



National Highway Traffic Safety Administration

49 CFR Parts 595 and 597

Docket No. NHTSA-2024-0100

RIN 2127-AM60

ADS-equipped Vehicle Safety, Transparency, and Evaluation Program

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking.

SUMMARY: This document proposes a voluntary framework for the evaluation and oversight of motor vehicles equipped with automated driving systems (ADS). The ADS-equipped Vehicle Safety, Transparency, and Evaluation Program (AV STEP) would establish a national program for ADS-equipped vehicles that operate or may operate on public roads in the United States under NHTSA's oversight with the goal of improving public transparency related to the safety of certain ADS-equipped vehicles, while allowing for responsible development of this technology. This proposal includes procedures for application, participation, public reporting, and program administration. It identifies content requirements for applications, including independent assessments of ADS safety processes, such as the safety cases used and conformance to industry standards. These application requirements will inform NHTSA's decisions on terms and conditions for participation. The proposal also contains reporting requirements for participants, including periodic and event-triggered reporting.

DATES: Comments are requested on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. In compliance with the Paperwork Reduction Act, NHTSA is also seeking comment on a new information collection. For additional information, see subsection D (Paperwork Reduction Act)

under Section IX (Regulatory Notices and Analyses). All comments relating to the information collection requirements should be submitted to NHTSA and to the Office of Management and Budget (OMB) at the address listed in the ADDRESSES section on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may submit comments to the docket number identified in the heading of this document by any of the following methods:

- *Federal eRulemaking Portal:* Go to www.regulations.gov and follow the instructions for submitting comments.
- *Mail:* Docket Management Facility, M-30, U.S. Department of Transportation, West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery or Courier:* U.S. Department of Transportation, West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC, 20590, between 9 a.m. and 5 p.m. Eastern time, Monday through Friday, except Federal holidays.
- *Fax:* (202) 493-2251

Instructions: All submissions received must include the agency name and docket number or Regulatory Information Number (RIN) for this rulemaking. All comments received will be posted without change to www.regulations.gov, including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the “Public Participation” heading of the **SUPPLEMENTARY INFORMATION** section of this document. Comments on the proposed information collection requirements should be submitted to OMB at www.reginfo.gov/public/do/PRAMain. To find this particular information collection, select “Currently under Review – Open for Public Comment” or use the search function. It is requested that comments sent to OMB also be sent to the NHTSA rulemaking docket identified in the heading of this document.

Docket: For access to the dockets or to read background documents or comments received, please visit www.regulations.gov, and/or Docket Management Facility, M-30, U.S. Department of Transportation, West Building, Ground Floor, Rm. W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590. The Docket Management Facility is open between 9 a.m. and 4 p.m. Eastern time, Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: For non-legal issues: Katherine L. Chasins, Rulemaking Office of Automation Safety by email: katherine.chasins@dot.gov, or phone: (202) 366-7396. For legal issues: Hunter B. Oliver, Office of the Chief Counsel by email: hunter.oliver@dot.gov, phone: (202) 366-8875. The mailing address for these officials is: National Highway Traffic Safety Administration, 1200 New Jersey Avenue SE, Washington, DC 20590.

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I. Executive Summary

Automated driving systems (ADS)¹ are evolving rapidly, posing challenges to

¹ Automated driving systems are systems developed (or being developed) to fully perform the driving task without any expectation of an attentive human driver. ADS-equipped vehicles are sometimes referred to as self-driving cars or autonomous vehicles. In contrast, driver support features (sometimes referred to as Advanced Driver Assistance Systems or ADAS), such as highway or parking assist features, must be continuously supervised by a human driver.

vehicle manufacturers and the agency alike regarding the safety of the traveling public. It is important that ADS technology be deployed in a manner that protects the public from unreasonable safety risk while at the same time allowing for responsible development of this technology, which has the potential to advance safety. Under NHTSA’s existing regulatory framework, which implements the National Traffic and Motor Vehicle Safety Act (Safety Act),² motor vehicle manufacturers may already deploy ADS-equipped vehicles on public roads, as long as they comply with existing Federal Motor Vehicle Safety Standards (FMVSS) and state and local laws.

Many ADS operations take this approach, and the FMVSS do not currently set performance standards specifically for ADS. Vehicles that are compliant with all applicable FMVSS can generally be equipped with ADS technology without NHTSA approval. Alternatively, if an ADS-equipped vehicle does not comply with all applicable FMVSS, exemptions may be requested from NHTSA. Past exemption requests involving ADS have typically involved purpose-built vehicles (those designed specifically for ADS operations).³

To account for this current ADS landscape, this document proposes a national program, entitled the ADS-equipped Vehicle Safety, Transparency, and Evaluation Program (AV STEP), designed to complement and further NHTSA’s ADS oversight, rulemaking, research, and transparency efforts as well as to support new proposed processes for exemptions involving ADS-equipped vehicles. This voluntary program

² 49 U.S.C. Ch. 301.

³ See 85 FR 7826, 7842 (February 11, 2020) (granting an exemption “to the requirements that an LSV be equipped with exterior and/or interior mirrors; have a windshield that complies with FMVSS No. 205, ‘Glazing materials’; and a backup camera system that meets the requirement in FMVSS No. 111, ‘Rear visibility,’ limiting the length of time that a rearview image can remain displayed by the system after a vehicle’s transmission has been shifted out of reverse gear.”) NHTSA also publishes notices of receipt of exemption requests under 49 CFR part 555, which provide examples of other standards for which exemptions have been requested for ADS-equipped vehicles. *See* 89 FR 88,856 (November 8, 2024); 87 FR 43602, 43607 (July 21, 2022); 87 FR 43595 (July 21, 2022).

would provide NHTSA with a framework for reviewing and overseeing ADS-equipped vehicles at a time when ADS technology continues to rapidly evolve.

In the future, as ADS technologies mature, NHTSA anticipates there may be a need to establish minimum standards for ADS safety performance, much as NHTSA's existing FMVSS govern the performance of conventional vehicle systems and attributes. However, the data, methods, and metrics to support such standards do not yet exist. Many of the elements included in this Notice of Proposed Rulemaking (NPRM) are intended to help NHTSA obtain insight and data that could, in turn, support the future development of such standards. Pending such future developments, AV STEP would serve as a national program built for the evolving state of the technology, offering an interim boost to regulatory oversight and a process for motor vehicle manufacturers and other participants to build public trust by demonstrating a commitment to responsible safety practices, accountability, and transparency.

As a voluntary program, AV STEP would be available to vehicle manufacturers, ADS developers, fleet operators, and system integrators of ADS-equipped vehicles seeking to operate on public roadways in the United States. NHTSA proposes AV STEP for two categories of ADS-equipped vehicles: ADS-equipped vehicles in need of exemptions and ADS-equipped vehicles that can lawfully operate on public roads today. For vehicles needing an exemption, AV STEP would offer an exemption pathway that is tailored for ADS-equipped vehicles (see Section VII (Requirements for AV STEP Exemptions (Regulatory Text Subpart C)) for additional details on the proposed exemption process). For all entities seeking participation in AV STEP (whether needing an exemption or not), the program would offer participants an opportunity to demonstrate their operational safety and their commitment to transparency for their vehicles and operations by engaging in a national program with well-defined participation and reporting criteria focused on advancing safety.

Under the proposed program, an applicant would provide NHTSA with information and data related to the safety of the design, development, and operations of ADS-equipped vehicles for their intended deployment under the program. NHTSA would review this information, engage with the applicant as needed to clarify or ask for additional information, and establish terms and conditions for participating in the program. Once admitted into AV STEP, a participant would be required to submit both periodic and event-triggered reports to NHTSA. To improve public transparency, the agency also proposes to publish much of the application and reporting information that NHTSA would receive.

Acceptance into the program would be based on the sufficiency of information supplied and after coordination with an applicant about terms and conditions for participation. Acceptance into the program would reflect a determination by NHTSA that the applicant has provided evidence showing it followed well-documented engineering processes and has the needed technical, operational, and management resources in place to mitigate safety concerns. Acceptance into the program would not be an assurance of safety, a validation of the ADS technology, or a guarantee that the applicant will execute its operational oversight functions as described. NHTSA would continue to exercise its existing defect and investigation authorities as ADS-equipped vehicles are deployed on public roadways.

As proposed, the program would be structured around two levels of participation: Step 1 and Step 2. Generally, Step 1 would apply to vehicles that rely on fallback personnel⁴ and Step 2 would apply to vehicles that do not rely on fallback personnel. The proposed participation requirements differ between these steps, as the approach to

⁴ As used within this proposal, fallback personnel are specially trained individuals that continuously supervise the performance of prototype ADS-operated vehicles and intervene whenever necessary to prevent a hazardous event by exercising any means of vehicle control. The full definition of “fallback personnel” appears in § 597.102 of the proposed rule.

managing risk is significantly different in these two cases. In ADS operations that rely on fallback personnel, a human is expected to intervene to compensate for any deficiency in the ADS, whereas in operations that do not rely on fallback personnel, the ADS must be able to safely respond to all driving scenarios without such intervention.

