six months	A.C.A. § 27-51-2004 Amended-AV-Rules-FINAL.pdf
California	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	13 CCR 228.06
Colorado	Not stated	C:\wptemp.txt
D.C.	Licensing not addressed; vehicle with ADS initially requires a "test operator" in vehicle; "autonomous vehicle testing entity" may request and receive authority to use "remote operator"	D.C. Code § 50-2352.01
Florida	Fully autonomous vehicles do not require licensed drivers	Fla. Stat. § 316.85
Georgia	Fully autonomous vehicles do not require licensed driver	O.C.G.A. § 40-8-11
Hawaii	Automated vehicle require licensed driver in vehicle	HAR 19-150
Iowa	Driverless-capable vehicle does not require licensed driver in vehicle	Iowa Code § 321.515
Kansas	Driverless-capable vehicle requires licensed driver in vehicle for first 12 months unless vehicle is not intended to carry human occupants or if vehicle lacks manual controls for driver operation	K.S.A. § 8-2902
Kentucky	Level 4 and Level 5 vehicles do not require licensed a driver in vehicle	KRS § 186.763
Louisiana	Autonomous commercial motor vehicle does not require operator to be present in vehicle	La. R.S. § 32:400.3
Maine	Vehicle with ADS does not require licensed driver in vehicle if entity submits an explanation and is approved by the Department of Transportation	229c800.docx

Maryland	Not clearly stated	
Michigan	Not clearly stated	
Massachusetts	Vehicle with ADS requires licensed driver in vehicle	MCLS § 257.665 No. 572
Michigan	Vehicle with ADS appears not to require licensed driver in vehicle	MCL - Section 257.665 - Michigan Legislature
Mississippi	Level 4 and Level 5 vehicles do not require licensed driver	Miss. Code Ann. § 63-35-5
Nebraska	Driverless-capable vehicles do not require operator to be present in vehicle	R.R.S. Neb. § 60-3302
Nevada	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	Nev. Rev. Stat. Ann. § 482A.070
New Hampshire	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	RSA 242:1
New York	Vehicle with ADS requires licensed driver in vehicle	(PART (FF) lines 36 - 39)v
North Carolina	Fully autonomous vehicles do not require licensed driver	N.C. Gen. Stat. § 20-401
North Dakota	Level 4 and Level 5 vehicles do not require licensed driver	N.D. Cent. Code, § 39-01-01.2
Oklahoma	Level 4 and Level 5 vehicles do not require licensed driver	47 Okl. St. § 1703
Pennsylvania	Vehicle with ADS does not require a licensed driver	75 Pa.C.S. § 8508
Ohio	Vehicle with ADS does not require licensed driver in vehicle	2018 Bill Text OH E.O. 4
South Dakota	Level 4 and Level 5 vehicles do not require licensed driver	S.D. Codified Laws § 32-41-2
Tennessee	ADS-operated vehicles do not require licensed driver	Tenn. Code Ann. § 55-30-103
Texas	Level 4 and Level 5 vehicles do not require licensed driver	Tex. Transp. Code § 545.454

Utah	Level 4 and Level 5 vehicles do not require licensed driver	Utah Code Ann. § 41-26-103
Vermont	Vehicle with ADS requires licensed driver in vehicle	23 V.S.A. § 4203
Washington	Level 4 and Level 5 vehicles do not require a licensed driver if testing or operating without "human operator" present	Program website
West Virginia	Level 4 and Level 5 vehicles do not require licensed driver	W. Va. Code § 17H-1-5

APPENDIX B. State-By-State Liability Coverages ([back to section](#))

State	Liability Coverage	Code
Alabama	At least \$100,000 private vehicles \$1 million vehicles operated by commercial entity	Code of Ala. § 32-9C-3 Code of Ala. § 32-9C-4
Arizona	Same liability coverage required for nonautomated vehicles under existing insurance law	A.R.S. § 28-9702
Arkansas	Liability coverage of \$750,000–\$5 million, depending on vehicle type and commercial purpose (references 49 C.F.R. § 387.9)	A.C.A. § 27-51-2002
California	Liability coverage of at least \$5 million	Cal Veh Code § 38750
Colorado	Not stated	
Florida	Vehicles operating in on-demand network must have primary liability coverage of at least \$1 million and additional benefits as required for nonautomated vehicles under existing insurance law	Fla. Stat. § 627.749
Georgia	Must have the same liability coverage required for nonautomated vehicles under existing insurance law	O.C.G.A. § 40-8-11
Iowa	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	Iowa Code § 321.516
Kansas	ADS-equipped same liability coverage requirements as for nonautomated vehicles under existing insurance law	K.S.A. § 8-2903
Kentucky	Vehicle not operated by a company have liability coverage of at least \$1 million Vehicle operated by a company, must have the same liability coverage required for nonautomated vehicles under existing insurance law	KRS § 186.766
Louisiana	Not less than two \$2 million	La. R.S. § 32:400.3
Mississippi	Same liability coverage required for nonautomated vehicles under existing insurance law	Miss. Code Ann. § 63-35-11
Nebraska	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	R.R.S. Neb. § 60-3304
Nevada	Liability coverage of at least \$5 million Liability coverage for autonomous vehicle network \$1.5 million	Nev. Rev. Stat. Ann. § 482A.060 Nev. Rev. Stat. Ann. § 706B.300

