



Administration

Report to Congress

September
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NHTSA Research and Rulemaking Activities on Vehicles Equipped with Automated Driving Systems

For the period covering
January 1, 2026–June 30, 2026

Automated Driving System (ADS)-Equipped Vehicles

Introduction

House Report No. 119-212, incorporated by reference into the Joint Explanatory Statement accompanying the Transportation, Housing and Urban Development and Related Agencies Appropriations Act, 2026 (Division F of the Consolidated Appropriations, Transportation, Housing and Urban Development and Related Agencies Appropriations Act, 2026, H.R. 7148; Pub. L. 119-75, enacted on February 3, 2026), directs that the National Highway Traffic Safety Administration (NHTSA) continue to submit biannual reports on its automated vehicles (AV) rulemaking and research activities, following the guidelines originally included in the Joint Explanatory Statement accompanying the Consolidated Appropriations Act, 2023 (Pub. L. No. 117–328). Specifically, the report states:

Automated Vehicles (AVs).—The Committee directs the NHTSA to continue to submit biannual reports on rulemakings related to AV rulemaking and research activities, following the guidelines included in the Joint Explanatory Statement accompanying the Consolidated Appropriations Act, 2023 (Pub. L. 117–328).

In response to these directives, NHTSA submitted its first biannual report to Congress in January 2025,¹ and its latest in March 2026.² This fourth biannual report summarizes NHTSA’s research and rulemaking activities on Automated Driving Systems (ADS) for the period January 1, 2026–June 30, 2026, focusing on updates since the March 2026 report, which included activities for the period July 1, 2025–December 31, 2025.

These reports specifically cover agency activities related to ADS consistent with the SAE International (SAE) Levels of Driving Automation - Levels 3-5.³

Agency Updates

Proposed Global Technical Regulation for Automated Driving Systems

In January 2026, NHTSA published a notice and request for comment on a proposed Global Technical Regulation (GTR) for Automated Driving Systems (ADS).⁴ The United Nations Working Party on Automated/Autonomous and Connected Vehicles, under the World Forum for the Harmonization of Vehicle Regulations (WP.29) at United Nations Economic Commission for Europe (UNECE), has proposed a draft GTR for ADS. NHTSA sought public comment on the draft GTR to help inform the U.S. Government’s position, including how that position could relate to any future domestic actions regarding ADS safety and performance. Following a review of the submitted comments, NHTSA voted in favor of the GTR for ADS on behalf of the U.S.

¹[Research-and-Rulemaking-Activities-on-Vehicles-Equipped-with-Automated-Driving-Systems-Report-to-Congress.pdf](#).

²<https://www.nhtsa.gov/document/report-congress-research-and-rulemaking-activities-vehicles-equipped-automated-driving-1>.

³ SAE International, Recommended Practice J3016, “Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles,” J3016_202104.

⁴ <https://www.regulations.gov/docket/NHTSA-2026-0034>.

Government in June 2026. During its 199th session, at the Palais des Nations in Geneva, Switzerland, UNECE WP.29 adopted and formally established the GTR under the 1998 agreement.⁵

National Automated Vehicle Safety Forum

NHTSA continues to execute actions to further its national AV Framework in support of Administration and DOT priorities. As the next step, NHTSA hosted its first National AV Safety Forum on March 10, 2026. The Forum's objective was to inform the public and NHTSA stakeholders about its ongoing and upcoming vehicle automation activities. Secretary Sean Duffy, Michael Kratsios, Director of the White House Office of Science & Technology Policy, and NHTSA Administrator Jonathan Morrison provided opening remarks followed by a fireside chat, led by Administrator Morrison with three Chief Operating Officers from Zoox, Waymo, and Aurora. The Forum's program also included two panel discussions on (1) Measures and Metrics for Real-World Safety Performance and Crash Risk Assessment, and (2) Remote Assistance in AV Deployments. The Forum concluded with a technical working session where participants discussed important open topics in roundtable discussion format and provided feedback to NHTSA.⁶ Accompanying the event was an AV showcase which featured vehicles on display from five different AV companies.