AV STEP would enhance public transparency and Federal oversight of ADS technologies to better understand and address emerging risks associated with their deployment. The agency proposes to examine applications for AV STEP in part through the use of an applicant's safety case, which would need to contain structured arguments, supported by evidence, intended to justify that a system is acceptably safe for a given use in a specified environment. The safety case concept is commonly used in safety-critical products and industries such as aviation, energy (including nuclear), medical devices, and other technology sectors. An application for AV STEP would require an assessment of an applicant's safety case by an independent entity with specialized experience and expertise. This independent assessment would consider the holistic safety of ADS-equipped vehicles, spanning technical, organizational, and operational challenges relevant to safety decision-making. While currently available testing and evaluation methods cannot conclusively determine an ADS' safety, this approach would facilitate NHTSA's review of the engineering rigor and due diligence applied to a system's development and operation. It would also provide a proactive opportunity to identify and resolve any safety concerns.

It is the agency's expectation that, by promoting a safer, more transparent, and more responsible environment for developing and deploying ADS in the United States, AV STEP will help foster the technological innovation and public confidence needed to advance ADS and the potentially significant safety benefits of the technology.

II. Program Context

AV STEP would build on NHTSA's other ADS transparency, oversight, and research activities. The first subsection below describes how the program would fit into the current ADS technology landscape. The second subsection describes the legal authorities for the AV STEP proposal and the agency's other ADS activity taken pursuant to these authorities.

A. How the Current ADS Technology Landscape Shaped this NPRM

Vehicle automation technologies, which include both ADS and advanced driver assistance systems (ADAS), have significantly transformed the automotive landscape over the last decade. Currently, the automation systems available to the public in consumer-owned vehicles are almost all driver support or convenience ADAS features, such as partial driving automation systems.⁵ For these features, the human driver remains responsible for supervising the system and must stay engaged and attentive.

In contrast, an ADS is responsible for performing the entire dynamic driving task (DDT)⁶ while operating within the system's operational design domain (ODD),⁷ without any expectation that a human driver will be attentive. However, a human may still be expected to take over the driving task when the ADS exits its ODD or, during an ADS' development, to perform a safety oversight role, such as preventing the ADS from handling a situation incorrectly.

⁵ Partial driving automation systems are described by SAE International (SAE) as executing "both the lateral and longitudinal vehicle motion control subtasks of the [dynamic driving task] with the expectation that the driver ... supervises the driving automation system." SAE International, "J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles," (Revised April 2021).

⁶ This NPRM defines DDT in part as "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 ..." *See* § 597.102 of the proposed rule. This definition is largely derived from SAE International's definition. *See* SAE International, "J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles," (Revised April 2021).

⁷ This NPRM defines ODD as "the operating conditions under which the Automated Driving System or feature thereof is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of defined traffic or roadway characteristics." This definition is largely derived from SAE International's definition. *See id.*

NHTSA proposes to limit AV STEP eligibility to ADS-equipped vehicles. This scope allows focus on the unique complexities of ADS while most ADS operations are within the control of the companies responsible for their testing. Currently, very few ADS-equipped vehicles are available for purchase by the general public.⁸ Instead, almost all such vehicles are owned and operated by vehicle manufacturers, ADS developers, or fleet operators. Most of these vehicles remain in the testing and development stage. If they operate on public roads at all, they do so only in limited environments. Limited numbers of ADS-equipped vehicles are engaged in commercial applications, such as goods delivery platforms or mobility on demand operations.⁹ However, even those commercial applications remain largely under development and operate in limited environments.

This proposal recognizes that the potential of ADS is still largely unproven. ADS technologies have the potential to improve safety, advance sustainability, provide accessible transportation for people with disabilities, increase mobility options for underserved communities, and enhance American competitiveness. However, positive outcomes are not inevitable.¹⁰ The impact ADS may have in these areas and others, such as on the workforce and on the environment, will ultimately be the result of future engineering, deployment, policy, and other choices.

⁸ See, e.g., California Department of Motor Vehicle's announcement regarding its acceptance of Mercedes' DRIVE PILOT System, available at <https://www.dmv.ca.gov/portal/news-and-media/california-dmv-approves-mercedes-benz-automated-driving-system-for-certain-highways-and-conditions>. The announcement states: "The Level 3 Mercedes-Benz DRIVE PILOT system can only operate on highways during daylight at speeds not exceeding 40 miles per hour. This permit excludes operation on city or county streets, in construction zones, during heavy rain or heavy fog, on flooded roads and during weather conditions that are determined to impact performance of DRIVE PILOT."

⁹ Mobility on demand is used to refer to vehicles that are often colloquially referred to as robotaxis, or, as discussed in SAE J3016, "robotic taxis." See SAE International, "J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles," (Revised April 2021).

¹⁰ ADS are defined by their functionality rather than safety: "the hardware and software that are collectively capable of performing the entire [dynamic driving task] DDT on a sustained basis, regardless of whether it [the system] is limited to a specific operational design domain (ODD)." SAE International, "J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles," (Revised April 2021).

The capabilities and expectations of ADS are likely to evolve significantly in the coming years. Currently, ADS can handle narrowly defined environments, but often struggle with driving tasks that humans consider relatively simple. Routine occurrences, such as adverse weather, overgrown foliage, or road construction, can exceed the capabilities of even the most advanced versions of existing ADS. To reach broader deployment, the roadway scenarios and ODDs that ADS can reliably navigate will have to substantially expand.

The tools used to develop and evaluate ADS will also need to mature. Currently, many different approaches exist within the automotive industry for designing, testing, and overseeing ADS operation. Industry standards, guidance documents, and best practices for ADS have been proposed and published but remain, collectively, in an early stage of establishment and implementation. Published standards are frequently updated to reflect the evolving state of the art, and while generalized performance metrics are sometimes included in these standards, they do not define specific measurement and analysis methods or acceptable value ranges. Given their new and evolving state, little evidence exists to prove that existing methods of evaluating ADS technology are capable of ensuring safety. Instead, these industry approaches often aim to provide safety guidance, such as by recommending minimal content for safety decision-making frameworks or by detailing high-level vehicle behavior expectations.¹¹

Given this uncertain landscape, too little transparency exists about ADS operations on public roads in the United States. There is sparse public information about basic facts, such as the number of ADS-equipped vehicles operating on public roads, the areas where those vehicles are operating, and attributes or limitations of the ADS that may affect other road users who interact with those vehicles. Publicly available

¹¹ This issue has been referred to as a long-tail problem. *See, e.g.,* Phillip Koopman, “How Safe is Safe Enough: Measuring and Predicting Autonomous Vehicle Safety” (2022).

information is often filtered through the companies that are proponents of their own technologies. Greater availability of objective information about ADS capabilities, operations, and outcomes would promote safety and more responsible growth of ADS technology.

AV STEP's proposed application, review, oversight, and reporting would create a holistic framework for evaluating and overseeing an ADS-equipped vehicle. To account for the current limits of performance-based ADS safety evaluations, the proposed evaluations would focus on the robustness of safety decision-making during all stages of an ADS operation—from development of the ADS to system operations on public roads. Reporting during participation would include data elements that are designed to oversee how this safety decision-making affects real-world safety performance. Collectively, these approaches would consider how comprehensively a company has identified the limits of its system, has accounted for risks likely to arise during operation, and is prepared to respond responsibly to problems encountered.

The agency proposes to examine this safety decision-making through a review of an applicant's safety case. The independent assessment of a safety case included with an AV STEP application and subsequent NHTSA review would consider the holistic safety of ADS-equipped vehicle operations. While currently available methods cannot definitively conclude that an ADS is safe, this approach would facilitate review of the robustness of the safety practices employed during a system's development and operation. It would also provide a proactive opportunity to identify and resolve any safety concerns.

The requirements for participating in AV STEP must be flexible enough to evolve as ADS technology evolves. To that end, the proposed independent assessment would consider industry consensus standards and best practices that exist at the time of an assessment. Likewise, the proposed ongoing reporting requirements would facilitate

NHTSA's continued oversight of vehicle operations, and the proposed procedures would allow for review and changes in operations during participation. In addition, NHTSA proposes to tailor many of the reporting requirements to the specific systems under review, to evaluate and account for the current diversity in approaches to ADS.

AV STEP is also designed to increase the amount of publicly available information about ADS operations in the United States. This proposal includes two program steps based on the competency of an ADS. NHTSA proposes to publish regularly on the agency's website a list of applicants and participants in the program, along with details regarding the scope and status of each operation. This publication would increase the public's awareness and understanding of ADS operations on public roads.