New Hampshire	\$5 million for testing Same liability coverage requirements as for nonautomated vehicles under existing insurance law (deployment)	RSA 242:1 (III) RSA 242:1 (IX)
North Carolina	Covered by a motor vehicle liability policy meeting the applicable requirements of G.S. 20-279.21	N.C. Gen. Stat. § 20-401
North Dakota	Same liability coverage requirements as for nonautomated vehicles under existing insurance	N.D. Cent. Code, § 39-01-01.2
Oklahoma	At least \$1 million	47 Okl. St. § 1704
Pennsylvania	At least \$1 million	75 Pa.C.S. § 8508
South Dakota	The same liability coverage required for nonautomated vehicles under existing insurance law	S.D. Codified Laws § 32-41-4
Tennessee	The same liability coverage required for nonautomated vehicles under existing insurance law	Tenn. Code Ann. § 55-30-106
Texas	The same liability coverage required for nonautomated vehicles under existing insurance law	Tex. Transp. Code § 545.455
Utah	The same liability coverage required for nonautomated vehicles under existing insurance law	Utah Code Ann. § 41-26-107
Washington	\$5 million	Rev. Code Wash. (ARCW) § 46.30.050
West Virginia	The same liability coverage required for nonautomated vehicles under existing insurance law	W. Va. Code § 17H-1-10

APPENDIX C. NHTSA Regulations ([back to section](#))

Rule Name	Year of Initial Action	Most Recent Action	Current Status	Summary
Pilot Program for Collaborative Research on Motor Vehicles with High or Full Driving Automation	2018	ANPRM	NHTSA is analyzing comments.	This rule would allow NHTSA to assess how to develop a national program that would validate advanced vehicle technologies through a pilot program. The pilot program would be designed to assess the safety of highly automated vehicles, including vehicles without conventional manual controls. The pilot program would allow NHTSA to monitor and learn from testing activities while ensuring that these technologies were safely deployed.
Removing Regulatory Barriers for Vehicles with Automated Driving Systems (ADS)	2019	ANPRM	NHTSA is analyzing comments.	This rule would address challenges that ADS-equipped vehicles face when complying with FMVSS, specifically the crash avoidance standards (100 series). This rule would identify how to implement test procedures and crash avoidance requirements for ADS-equipped technologies that lack conventional manual controls.
Considerations for Telltales, Indicators, and Warnings in Vehicles Equipped with ADS	2020	Published in unified agenda.	NHTSA is developing the NPRM.	This rule would evaluate safety messaging for ADS-equipped vehicles. This would amend FMVSS to support safety messaging in ADS-equipped vehicles, similar to the telltale and display standards included in FMVSS 101, "Controls and displays."
Occupant Protection for Vehicles with Automated Driving Systems	2020	Final rule	Rule is finalized.	This rule was finalized in 2022 and ensures that FMVSS include ADS designs while maintaining the same rigorous safety standards as conventional passenger vehicles. The final rule adjusted crashworthiness standards (the 200 series of FMVSS) for ADS-equipped vehicles. It clarified existing terminology so that standards for traditionally designed vehicles were not applied to ADS-equipped vehicles.
Framework for Automated Driving System Safety	2020	ANPRM	NHTSA is analyzing comments.	This rule would establish a performance-based safety framework for ADS developers. The framework is intended to "objectively define, assess, and manage the safety of ADS performance." The rule would establish a performance threshold through guidance, consumer information, or regulation.
Incident Reporting Requirements for Automated Driving Systems and Level 2 Advanced Driver Assistance Systems	2024	Published in unified agenda	NHTSA is developing the NPRM.	This rule is expected to address the SGO that mandates crash-reporting requirements from manufacturers and operators of partially automated and ADS-equipped on publicly accessible roads.
ADS-Equipped Vehicle Safety, Transparency, and Evaluation Program (AV STEP)	2025	NPRM	NHTSA closed the public comment period on March 17, 2025.	This rule would create a voluntary framework to evaluate vehicles equipped with ADS. Manufacturers, developers, and operators of ADS-equipped vehicles could opt into a program that would evaluate the performance of their vehicles. The program would provide NHTSA with information that would support the development of ADS safety standards while offering regulatory oversight in the interim. Participants accepted into the program may receive exemptions from FMVSS, which would provide an alternate path to exemptions from the current mechanism available.

APPENDIX D. Autonomous Heavy-duty Vehicles ([back to section](#))

State	Code
Alabama	Code of Ala. § 32-9B-3
Arizona	A.R.S. § 28-9705
Arkansas	A.C.A. § 27-51-2001
Florida	Fla. Stat. § 316.003
Kansas	K.S.A. § 8-2908
Kentucky	KRS § 186.763
Louisiana	La. R.S. § 32:400.1
Michigan	MCLS § 257.665
Mississippi	Miss. Code Ann. § 63-35-21
Neveda	Nev. Rev. Stat. Ann. § 706A.080
New Mexico	N.M. Stat. Ann. § 66-1-4.1
Oklahoma	47 Okl. St. § 1709
Pennsylvania	75 Pa.C.S. § 8509
South Dakota	S.D. Codified Laws § 32-41-9
Texas	Tex. Transp. Code § 545.458
West Virginia	W. Va. Code § 17H-1-7