Automated Vehicle Exemption Program

As part of the March 10, 2026 National Automated Vehicle Safety Forum, NHTSA announced it was seeking public comment on Zoox's exemption application to deploy up to 2,500 purpose-built robotaxis, which lack a steering wheel and other traditional controls.⁷ Specifically, Zoox seeks exemption from portions of Federal Motor Vehicle Safety Standard (FMVSS) No. 103, Windshield defrosting and defogging systems; FMVSS No. 104, Windshield wiping and washing systems; FMVSS No. 108, Lamps, reflective devices, and associated equipment; FMVSS No. 111, Rear visibility; FMVSS No. 135, Light vehicle brake systems; FMVSS No. 201, Occupant protection in interior impact; FMVSS No. 205, Glazing materials; and FMVSS No. 208, Occupant crash protection.

Co-Regulator Virtual Event

As announced during Administrator Morrison's opening remarks during the March 10, 2026 National Automated Vehicle Safety Forum, NHTSA held a virtual event, *The Jurisdictional Landscape: Coordinating the Multi-Agency AV Legal and Regulatory Environment*, with representatives from State and local governments as well as law enforcement on March 26, 2026. This event focused on stakeholder engagement and strengthening coordination among the many agencies that oversee various aspects of driverless operations. While NHTSA oversees vehicle performance and safety design, the real-world impact of AVs depends on a vast ecosystem of partners working in concert. The event offered a unique opportunity to hear directly from a variety of stakeholders shaping the future of our roads. The event opened with remarks by NHTSA Administrator Morrison and was followed by presentations from NHTSA's Rulemaking

⁵ <https://unece.org/transport/road-transport/working-party-automatedautonomous-and-connected-vehicles-introduction>.

⁶ <https://www.nhtsa.gov/events/av-public-meeting-2026>.

⁷ <https://www.regulations.gov/document/NHTSA-2025-0523-0003>.

Office of Automation Safety and its Office of Defects Investigation, both of which provided updates on automation safety activities. This was followed by four panel discussions involving State jurisdictions, local jurisdictions, commercial and service oversight agencies, and safety officials (e.g., law enforcement, fire, EMS, and traffic incident management). Panel representatives included officials from key AV deployment areas for their peers to learn from their experiences. NHTSA plans to hold in the future similar events to continue to facilitate peer exchanges as well as to better understand evolving needs, concerns, and perspectives.

28th International Technical Conference on the Enhanced Safety of Vehicles

In May 2026, NHTSA held the 28th International Technical Conference on the Enhanced Safety of Vehicles (ESV). The event brought together global leaders, experts, and innovators to advance motor vehicle safety. The first day of the conference featured a government and industry session on *Automated Driving Systems (ADS): Shaping the Future of Automotive Safety*.⁸ The session explored the transformative role of vehicle automation in advancing road safety. Experts discussed the current state of automated driving applications and capabilities, including the potential to improve safety. The session also addressed critical challenges such as safety performance validation, key regulatory considerations, public acceptance and trust, and deployment challenges including fleet monitoring and incident management. For the government panel, NHTSA Administrator Morrison and Transport Canada's Director General of Multimodal and Road Safety Programs, Melanie Vanstone, engaged in a fireside chat. This was followed by the industry panel which included company executives from Zoox, Waabi, Tesla, and NVIDIA.

Updates on NHTSA's ADS Research

NHTSA's ADS research program advances the body of knowledge on ADS-equipped vehicle safety. The following program areas target safety assessment methodologies that enable NHTSA to oversee ADS-equipped vehicles effectively from testing and development through large-scale commercial deployment.

System Safety Performance Assessment

Description: This ADS safety research program focuses on developing methods, tools, and metrics to assess system-level (all hardware and software working together) and safety performance. This includes assessment approaches such as simulation, closed-course testing, and on-road evaluations. NHTSA is also researching objective methods for selecting relevant test scenarios that reflect the operational boundaries and safety needs of different ADS applications.

Status Update: In February 2026, research was initiated at NHTSA's Vehicle Research and Test Center to develop an adaptable, parameterizable ADS driving competency testing framework based on known behavioral competencies. The initial phase of this research focuses on developing a draft test track procedure to evaluate ADS performance for a sample driving competency.