B. How NHTSA's Authorities Shaped this NPRM

NHTSA proposes AV STEP as a national program available for two categories of vehicles. The first category consists of vehicles that can lawfully operate on public roads regardless of participation in AV STEP, as long as they comply with all other Federal, state, and local laws. These vehicles include those that are compliant with and certified to all applicable FMVSS, those that have received exemptions under other NHTSA programs, and those that may operate on public roads under 49 U.S.C. 30112(b)(10).¹² The second category consists of vehicles that seek an exemption from NHTSA through AV STEP. Under this proposal, vehicles that do not comply with all applicable FMVSS or those that originally complied but are taken out of compliance by an ADS retrofit could seek exemptions through AV STEP. This section discusses how NHTSA's authorities and other ADS work support both of these categories of participation.

¹² This provision is described further later in this section.

1. NHTSA’s Mission and ADS Activity

The establishment of a national program for ADS-equipped vehicles stems from NHTSA’s authority under the Safety Act,¹³ in addition to other statutory authorities. Under 49 U.S.C 322(a), “[t]he Secretary of Transportation may prescribe regulations to carry out the duties and powers of the Secretary.” The Safety Act and other statutes provide NHTSA, by delegation, with authority relating to oversight, rulemaking, research, transparency, and exemptions. *See, e.g.*, 49 U.S.C. 30101(b) (noting need “to prescribe motor vehicle safety standards” and “carry out...safety research and development”); Section 30111 (authority to “prescribe motor vehicle safety standards”); Section 30112 (restricting the activities of vehicles that do not comply with applicable vehicle standards or that contain a defect); Section 30114 (authority to issue FMVSS exemptions for particular purposes); Section 30122 (authority to issue exemptions from the make inoperative prohibition); and Section 30182 (authority to “conduct motor vehicle safety research, develop, and testing programs and activities, including activities related to new and emerging technologies that impact or may impact motor vehicle safety”).¹⁴ This authority forms the foundation for AV STEP. The remainder of this subsection explains how AV STEP carries out each of these authorities, as well as how AV STEP fits into NHTSA’s broader regulatory activities pertaining to ADS technologies.

a) Oversight and Transparency

AV STEP would carry out NHTSA’s authorities relating to oversight and transparency by increasing the amount of information available to NHTSA about ADS-equipped vehicles, including for those vehicles that are already operating on public roads.

¹³ These duties are generally set forth in 49 U.S.C. chapter 301.

¹⁴ *See also* 49 CFR 1.95 (delegating to the National Highway Traffic Safety Administrator “the authority vested in the Secretary under chapter[] 301 . . .”), *and* 49 CFR 1.81 (“each Administrator is authorized to . . . (3) Exercise the authority vested in the Secretary to prescribe regulations under 49 U.S.C. 322(a) with respect to statutory provisions for which authority is delegated by other sections in this part”).

Under the regulatory framework established by the Safety Act, NHTSA's review and approval is not needed for most current ADS operations on public roads. The Safety Act generally requires vehicles to comply with (and be certified as complying with) all applicable FMVSS and to be free of safety defects.¹⁵ Once a manufacturer self-certifies that a vehicle meets all applicable FMVSS, it may sell the vehicle or operate it on public roads without further action from NHTSA. A manufacturer may also equip the vehicle with additional technologies not subject to an FMVSS, as long as the technologies do not pose an unreasonable risk to safety or take the vehicle out of compliance with an applicable FMVSS.¹⁶ The FMVSS do not currently set performance standards specifically for ADS, and compliant vehicles can generally be equipped with ADS technologies without NHTSA approval. Many ADS operations already occur on public roads in the United States.

In addition, the 2015 Fixing America's Surface Transportation (FAST) Act added a provision to Section 30112 permitting certain entities to test or evaluate noncompliant vehicles on public roads, as long as they do not sell those vehicles or offer them for sale once the testing or evaluation concludes.¹⁷ Entities eligible to conduct these testing or evaluation operations are those that had manufactured and distributed certified vehicles in the United States (as well as satisfied other information requirements in NHTSA's regulations) by the date of the FAST Act's enactment, December 4, 2015. Some manufacturers have relied on this provision to test noncompliant ADS-equipped vehicles on public roads.

Because most ADS operations do not need NHTSA's upfront approval, the agency's oversight of the ADS in those vehicles primarily occurs once they are operating. Specifically, NHTSA enforces the general duty of vehicle and equipment manufacturers

¹⁵ See, e.g., 49 U.S.C. 30112.

¹⁶ See 49 U.S.C. 30118, 30122.

¹⁷ See 49 U.S.C. 30112(b)(10).

to recall and remedy vehicles and equipment—including ADS or ADS-equipped vehicles—if they contain a defect that poses an unreasonable risk to motor vehicle safety. To exercise this oversight on ADS and ADS-equipped vehicles, NHTSA relies on access to information about ADS and their operations.¹⁸ NHTSA uses this information to monitor for ADS defects.

To ensure that NHTSA has access to the information necessary to exercise its oversight authority, the Safety Act expressly includes information-gathering authorities.¹⁹ NHTSA’s traditional information-gathering tools apply to ADS in much the same way as any other item of motor vehicle equipment.²⁰ In recent years, NHTSA has overseen recalls for ADS²¹ and undertaken defects and compliance investigations into ADS.²² NHTSA has also imposed standing reporting requirements for ADS crashes through a Standing General Order (SGO),²³ which requires identified manufacturers and operators to report certain crashes involving vehicles equipped with ADS to the agency. SGO reporting has led to hundreds of crash reports involving ADS operations, with many of those prompting NHTSA follow-up review. AV STEP would supplement SGO information through additional reporting requirements for participation.

However, by their nature, crash reporting and follow-up investigations are principally reactive, as a problem has already caused a crash before any reporting occurs.

¹⁸ See 49 U.S.C. 30166.

¹⁹ See *id.*

²⁰ See 81 FR 65705, 65707 (September 23, 2016) (explaining that ADS is motor vehicle equipment).

²¹ See Pony.ai, “Part 573 Safety Recall Report, No. 22E-016,” (March 3, 2022), available at <https://static.nhtsa.gov/odi/rcl/2022/RCLRPT-22E016-6814.PDF>; Cruise, LLC, “Part 573 Safety Recall Report, No. 22E-072,” (August 29, 2022), available at <https://static.nhtsa.gov/odi/rcl/2022/RCLRPT-22E072-8020.PDF>; Cruise, LLC, “Part 573 Safety Recall Report, No. 23E-029,” (April 3, 2023), available at <https://static.nhtsa.gov/odi/rcl/2023/RCLRPT-23E029-4270.PDF>.

²² See, e.g., NHTSA, “ODI Resume: Preliminary Evaluation PE 22-014” (December 12, 2022); NHTSA, “ODI Resume: Recall Query RQ 22-001” (Recall 22E-016) (April 10, 2022); and NHTSA, “ODI Resume: Audit Query AQ 23-001” (March 3, 2023), available at <https://static.nhtsa.gov/odi/inv/2023/INOA-AQ23001-2603.PDF>.

²³ NHTSA, “In re: Second Amended Standing General Order 2021-01: Incident Reporting for Automated Driving Systems (ADS) and Level 2 Advanced Driver Assistance Systems (ADAS)” (April 5, 2023), available at https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01_2023-04-05_2.pdf.

AV STEP aims to complement these efforts by adding an earlier layer of agency oversight for participating ADS-equipped vehicles. AV STEP would help NHTSA proactively identify safety concerns by proposing upfront submission requirements on the design and capabilities of an ADS and ongoing performance reporting during operations.

In addition, AV STEP also aims to increase the amount of information publicly available about ADS operations. In doing so, AV STEP would further NHTSA's longstanding goal to promote awareness of matters related to motor vehicle safety. NHTSA has a history of doing so through a variety of information programs, such as recall awareness,²⁴ motor vehicle labeling requirements,²⁵ and driver behavior education.²⁶ This charge to increase public awareness of motor vehicle safety extends to advanced vehicle technologies as well,²⁷ and NHTSA has undertaken initiatives to publicize information about vehicle automation, such as by publishing SGO crash reporting, developing an interactive online tool through the Automated Vehicle Transparency and Engagement for Safe Testing (AV TEST) Initiative,²⁸ and publishing Voluntary Safety Self-Assessments (VSSAs) submitted by entities engaged in ADS operations.²⁹ NHTSA has designed this NPRM to build on these efforts through proposals to publish information about AV STEP applications and participations.

b) Rulemaking and Research

AV STEP also proposes to implement NHTSA's research and rulemaking authorities under the Safety Act. Pursuant to 49 U.S.C. 30111, NHTSA (as delegated from the Secretary of Transportation) "shall prescribe motor vehicle safety standards."

²⁴ See 49 U.S.C. 30118; 49 CFR part 577.

²⁵ See 49 U.S.C. chapter 323; 49 CFR part 575.

²⁶ See generally NHTSA, "Research & Evaluation: Behavioral Research," available at <https://www.nhtsa.gov/behavioral-research>.

²⁷ See 49 U.S.C. 32302(e) (directing NHTSA to develop "a means for providing to consumers information relating to advanced crash-avoidance technologies"). See also 87 FR 13452 (March 9, 2022).

²⁸ AV TEST is an interactive tool that lets the public view voluntarily submitted information about automated vehicle operations. See NHTSA, "Automated Vehicle Transparency and Engagement for Safe Testing (AV TEST) Initiative," available at <https://www.nhtsa.gov/automated-vehicle-test-tracking-tool>.

²⁹ NHTSA, "Automated Driving Systems: Voluntary Safety Self-Assessment," available at <https://www.nhtsa.gov/automated-driving-systems/voluntary-safety-self-assessment>.

The Safety Act requires these FMVSS to be “practicable, meet the need for motor vehicle safety, and be stated in objective terms.”³⁰ When developing an FMVSS, the agency must, among other things, “consider relevant available motor vehicle safety information” and “consider whether a proposed standard is reasonable, practicable, and appropriate for the particular type of motor vehicle or motor vehicle equipment for which it is prescribed.”³¹

As a result, when developing an FMVSS, NHTSA builds on extensive research about the aspect of vehicle performance at issue, including the extent to which a standard would drive positive safety outcomes and present objective requirements for regulated entities. Accordingly, Congress established a policy directing the agency to “conduct research, development, and testing on any area or aspect of motor vehicle safety necessary to carry out [chapter 301]” of Title 49.³² This charge extends to advanced vehicle technologies. In the Moving Ahead for Progress in the 21st Century Act,³³ Congress instructed the Secretary to “[c]onduct motor vehicle safety research, development, and testing programs and activities, including activities related to new and emerging technologies that impact or may impact motor vehicle safety”³⁴ and to “[c]ollect and analyze all types of motor vehicle and highway safety data” relating to motor vehicle performance and crashes.³⁵ This authority to carry out research includes programs that entail engagement and collaboration with third parties.³⁶

³⁰ 49 U.S.C. 30111(a).

³¹ 49 U.S.C. 30111(b).

³² See 49 U.S.C. 30181. This chapter includes NHTSA’s core authorities for prescribing motor vehicle safety standards (Section 30111), adjudicating general and special exemptions to those standards (Sections 30113 and 30114), evaluating the existence of unreasonable risks to motor vehicle safety (Section 30116 et seq.), overseeing the importation of motor vehicles (Section 30141 et seq.), and securing enforcement of these authorities (Section 30161 et seq.). §

³³ See Pub. L. 112–141 (2012).

³⁴ See 49 U.S.C. 30182(a). Subsection 30182(b) specifies activities NHTSA may undertake in carrying out subsection (a).

³⁵ NHTSA, 83 FR 50872, 50876 (October 10, 2018).

³⁶ See 49 U.S.C. 30182(b).

In addition to other rulemaking activity regarding ADS, NHTSA has already begun the process of assessing how ADS may be affected by both existing and future FMVSS requirements.³⁷ For example, in 2022, NHTSA published a final rule that amended certain occupant protection FMVSS to account for future vehicles that would not have traditional manual controls associated with a human driver because they are equipped with ADS. This rulemaking work is supported by NHTSA’s research portfolio, which spans a range of ADS safety topics and is the outgrowth of widespread coordination within DOT and with stakeholders. The agency publishes an Annual Modal Research Plan (AMRP) that summarizes its research priorities.³⁸ The agency also recently published a Report to Congress that provides a more detailed discussion of NHTSA’s ADS research program.³⁹ NHTSA’s ADS research portfolio aims to advance the body of knowledge on ADS-equipped vehicles, including their real-world performance, as well as explore the technical challenges associated with the safe testing and deployment of ADS.

AV STEP is designed to complement these research goals in support of future ADS rulemaking efforts. Given the nascent state of ADS technology, many of the metrics for evaluating ADS safety are new, limited, or under development. This AV STEP proposal would enable NHTSA to consider the effectiveness of such metrics for evaluating ADS safety by exploring their value to automotive safety, and in turn would help NHTSA identify data elements that could form effective oversight tools or be integrated into future FMVSS.⁴⁰ To that end, the AV STEP proposal would provide

³⁷ Information about NHTSA’s full array of regulatory actions, including those pertaining to vehicle automation technologies, can be found within the biannually released Unified Agenda. *See* Office of Information and Regulatory Affairs, “Unified Agenda of Regulatory and Deregulatory Actions,” available at <https://www.reginfo.gov/public/do/eAgendaMain>.

³⁸ NHTSA, “United States Department of Transportation Annual Modal Research Plan FY 2022 and Program Outlook FY 2023” (September 10, 2021), available at <https://www.transportation.gov/sites/dot.gov/files/2022-02/AMRP%20FY2022-2023%20NHTSA%20FINAL.pdf>.

³⁹ NHTSA, “Report to Congress: Automated Vehicles” (2023), available at <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-06/Automated-Vehicles-Report-to-Congress-06302023.pdf>.

⁴⁰ 49 U.S.C. 30111.

NHTSA with in-depth access to information about the development and operations of ADS technology as it continues to evolve.

2. NHTSA Exemptions

NHTSA proposes to use AV STEP to administer requests for exemptions of ADS-equipped vehicles under two statutory provisions: 49 U.S.C. 30114(a) and 49 U.S.C. 30122(c). This proposal would not replace any of NHTSA's existing exemption processes, which would remain available for any eligible vehicles, including those equipped with ADS. Instead, AV STEP would establish a streamlined way to seek exemptions through a framework expressly designed for ADS-equipped vehicles. This proposal would establish a new framework for ADS-equipped vehicles to seek Section 30114(a) and Section 30122(c) exemptions.

a) Section 30114(a) Exemptions

With AV STEP, NHTSA proposes to carry out the agency's special exemption authority to administer FMVSS exemptions in 49 U.S.C. 30114(a). This statutory authority permits NHTSA to grant special exemptions to "vehicles used for particular purposes." Specifically, NHTSA "may exempt a motor vehicle or item of motor vehicle equipment from Section 30112(a) of this title on terms [it] decides are necessary for research, investigations, demonstrations, training, competitive racing events, show, or display." This proposed exemption process would not replace NHTSA's existing two FMVSS exemption processes, as described below. However, in administering those two exemption processes, NHTSA has observed that both the frequency and complexity of ADS exemption requests continue to grow as the technology progresses.

Those two exemption processes were designed to handle any type of FMVSS exemption that NHTSA receives, originally for traditional vehicles that do not utilize automation. ADS technologies entail an array of unique safety and oversight considerations compared to traditional automotive components. As a result, NHTSA

believes that an exemption process designed from the ground up to account for these unique considerations could enhance the agency's administration of exemptions that involve ADS, such as through improved oversight and efficiency. As described below, NHTSA's two existing exemption processes would also remain available for ADS-equipped vehicles and may provide advantages for certain types of operations. However, NHTSA believes that the current ADS landscape warrants the availability of a dedicated exemption process for ADS-equipped vehicles, and the existence of this process would also better equip NHTSA for the potential growth of ADS technology in the future.

By creating a pathway specifically designed for ADS-equipped vehicles, NHTSA proposes to use many of the principles that have proven effective under NHTSA's other exemption programs that implement Section 30114(a). NHTSA currently administers Section 30114(a) through two programs: (1) exemptions for vehicles imported for purposes of show or display⁴¹ and (2) the Temporary Import Exemption (TIE) program, which administers Section 30114(a) exemptions for vehicles requesting importation for purposes of research, investigation, demonstrations, training, or competitive racing events.⁴² In 2016, the TIE program processed the first Section 30114(a) exemption for an ADS-equipped vehicle. In 2018, NHTSA developed the ADS-equipped Vehicle Exemption Program (AVEP), within the TIE program, to process the increasing number of Section 30114(a) exemption requests for the importation of ADS-equipped vehicles. This number of requests has continued to grow since then, both in number and complexity. Since the first ADS exemption request in 2016 to the end of 2023, NHTSA permitted 293 imported ADS-equipped vehicles to operate in 249 projects across 25

⁴¹ See generally, NHTSA, "How to Import a Motor Vehicle for Show or Display" (October 15, 2012), available at

https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/how_to_import_show_display_10152012-tag.pdf.

⁴² TIE is often colloquially known as NHTSA's Box 7 program, a reference to the numbered box associated with this exemption on the HS-7 Declaration form used during the importation process. See generally, NHTSA, "Temporary Importation of a Motor Vehicle Under Box 7 on the HS-7 Form," available at https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/box7_form_111920_v3_secured.pdf.

states. The last several years have accounted for much of this activity: between 2020 to the end of 2023, NHTSA permitted 222 imported ADS-equipped vehicles to operate in 194 projects across 23 states.

Many of the requirements proposed for AV STEP build on AVEP processes or apply the agency's experience from that program. Like the proposed AV STEP process, AVEP uses an iterative review process that considers the safety of the ADS along with the overall safety of the vehicle and the purposes for which the exemption is requested. This process culminates in terms and conditions in an exemption letter, which govern the exempted vehicles' operation. This proposal does not intend to replace AVEP. However, just as NHTSA's Section 30114(a) review process evolved to establish AVEP shortly after ADS exemption requests began, the increasing complexity of ADS exemption requests merits the development of another framework. NHTSA proposes for AV STEP to meet this need through a more comprehensive application and participation framework designed specifically for larger and more complex ADS operations.