The research approach plans to utilize robotic surrogate vehicles that will interact dynamically with an ADS-equipped vehicle for the purpose of developing a procedure that enables repeatable,

⁸ <https://www.nhtsa.gov/research/enhanced-safety-vehicles>.

reproducible test scenarios while accommodating scenario variability in how the core competency could be tested.

NHTSA continues to advance its research on how to test, validate, and assess the safety of ADS. The agency is developing new methods to evaluate how ADS components and subsystems detect and respond to their surroundings, including using augmented reality to blend virtual and physical objects in performance testing. NHTSA is studying simulation methods as a complementary tool for assessing ADS-equipped vehicle safety, developing methods to characterize perception system performance and researching the current state of high-definition mapping. In parallel, NHTSA continues to research independent ground-truth trip recorders for both light- and heavy-duty vehicles to perform real-world safety assessments of ADS technologies. NHTSA is also exploring how reliability-centered maintenance concepts can help reduce or prevent in-use failures for ADS-equipped vehicles and is researching the safety of software defined vehicles.

Component and Subsystem Testing and Functional Safety

Description: NHTSA is studying the performance, reliability, and failure modes of components and subsystems in ADS to understand safety considerations throughout vehicle design, development, and deployment. ADS functionality can be structured into three core elements: perception, decision/path planning, and execution/control. Gaining insight into the performance of each element is believed to improve overall ADS safety assessment. NHTSA's research aims to evaluate these components and subsystems individually and collectively to identify potential risks and support the development of safety benchmarks.

Status Update: NHTSA's research continues to progress on characterizing subsystem performance, identifying failure modes, and exploring methods to evaluate and mitigate risks associated with ADS-equipped vehicles. Additional research is examining Driver Monitoring Systems (DMS) in the context of Level 2 (L2) driver support features and Level 3 (L3) ADS. This work includes a literature review of driver monitoring approaches, architectures, and implementations for current and near-term DMS products, and hazard and risk assessments of DMS for L2 and L3 systems. NHTSA's work on the safety implications of sensor degradation was published⁹ and NHTSA is nearing publication of its introductory research into artificial intelligence (AI) techniques used in ADS and Advanced Driver Assistance Systems technologies and related validation approaches.

Crashworthiness, Alternative Cabin Design

Description: Although driving automation systems may not directly alter vehicle crash mechanics, they introduce new challenges for occupant crash safety. Without the need for manual driving, passengers in ADS-equipped vehicles may be offered a broader range of seating positions and orientations, such as reclining seats or rear-facing arrangements. These variations necessitate a re-evaluation of crash safety standards. NHTSA is exploring how these evolving design elements impact occupant protection and how to adapt safety systems to accommodate new seating configurations.

⁹ <https://rosap.nhtl.bts.gov/view/dot/88134>.

Status Update: NHTSA continues to refine the understanding of human response kinematics and injuries for various-sized occupants in forward- and rear-facing reclined seating conditions. This research uses human body models for both males and females to evaluate occupant restraints for the range of seating conditions expected in new ADS-equipped vehicle designs. Advanced crash test dummies, such as the THOR-RS, were adapted under this effort for use in forward-facing reclined seating configurations and are also being evaluated in rear-facing reclined seating configurations. This research also includes assessments of the injury risk posed to children by a deploying air bag when seated in the traditional driver's seating position in an ADS-equipped vehicle. Finally, NHTSA's research continues to evaluate best practices for safe interaction of non-occupied ADS-equipped vehicles with existing vehicles, roadside hardware, pedestrians, cyclists, and motorcyclists.

ADS Human Factors and Unique User Needs

Description: The research explores how changing seating configurations and lack of a human driver may affect safety standards, occupant awareness, and system communication. These include human-machine interfaces, telltales, and warnings for Level 4–5 automation, remote operation methods, and their impact on both teleoperators and vehicle occupants.

Status Update: NHTSA has advanced its research on emerging ADS human factors topics, focusing on control transitions between human drivers and ADS, and on the design and effectiveness of telltales, controls, and indicators in ADS-equipped vehicles. In addition, the agency is making progress on human factors research in better understanding the mobility and information needs of all passengers and how to convey critical information effectively through human-machine interfaces to support safety related situational awareness. Research also continues on driver engagements in Level 3 and dual use Level 4 ADS and the impact of different types of disengagements. Further, NHTSA is finalizing its work on how changing seating configurations, and the absence of a human driver may influence safety standards, occupant awareness, and system communication.