In general, AVEP exemptions do not cover large numbers of vehicles, with many of those exemptions covering only a single vehicle. AVEP vehicles often operate on a fixed route expressly approved by NHTSA in a permission letter. As a result, NHTSA's review of an AVEP application often involves a detailed turn-by-turn review of the route. NHTSA receives much of the information about the vehicle's ADS in response to follow-up questions that arise during review of an application. Likewise, unique terms and reporting requirements are often developed for each operation. The AVEP review and participation process is iterative, and companies often need to request amendments for even minor changes to a permission, such as requesting to add a turn or stop to a route.

The AVEP process has proven an effective way to oversee small numbers of vehicles. Because its processes are tailored to each exemption, AVEP also offers a flexible program that reduces the burden on companies who seek smaller-scale

importation exemptions. If AV STEP is finalized, NHTSA expects many companies would still choose to use the AVEP process, especially for vehicles that are tested in small numbers, such as early prototypes.

However, AVEP's detailed, iterative process is less efficient for larger operations. The AV STEP proposal accounts for this by adapting many of the safety lessons learned from AVEP into processes that are capable of administering and overseeing exemptions at scale. For instance, aspects of this proposal—such as the independent assessment, application review procedures, and reporting on updates to operations—aim to make reviewing evolving operations with growing numbers of vehicles or routes more manageable. In turn, AV STEP should help NHTSA process and oversee complex ADS exemptions more efficiently.

Apart from Section 30114(a), NHTSA also administers exemptions to ADS-equipped vehicles under 49 U.S.C. 30113. These exemptions are implemented in NHTSA's regulations in 49 CFR part 555. Compared to Section 30114(a), companies have not used Section 30113 exemptions as frequently for ADS-equipped vehicles. NHTSA has received fewer than five part 555 exemption requests for ADS-equipped vehicles, with only one of those to date receiving an exemption.⁴³ The terms and conditions on the sole ADS exemption issued under part 555 were significantly influenced by terms that NHTSA developed for AVEP.

Exemptions issued under Section 30113 are for more general purposes than exemptions issued under Section 30114(a). Vehicles receiving them do not need to meet one of the specific purposes enumerated in Section 30114(a) and, absent restrictions placed by NHTSA, can be more broadly introduced into interstate commerce. In general, each vehicle manufactured under a Section 30113 exemption retains the exemption in perpetuity. Such a broader exemption is warranted because a vehicle that receives an

⁴³ NHTSA, 85 FR 7826, 7842 (February 11, 2020).

exemption under Section 30113 must meet one of several express statutory standards, such as proving that the vehicle’s “overall level of safety is at least equal to the overall safety level of the nonexempt vehicles.”⁴⁴ Thus, even if AV STEP exists, NHTSA expects that some manufacturers will elect to use Section 30113 for their ADS-equipped vehicles, especially if ADS technologies mature to the point that more entities consider equipping them on vehicles intended for sale.

As a result, AV STEP would complement existing Section 30113 and Section 30114(a) exemption processes to create a comprehensive NHTSA FMVSS exemption portfolio, with each process offering advantages for certain types of ADS-equipped vehicle use cases. Entities requesting exemptions for imported vehicles in early development stages would likely request exemptions through AVEP, due to its flexibility and potential to reach quicker decisions for limited-scope projects.⁴⁵ AV STEP would provide an exemption process designed for ADS-equipped vehicles—regardless of whether they are imported—that are in later or final stages of development but still within the control of essential stakeholders. Given their more developed state, vehicles in AV STEP could begin to engage in some types of commercial operations as long as that commercialization did not undermine the public purposes for which the exemption was issued. Finally, manufacturers in need of exemptions for their ADS-equipped vehicles that have reached a more mature development state may prefer part 555, especially if the vehicle is designed for sale. In this way, AV STEP would fill the need for an FMVSS exemption suited for the current interim stage of ADS technology development. NHTSA specifically requests comment on how the proposed AV STEP exemptions would likely

⁴⁴ 49 U.S.C. 30113(b)(3).

⁴⁵ Although this process is currently only for imported vehicles, NHTSA is undertaking a rulemaking to create an equivalent exemption option for vehicles manufactured in the United States. *See* Office of Information and Regulatory Affairs, “Unified Agenda of Regulatory and Deregulatory Actions,” RIN 2127-AM14: Expansion of Temporary Exemption Program to Domestic Manufacturers for Research, Demonstrations, and Other Purposes. This issue is discussed further in Section VII (Requirements for AV STEP Exemptions (Regulatory Text Subpart C)) of this NPRM.

be utilized in comparison to NHTSA's other exemption programs, as well as on how best to design AV STEP to complement those other exemptions.

b) Section 30122(c) Exemptions

NHTSA proposes to allow exemptions under Section 30122, which generally prohibits activities that take a previously compliant vehicle out of compliance with the FMVSS.⁴⁶ NHTSA is authorized to prescribe regulations for Make Inoperative Exemptions as long as those exemptions are consistent with motor vehicle safety and with 49 U.S.C. 30101, which is the Safety Act's general purpose and policy statement.⁴⁷

NHTSA has carried out this authority through regulations that govern specific situations where making certain safety devices inoperable, such as airbags, is permissible.⁴⁸ For instance, NHTSA's regulations create procedures for invoking the exemption to "install retrofit air bag on-off switches and to otherwise modify motor vehicles to enable people with disabilities to operate or ride as a passenger in a motor vehicle."⁴⁹ Part 595 was most recently updated in 2024 to allow law enforcement vehicles to be modified in a way that deactivates an automatic emergency braking system required by 49 CFR 571.127, S5.4.2.

The proposed Make Inoperative Exemption in AV STEP would continue NHTSA's practice of exempting specific situations where the general make inoperative prohibition may not account for unique vehicle needs. Engagement with stakeholders on how ADS technology relates to NHTSA's authorities has repeatedly raised the possibility that equipping an FMVSS-certified vehicle with an ADS may implicate the make inoperative prohibition in Section 30122.

⁴⁶ See 49 U.S.C. 30122(b) ("A manufacturer, distributor, dealer, rental company, or motor vehicle repair business may not knowingly make inoperative any part of a device or element of design installed on or in a motor vehicle or motor vehicle equipment in compliance with an applicable motor vehicle safety standard").

⁴⁷ See 49 U.S.C. 30122(c).

⁴⁸ 49 CFR part 595 (Make Inoperative Exemptions).

⁴⁹ 49 CFR 595.2; see also 87 FR 14406 (March 15, 2022).

NHTSA’s 2022 Final Rule on Occupant Protection for Vehicles With Automated Driving Systems discussed comments that raised hypothetical situations where ADS modifications to a vehicle may relate to the make inoperative prohibition.⁵⁰ Questions about how the make inoperative prohibition in Section 30122 affects ADS equipment will likely persist over the coming years, particularly as NHTSA promulgates new FMVSS that govern the performance of vehicle automation features.⁵¹ NHTSA has also explored the relationship between Section 30122 and ADS-equipped vehicles—including the use of exemptions under Section 30122(c)—in past regulatory notices.⁵²

NHTSA takes no position in this rulemaking on the effect of the make inoperative prohibition in Section 30122 on ADS equipment or associated aftermarket modifications. The AV STEP framework would enable NHTSA to address this issue by providing a set of procedures to govern the review and oversight of make inoperative exemptions for ADS-equipped vehicles.

The AV STEP Make Inoperative Exemption is proposed pursuant to NHTSA’s authority in Section 30122(c). The proposed AV STEP framework would further the purposes of the Safety Act in carrying out NHTSA’s oversight, rulemaking, research, and transparency authorities, as explained previously in this section. The AV STEP framework is designed to help NHTSA identify potential safety issues with an ADS and to oversee its performance during the course of program participation. These review and oversight procedures would help NHTSA assess the statutory criteria for such an exemption.

Exemptions to the make inoperative provision are codified in 49 CFR part 595. NHTSA proposes to add a new subsection in part 595 that incorporates the proposed

⁵⁰ NHTSA, 87 FR 18560, 18571 n.36 (September 26, 2022).

⁵¹ *See, e.g.*, 89 FR 39686 (May 9, 2024).

⁵² *See* NHTSA, 83 FR 50872, 50882 (October 10, 2018) (requesting comment on: what role could a pilot program play in determining when to grant an exemption from the make inoperative prohibition under Section 30122 for certain dual mode vehicles).

procedures for AV STEP that would be codified in the new part 597. In addition, NHTSA proposes to amend the Purpose and Applicability subsections in part 595 so that they encompass all of the exemptions set forth in the part.

The discussion in this preamble is generally organized around the sequence in which an entity would engage with AV STEP. The first section below (Section III) explains the threshold requirements for AV STEP, including eligibility and required terms and conditions for all participants. Sections IV through VI provide an overview of the application process, the participation stage, and the information that NHTSA proposes to make public regarding both applications and participations. These aspects of AV STEP would all apply across the entirety of the program, while Section VII outlines proposals specific to AV STEP exemptions. For reader convenience, NHTSA includes reference to the associated subparts of the proposed regulatory text in the headings for each of these sections.

In past exercises of its authorities, NHTSA has often implemented standalone voluntary or exemption programs analogous to AV STEP's various components, and NHTSA intends that the components of the proposal be severable. AV STEP is proposed as a national framework that encompasses three independent structural components: (1) a voluntary program for compliant vehicles; (2) a process for administering FMVSS exemptions; and (3) a process for administering exemptions from the make inoperative prohibition. As explained in this proposal, each of these structural elements stems from independent NHTSA authorities under the Safety Act. Although NHTSA believes that AV STEP offers an opportunity to combine all three of these elements into a national framework, as the proposal explains, each of these structural elements has independent value.

III. Program Structure (Regulatory Text Subpart A)

This section explains the threshold requirements for AV STEP, such as those

relating to eligibility and the required terms and conditions for all participants. AV STEP would be available to vehicles that can lawfully operate on public roads without AV STEP, as well as those that would need one of the two types of exemptions proposed in this NPRM.

In several places, this document proposes unique requirements for AV STEP exemptions to account for their particular attributes. However, in general, the proposed requirements for AV STEP are the same regardless of whether a subject vehicle needs an AV STEP exemption. Keeping these requirements consistent would further the continuity of the program, reduce confusion for potential applicants and the public about what participation entails, and simplify NHTSA's administration of the program. When developing these proposed requirements, NHTSA sought to make program application and participation requirements stringent enough to require meaningful commitments to safety while also making them feasible for participating entities. Participation in AV STEP, as proposed, would be valuable both for vehicles that need one of the AV STEP exemptions and for entities choosing voluntary participation.

NHTSA's experience suggests that a variety of incentives may exist for entities to voluntarily participate in AV STEP. Voluntary programs have historically played an important role in advancing automotive safety, particularly for advanced vehicle technologies. Recent examples include voluntary industry commitments to equip vehicles with specific safety technologies,⁵³ the submission of VSSAs to NHTSA by entities engaged in ADS testing and deployment,⁵⁴ the participation of entities engaged in ADS testing in NHTSA's AV TEST Initiative,⁵⁵ and the participation of vehicle manufacturers

⁵³ NHTSA, "NHTSA Announces Update to Historic AEB Commitment by 20 Automakers" (December 17, 2019), available at <https://www.nhtsa.gov/press-releases/nhtsa-announces-update-historic-aeb-commitment-20-automakers>.

⁵⁴ NHTSA, "Automated Driving Systems: Voluntary Safety Self-Assessment," available at <https://www.nhtsa.gov/automated-driving-systems/voluntary-safety-self-assessment>.

⁵⁵ NHTSA, "AV TEST Initiative: Automated Vehicle Transparency and Engagement for Safe Testing Initiative," available at <https://www.nhtsa.gov/automated-vehicle-test-tracking-tool>.

in the Partnership for Analytics Research in Traffic Safety.⁵⁶

The extent and nature of the incentives for entities to participate in AV STEP may depend on the entity and the type of operation. NHTSA believes that companies that strive to develop and implement robust safety practices will understand that AV STEP participation entails a public commitment to safety, transparency, and the continuous refinement of their ADS operations. Public trust is often difficult to establish for ADS operations, particularly given that incidents involving ADS-equipped vehicles receive significant negative attention. Within this climate, some entities may see AV STEP as an opportunity to demonstrate their commitment to transparency and willingness to subject their safety decision-making to external scrutiny.

Other entities that engage with ADS operations may find value in the review and oversight that would be conducted by NHTSA through AV STEP. Examples of these types of entities could include state or local authorities that regulate ADS, insurers of ADS-equipped vehicles, entities providing grants for ADS projects, or business partners, such as goods delivery services looking to partner with an ADS company. These third-party relationships could motivate companies to participate in AV STEP even if their vehicles could lawfully operate without the program.

As participation in the program grows, competitive forces may motivate other companies to participate. Accounting for these potential incentives for voluntary participation, as well as the clear incentives that would exist for entities in need of exemptions, the proposed AV STEP requirements balance the value of encouraging participation with the need to ensure that participation requirements are meaningful. NHTSA requests comment on how this proposal strikes that balance.

⁵⁶ NHTSA, “PARTS: Partnership for Analytics Research in Traffic Safety,” available at <https://www.nhtsa.gov/parts-partnership-for-analytics-research-in-traffic-safety>.

A. Program Eligibility

This proposal is designed to oversee ADS-equipped vehicles under the control of motor vehicle manufacturers, ADS developers (i.e., manufacturers of ADS, which is motor vehicle equipment), fleet operators, or system integrators that plan to engage in public road operations where the ADS will perform the driving task.⁵⁷ Section 597.103 of the proposed rule contains the following eligibility requirements:

Vehicle Eligibility. NHTSA proposes two eligibility requirements for vehicles participating in AV STEP. First, the vehicles must be equipped with an ADS being used or developed for operation without an expectation of an attentive human driver (whether in-vehicle or remote) while engaged. Second, the ADS equipped on such vehicles must perform the entirety of the DDT for all or part of the participating operations. These vehicle eligibility criteria focus on the ultimate design intent of the system.⁵⁸ Although these eligibility criteria are not tied to any preexisting taxonomy for vehicle automation, for illustration purposes, under the current SAE International levels of driving automation, these eligibility criteria could apply to certain vehicles operating at SAE Levels 3, 4, or 5.⁵⁹ The proposal does not extend AV STEP eligibility to partial driving automation systems, also known as SAE Level 2 ADAS. Excluding such systems optimizes AV STEP to address ADS' unique safety considerations and complexities.

Beyond these ADS requirements, NHTSA proposes to consider the effect of other vehicle attributes on a case-by-case basis during the agency's review, especially insofar as they may impact safety. NHTSA does not propose to categorically restrict program participation to any particular vehicle classes or types of operations (e.g., public transit).

⁵⁷ For this NPRM's definition of these terms, see § 597.102 of the proposed rule.

⁵⁸ For instance, a vehicle would be considered to be equipped with an ADS even if the ADS remained in development and dependent, at times, on a human operator such as an onboard test driver.

⁵⁹ SAE International, "J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles," (Revised April 2021). A limited number of Level 3 systems have recently become available on consumer-owned vehicles. Those vehicles would not be eligible for participation because they do not meet the separate program requirement that a vehicle manufacturer, ADS developer, fleet operator, or system integrator retain operational control over a subject vehicle.

However, NHTSA recognizes there may be unique considerations related to certain vehicle attributes or classes, such as those relating to accessibility for people with disabilities or impacts on labor and employment. NHTSA requests comment on incorporating such considerations into AV STEP, for example, through program limitations or specialized requirements.

Applicant Eligibility. NHTSA proposes to limit AV STEP participation to motor vehicle manufacturers, ADS developers, fleet operators, and system integrators for the subject vehicle. Section 597.102 of the proposed rule defines these entities as follows:

“ADS Developer” means the entity that is principally responsible for the manufacture of the ADS at the system level, including but not limited to its design, development, and testing.

“Manufacturer” has the meaning given in 49 U.S.C. 30102(a)(6). Under Section 30102, the term manufacturer includes a person (A) manufacturing or assembling motor vehicles or motor vehicle equipment; or (B) importing motor vehicles or motor vehicle equipment for resale. Under § 597.102 of the proposed rule, an entity qualifying as a manufacturer would need to be the manufacturer of the subject vehicle. Other than ADS developers, who are manufacturers of the ADS, which is motor vehicle equipment, NHTSA is not currently proposing to extend eligibility to manufacturers of motor vehicle equipment unless they can meet one of the other eligible classes of applicants. NHTSA does not believe that other manufacturers of motor vehicle equipment, such as suppliers of an individual component on a vehicle, are likely to have a broad enough understanding of the system-level performance of the vehicle to satisfy the considerations described in the following paragraphs.

“Fleet Operator” means the individual or entity that exercises all or part of the operational control over the ADS installed in a subject vehicle or group of subject

vehicles. The threshold for “operational control” is described further in the next subsection.

“System Integrator” means an entity responsible for integration of an ADS at the vehicle level. For example, an ADS that was developed for use across varied vehicle platforms could be integrated into a given vehicle and validated for that vehicle integration by an entity that does not qualify as any of the three preceding stakeholders.

In many cases, the same entity may perform the role of multiple entities. For instance, some vehicle manufacturers are responsible for the development and system integration of the vehicle’s ADS and many ADS developers conduct fleet operations for their own vehicles. However, when one or more of these entities are separate, their collective contributions are critical to the system-level operation of an ADS-equipped vehicle. Under the proposal, any of these four entities or any combination of these four entities could apply to participate in AV STEP.