Updates on NHTSA's ADS Rulemakings

The following list provides an update on NHTSA's current ADS rulemaking actions, reflecting changes that occurred during the reporting period over the previous Report to Congress.¹⁰ Future publications of the Unified Agenda of Federal Regulatory and Deregulatory Actions will provide additional updates on NHTSA's regulatory actions that support the advancement of the AV Framework.

1. Exemption and Demonstration Framework for Automated Driving Systems (RIN 2127-AM60) – NHTSA issued a Notice of Proposed Rulemaking (NPRM) in January 2025 to propose a program (the ADS-equipped Vehicle Safety, Transparency, and Evaluation Program, or AV STEP) that would enhance the agency's review, monitoring, and reporting of participating ADS operations while informing the agency's approach to future rulemaking and oversight. This notice contained many concepts put forth in the 2018 ANPRM, "Pilot Program for Collaborative Research on Motor Vehicles with High or Full Driving

¹⁰ <https://www.nhtsa.gov/document/report-congress-research-and-rulemaking-activities-vehicles-equipped-automated-driving-1>.

Automation.”¹¹ NHTSA withdrew this proposed rulemaking on June 26, 2026 based on its reevaluation of the proposal, consideration of the comments received, and subsequent progress on other ADS initiatives as explained in the withdrawal notice.¹²

2. Modernization of FMVSS 103 and FMVSS 104 to accommodate ADS (RIN 2127-AM71) – This new deregulatory NPRM proposes to update the FMVSS regulating windshield wipers (FMVSS No. 103) and windshield defrosters (FMVSS No. 104) to enable applicability of these standards to vehicles lacking manual controls. The NPRM was published on March 16, 2026.¹³ The current standards assume the presence of a human driver and require manual controls, reference the location of a human driver, and specify the operation of manual controls to effectuate testing for compliance with the standards. This rulemaking would address the applicability of these standards for vehicles that lack manually operated driving controls and do not have outward-facing cameras or sensors behind the windshield. In addition, this rulemaking would maintain the level of safety performance required by the standard. The rulemaking docket closed on April 15, 2026, and NHTSA is currently reviewing comments.
3. Modernization of FMVSS 102 to accommodate ADS (RIN 2127-AM72) – This new deregulatory NPRM proposes to update the FMVSS for transmission shift interlock (FMVSS No. 102) to enable applicability of the standard to novel-design ADS vehicles lacking manual controls. The NPRM was published March 16, 2026.¹⁴ The current standard assumes the presence of a human driver and manual controls, references the location of a human driver, and specifies the operation of manual controls to effectuate testing for compliance with the standards. This rulemaking would address the applicability of the standard for vehicles that lack manual controls. In addition, this rulemaking would maintain the level of safety performance required by the standard. The rulemaking docket closed on April 15, 2026 and NHTSA is currently reviewing comments.
4. Modernization of FMVSS No. 110: Tire selection and rims and motor home/recreation vehicle trailer load carrying capacity information for motor vehicles with a GVWR of 4,536 kilograms (10,000 pounds) or less (2127-AM96) – The proposed modification would provide flexibility to vehicles without manually operated driving controls in the placard section of the standard, allowing for the tire pressure placard to be placed in alternate locations. The NPRM was published April 1, 2026.¹⁵ The rulemaking docket closed on May 1, 2026 and NHTSA is currently reviewing comments.
5. Modernization of FMVSS No. 135 to Accommodate ADS-Equipped Vehicles (2127-AN00) – The proposed modification to FMVSS No. 135, on light vehicle brake systems, would clarify the requirements and test procedures for vehicles with and without manual driving

¹¹ See 83 FR 59353.

¹² <https://www.federalregister.gov/documents/2026/06/26/2026-12980/ads-equipped-vehicle-safety-transparency-and-evaluation-program-withdrawal>.

¹³ 91 FR 12537, March 16, 2026.

¹⁴ 91 FR 12532, March 16, 2026.