The agency believes that an application and a participation must include at least one of these entities to ensure successful program engagement. An entity other than these four stakeholders could not meet the application requirements without relying heavily on these stakeholders’ representations. Likewise, it could not meet the participation requirements without relying on their commitments regarding the vehicle’s operation or data collection. Limiting participation to these four entities would promote direct accountability. NHTSA may also engage with other entities throughout the application and participation stages. Other proposed provisions address such engagement.

Operational Control. As a precondition for participation in AV STEP, NHTSA proposes to limit all operational control of the subject vehicles to the vehicle manufacturer, ADS developer, fleet operator, or system integrator. This limitation would ensure that vehicle operations remain within the direct reach of the entities with the technical knowledge of the vehicle systems and operations. This requirement would also

maintain a direct relationship between NHTSA and the parties that exercise control over the subject vehicles. This “operational control” standard has provided an effective threshold for maintaining oversight in past NHTSA ADS exemptions.⁶⁰

For operations where only one of those four entities maintains full ownership and possession of the subject vehicles, this requirement would be straightforward. In contrast, certain fleet operations may involve more complicated arrangements, such as projects that involve multiple entities. For instance, some operations may involve an ADS developer responsible for the ADS software and a fleet operator responsible for the fallback personnel present during operations. Other types of projects may involve entities other than Essential System-Level Stakeholders,⁶¹ such as a grocery store that takes possession of the vehicle while loading goods for delivery. In these situations, requiring the Essential System-Level Stakeholders to retain ownership or even possession of the subject vehicles may not always be feasible given the specific logistics of an operation.⁶² To account for this possibility, NHTSA proposes to require Essential System-Level Stakeholders to retain operational control of the subject vehicles. NHTSA proposes a scope of operational control similar to the scope of a dispatching entity that exercises control over fleet operations, as described in SAE J3016.⁶³

Definition 3.3 of J3016 defines a “dispatching entity” as “an entity that dispatches an ADS-equipped vehicle(s) in driverless operations.”⁶⁴ Definition 3.4 defines “dispatch”

⁶⁰ For instance, a 2020 exemption issued by NHTSA for an ADS-equipped vehicle under 49 CFR part 555 (which implements 49 U.S.C. 30113) imposed the condition that the vehicle manufacturer: must maintain ownership and operational control over the [exempted vehicles] that are built pursuant to this exemption for the life of the vehicles. 85 FR 7826, 7842 (February 11, 2020).

⁶¹ As proposed in the AV STEP definitions, the list of Essential System-Level Stakeholders would include, at a minimum, the vehicle manufacturer, ADS developer, fleet operator, and system integrator. Additional entities may be listed as well depending on their role in the operation.

⁶² Those receiving an exemption under AV STEP would, however, be subject to additional restrictions on possession or ownership. *See* Section VII (Requirements for AV STEP Exemptions (Regulatory Text Subpart C)).

⁶³ *See generally* SAE International, “J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles,” (Revised April 2021).

⁶⁴ *Id.* at 3.3, p. 7 (“[Driverless Operation] Dispatching Entity”) (bracketed language in original).

as “[t]o place an ADS-equipped vehicle into service in driverless operation by engaging the ADS.”⁶⁵ Finally, definition 3.13 describes “fleet operations” or fleet functions as:

The activities that support the management of a fleet of ADS-equipped vehicles in driverless operation, which may include, without limitation:

- Ensuring operational readiness.
- Dispatching ADS-equipped vehicles in driverless operation (i.e., engaging the ADSs prior to placing the vehicles in service on public roads).
- Authorizing each trip (e.g., payment, trip route selection).
- Providing fleet asset management services to vehicles while in use (e.g., managing emergencies, summoning or providing remote assistance as needed, responding to customer requests and breakdowns).
- Serving as the responsible agent vis-a-vis law enforcement, emergency responders, and other authorities for vehicles while in use.
- Disengaging the ADS at the end of service.
- Performing vehicle repair and maintenance as needed.⁶⁶

Under this proposal, a vehicle manufacturer, ADS developer, fleet operator, or system integrator (or any combination thereof) could each exercise aspects of this control even if only one of them were an AV STEP participant. For instance, if the ADS developer were the sole participant, a fleet operator could exercise some measure of operational control. Likewise, this proposed requirement is not intended to prohibit vehicle passengers from having limited control authority over the vehicle, such as selecting a destination for a ride-hailing operation.⁶⁷ Given the complex relationships among different stakeholders in operations, NHTSA requests comment on the workability of the proposed operational control requirement.

Location Eligibility. NHTSA proposes to require that AV STEP operations take

⁶⁵ *Id.* at 3.4, p. 7 (“Dispatch [In Driverless Operation]”) (bracketed language in original). Note 1 of this definition clarifies that “[t]he term ‘dispatch,’ as used outside of the context of ADS-equipped vehicles, is generally understood to mean sending a particular vehicle to a particular pick-up or drop-off location for purposes of providing a transportation service. In the context of ADS-equipped vehicles, and as used herein, this term includes software-enabled dispatch of multiple ADS-equipped vehicles in driverless operation that may complete multiple trips involving pick-up and drop-off of passengers or goods throughout a day or other pre-defined period of service, and which may involve multiple agents performing various tasks related to the dispatch function. To highlight this specialized use of the term dispatch, the term is modified and conditioned by the stipulation that it refers exclusively to dispatching vehicles in driverless operation.”).

⁶⁶ *Id.* at 3.13, p. 14 (“Fleet Operations [Functions]”) (bracketed language in original).

⁶⁷ In such cases, the vehicle user would be acting within a set of parameters controlled by an ADS developer, such as by selecting a destination within a developer-established ODD.

place, in part or entirely, on public streets, roads, and highways in the United States. This eligibility requirement mirrors statutory language for the Safety Act’s definition of “motor vehicle” in 49 U.S.C. 30102. Since the program framework for AV STEP is designed principally to oversee vehicles operating on public roads, this eligibility requirement ensures that each operation involves at least some public road usage. During participation, NHTSA expects that subject vehicles may also engage in operations on non-public roads, such as closed course testing. In general, the proposed application and reporting requirements for AV STEP would not cover such private road operations.⁶⁸

B. Program Steps

AV STEP would have two program participation categories. In general, Step 1 would apply to vehicles that rely on fallback personnel, and Step 2 would apply to vehicles that do not rely on fallback personnel. Given the increased responsibility of the ADS at Step 2, the level of system maturity is expected to be higher than at Step 1. As proposed, a vehicle could start participation at either step level. It would not be necessary to complete Step 1 before moving to Step 2. However, Step 1 participants could apply to participate at Step 2 as their systems and operations mature. Likewise, under this proposal, if a company had multiple vehicle platforms or systems, some of which were more mature than others, the company could apply to participate in Step 1 for some operations and in Step 2 for others.

The reliance on fallback personnel is used to delineate between Steps 1 and 2 because the approach to managing risk is significantly different in these two cases. In an operation that relies on fallback personnel, a human is expected to compensate for known limitations or unproven aspects of the ADS. In contrast, in an operation that does not rely on fallback personnel, the ADS must be capable of handling all scenarios within an ODD

⁶⁸ However, non-public road testing would likely be relevant to the validation evidence for the safety case assessment discussed in Section IV.D.1.b) (Independent Assessment, Safety Case).

without the intervention of fallback personnel. AV STEP can more easily account for these unique safety considerations by dedicating a separate step to each type of operation.

The ADS industry acknowledges the significance of these differences. For instance, when discussing its ADS, referred to as the Aurora Driver, Aurora Innovation Inc. (Aurora) explained in its 2022 VSSA that:

as we continue to develop with the Aurora Driver, we currently have vehicle operators ... monitoring the performance of the Aurora Driver at all times and ready to take over as necessary to ensure operational safety. Therefore, our tailored safety case for this use case includes claims focused on vehicle controllability and vehicle operator hiring, training, and operational procedures, among others. However, when we reach the point of removing the vehicle operators from cabs, these vehicle operator-centric claims will no longer be relevant.⁶⁹

Similarly, Waymo LLC explained in a 2020 discussion of safety readiness determinations that:

[d]eterminations to move from public road testing with trained vehicle operators to driverless operations, of course, are conducted at the greatest level of detail. Going completely driverless entails extremely rigorous analysis of expected behaviors and risks within the ODD, including unique risks presented by the absence of a human driver (e.g., responding to system failures through fallback maneuvers that do not rely on human intervention).⁷⁰

Under the proposal, an entity would be eligible to apply for Step 1 participation for vehicles that operate with fallback personnel during all participating operations on public roads.⁷¹ An entity would be eligible to apply for Step 2 participation for vehicles that operate, at any time during participation on public roads, without fallback personnel. NHTSA proposes to define “Fallback Personnel” as an individual specially trained and skilled in supervising the performance of prototype ADS-operated vehicles in on-road traffic, who continuously supervises the performance of an ADS-operated vehicle in real

⁶⁹ Aurora, “Safety Report” (2022), available at https://info.aurora.tech/hubfs/Website%20Public%20Files/Q4_Safety_VSSA%202022_digital_r2.pdf.