¹⁵ 91 FR 16172, April 1, 2026.

controls, while retaining the existing requirements for stopping distance. The current standard requires a foot-actuated service brake control and a hand- or foot-actuated parking brake control. NHTSA proposed to remove the requirements for manual braking controls for vehicles designed never to be operated by a human. The proposed changes also include language modifications, corrections of typographical errors, and removal of outdated information to clarify the braking requirements for all vehicles. The NPRM was published on June 26, 2026 and the comment period closes on July 27, 2026.¹⁶

¹⁶ 91 FR 38593, June 26, 2026.

Appendix – NHTSA ADS Research Publications and Other Activities (January 1, 2026–June 30, 2026)

Reports and Papers:

- Stowe, L., Alcazar, J., Huggins, S., Beale, G., Plamer, M., Doerzaph, Z., Virginia Tech Transportation Institute, USA. *Safety Implications of Potential Advanced Driver Assistance Systems Sensor Degradation*. December 2025.¹⁷
- Singh, H., Capito, L., Maleki, S., Venkateshwara, K.S., and Rao, S., Transportation Research Center Inc., USA; Elsasser, D., and Salaani, K., National Highway Traffic Safety Administration, Vehicle Research and Test Center, USA. *Validation Methodology For An Augmented Reality Testing Implementation For An Automated Driving System*. International Technical Conference on the Enhanced Safety of Vehicles, May 2026.¹⁸
- Siberling, J., Kelly, J., Dynamic Research, Inc. USA; Silvani, S., Svenson, A. National Highway Traffic Safety Administration, USA. *Development and Validation Methodology of a Strikable Heavy Truck Trailer Surrogate*, International Technical Conference on the Enhanced Safety of Vehicles, May 2026.¹⁹
- Guo, F., Sarkar, A., Shi, L., Yang, G., Virginia Tech, USA; Thorn, E., Southwest Research Institute, USA; Kallepalli, P., Terry, T., Van Gennip, M., Global Center for Automotive Performance Simulation, USA; Gupta, A., Qin, X., Auburn University USA. *Synthesis of Artificial Intelligence Training and Validation Methods*, International Technical Conference on the Enhanced Safety of Vehicles, May 2026.²⁰

Recent Panel Discussions and Presentations:

- Panel Discussion, “Measures and Metrics for Real-World Safety Performance and Crash Risk Assessment,” moderated by Hatipoglu, Cem, NHTSA. March 10, 2026. NHTSA National Automated Vehicle Safety Forum.²¹
- Panel Discussion, “Remote Assistance in AV Deployments,” moderated by Simshauser, Peter, NHTSA. March 10, 2026. NHTSA National Automated Vehicle Safety Forum.²²
- Presentation, “An Overview of the NHTSA Office of Automation Safety Activities,” Balk, Stacy, NHTSA. March 26, 2026. Jurisdictional Roles. NHTSA Virtual Co-regulator virtual event - The Jurisdictional Landscape: Coordinating the Multi-Agency AV Legal and Regulatory Environment.
- Presentation, “Update on Automated Vehicle Activities,” Topka, Tanya, NHTSA. March 26, 2026. Jurisdictional Roles. NHTSA Virtual Co-regulator virtual event - The Jurisdictional Landscape: Coordinating the Multi-Agency AV Legal and Regulatory Environment.

¹⁷ <https://rosap.ntl.bts.gov/view/dot/88134>.

¹⁸ [ESV Proceedings: Papers & Documents](#).

¹⁹ [ESV Proceedings: Papers & Documents](#).

²⁰ [ESV Proceedings: Papers & Documents](#).

²¹ [Recording-Measures and Metrics for Real-World Safety Performance and Crash Risk Assessment](#).

²² [Recording-Remote Assistance in AV Deployments](#).

- Workshop, “On the Road to Automation: A Scenario Based Planning Exercise,” co-moderated by Williams, Dee. NHTSA. April 19, 2026. 2026 Lifesavers Conference on Roadway Safety.
- Fire Side Chat, “Automated Driving Systems: Shaping the Future of Vehicle Safety,” moderated by Hatipoglu, Cem, NHTSA, with NHTSA Administrator Jonathan Morrison and Transport Canada’s Director General of Multimodal and Road Safety Programs, Melanie Vanstone. NHTSA. May 12, 2026. International Technical Conference on the Enhanced Safety of Vehicles.