⁷⁰ Webb, N., Smith, D., Ludwick, C., Victor, T.W., Hommes, Q., Favarò F., Ivanov, G., and Daniel, T., “Waymo’s Safety Methodologies and Safety Readiness Determinations,” (2020) available at <https://arxiv.org/abs/2011.00054>.

⁷¹ Stakeholders use a variety of terms to refer to the fallback personnel role, such as in-vehicle fallback test drivers, safety operators, or testing safety operators.

time and intervenes whenever necessary to prevent a hazardous event by exercising any means of vehicle control. This intervention may occur as part of a DDT Fallback⁷² or in anticipation of possible future ADS behavior that is unsafe or otherwise unwanted by the user. This definition of fallback personnel would not include vehicle assistance, which does not involve directly exercising vehicle control authority.⁷³ An ADS that relied only on vehicle assistance during public road operations would fall under Step 2 rather than Step 1.

As defined in this proposal, individuals who perform the fallback role could do so from within the vehicle or remotely. Remote fallback personnel would be considered remote drivers under the proposed definition of remote driving—the real-time performance of part or all of the DDT by an individual physically located outside of the vehicle.⁷⁴ However, NHTSA proposes to narrowly limit remote driving in AV STEP, as described in Section III.C (Terms and Conditions).

The proposed eligibility requirements of Step 2 are not intended to disincentivize the limited use of fallback personnel when a participant deems it beneficial for safety. Therefore, once admitted into AV STEP, a vehicle participating under Step 2 could rely on fallback personnel on a limited basis during public road operations. For example, fallback personnel could be temporarily reintroduced during the validation of a software update. Such limited exceptions notwithstanding, Step 2 is intended to demarcate an ADS' readiness to operate without fallback personnel, and the agency does not intend

⁷² Section 597.102 of the proposed rule defines *DDT Fallback* as: the response by an individual to either perform the DDT or achieve a minimal risk condition after occurrence of a DDT performance-relevant system failure(s) or upon operational design domain exit, or the response by an ADS to achieve a minimal risk condition, given the same circumstances.

⁷³ Section 597.102 of the proposed rule defines *Vehicle Assistance* as: an individual providing information or instruction about a situation to an ADS-equipped vehicle in driverless operation (instead of exercising direct control of the vehicle) to help the ADS continue a trip when encountering a situation that the ADS cannot manage. Vehicle assistance may be provided remotely, by an individual not physically present in the vehicle, or by an individual on board (physically present in) the vehicle. Unlike fallback personnel, as defined in this section, vehicle assistance personnel provide information or instruction to an ADS-equipped vehicle rather than directly exercising vehicle control authority.

⁷⁴ Some vehicle designs do not facilitate any human occupancy. Remote fallback personnel would be the only option for such vehicles to rely on fallback personnel.

participants in Step 2 to functionally operate as Step 1 participants through the widespread or sustained use of fallback personnel. To oversee this expectation, NHTSA proposes reporting requirements to monitor the extent to which Step 2 operations use fallback personnel.⁷⁵

For both steps, NHTSA proposes to prohibit vehicle operations that rely on fallback personnel from providing rides to public passengers.⁷⁶ This would mean that no public ridership would be permitted under Step 1 or in any of the limited situations where fallback personnel could be used under Step 2. This prohibition is proposed in light of the lower level of ADS maturity that is expected of a system that must rely on a human as a fallback. The need for fallback personnel indicates that an ADS has known limitations or requires further validation. The presence of fallback personnel also introduces training and human factor considerations into the safety of those vehicles, such as whether fallback personnel remain attentive while monitoring the ADS. Although the use of fallback personnel can be beneficial for safety during testing, NHTSA believes their role is better suited for operations engaged in significant development than those ready to carry public passengers. NHTSA requests comment generally on the conditions under which AV STEP should permit public ridership, including, more specifically, whether it should be permitted during operations that rely on fallback personnel.

C. Terms and Conditions

Each AV STEP participation would be governed by a Final Determination Letter that establishes the full set of terms and conditions for the participation. NHTSA's proposed review process that would lead to the issuance of a Final Determination Letter is described in Section IV.E (Application Review). In general, the terms and conditions

⁷⁵ These requirements are set forth in § 597.501(f) of the proposed rule and described further in Section V.A (Reporting Requirements) of this document.

⁷⁶ This prohibition would apply to any passenger who is a member of the public other than an employee or agent of an entity designated as an Essential System-Level Stakeholder or a public official acting in an official capacity, such as law enforcement or government personnel. *See* § 597.105(c) of the proposed rule.

established by a letter would be tailored to the unique aspects of a participation and may cover subjects other than those expressly enumerated in § 597.105(b) of the proposed rule. Section IV.E lists seven subjects that would, at a minimum, be addressed in a Final Determination Letter. These include whether the participation is permitted under Step 1 or 2, the vehicles approved for participation,⁷⁷ the locations where participation is permitted, the duration of participation, and the stakeholders deemed essential for the participation. This letter would also govern the permitted uses of those vehicles, which could include commercial operations.⁷⁸

A Final Determination Letter would also govern the maximum number of vehicles approved for participation.⁷⁹ This number would be informed by NHTSA's review of the information submitted in the application. NHTSA proposes, when appropriate, to authorize increases in vehicle numbers over time if requested by the participant. Incrementally increasing participation would allow the scope of participation to mature along with a technology, enabling expansions to correspond to performance benchmarks or limiting initial operations until the agency gains further insight from overseeing the vehicles. Conversely, NHTSA could reduce the number of vehicles permitted to participate in AV STEP. For instance, this could occur during participation by lowering the cap on permitted vehicles through the concern resolution procedures proposed in this document or through a term in a Final Determination Letter that sets benchmarks for expanding or contracting vehicle participation numbers. NHTSA requests comment on whether the proposed rule should establish a cap on the number of vehicles allowed for each participant, including what such a cap should be and the grounds for

⁷⁷ Section VII (Requirements for AV STEP Exemptions (Regulatory Text Subpart C)) explains a unique set of procedures for vehicles receiving exemptions under AV STEP.

⁷⁸ Section VII (Requirements for AV STEP Exemptions (Regulatory Text Subpart C)) explains the requirements for FMVSS exemptions that involve commercial operations.

⁷⁹ Setting limits on participation numbers through the adjudication of each request rather than through a categorical cap that applies to all participants would align with the longstanding approaches of the other NHTSA programs that administer exemptions under Section 30114(a).

setting it, as well as whether the cap should be able to be modified during program participation.

NHTSA also proposes for Final Determination Letters to contain terms governing the use of remote driving during participation. NHTSA proposes, in § 597.105(j) of the proposed rule, to generally prohibit remote driving in AV STEP except as temporarily needed to briefly move a vehicle after the ADS initiates a minimal risk maneuver or during any situations expressly permitted in a Final Determination Letter.⁸⁰ This proposal would limit remote driving to short distances, such as moving a vehicle to the side of the road after it has stopped in a travel lane or moving a vehicle in response to direction from emergency responders. Conditioning remote driving on the initiation of a minimal risk maneuver would, for example, allow this brief use of remote driving after the vehicle achieves a minimal risk condition or if remote personnel realize that a vehicle undertaking a minimal risk maneuver is taking inappropriate action. Minimal risk maneuvers and minimal risk conditions are discussed further in Section IV.B.2 (System Fallback Response).

As proposed, this general prohibition on remote driving also allows an exception for other situations expressly delineated in a Final Determination Letter. An application would need to describe any such situations for which permission is requested.⁸¹ NHTSA requests comment on the proposed approach to remote driving and, specifically: (1) whether to include operations that use remote fallback personnel within the scope of the program; (2) whether the proposed rule should include a limited allowance for remote

⁸⁰ Human factors issues, connection latency, and jitter can result in unavoidable challenges for remote driving operations, even in locations with optimal connectivity. Therefore, although the agency extends eligibility to prospective operations that would entail limited remote driving, NHTSA expects, through the review framework described in the ensuing sections, to significantly scrutinize such uses. For further discussion of latency, jitter, and other remote driving considerations, *see, e.g.*, Y. Yu and S. Lee, “Remote Driving Control With Real-Time Video Streaming Over Wireless Networks: Design and Evaluation” (June 2022), available at <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9797698>.

⁸¹ The required information about remote driving in an application is discussed in Section IV.B (Protocols for ADS Operations).

driving after the ADS achieves a minimal risk condition or after the ADS initiates a minimal risk maneuver; and (3) whether the proposed rule should expressly include any other exceptions to the general prohibition on remote driving.⁸²

The proposed rule contains several terms to promote NHTSA's engagement with other regulatory authorities, such as states and local governments, during the review of an application and participation in the program. The proposed rule would require all vehicles, including their operations, to comply with all Federal, state, and local laws and requirements during participation.⁸³ This provision would cover both generally applicable requirements, including local traffic laws, and those specific to ADS technologies. The proposed application and reporting requirements would provide NHTSA with information to consider whether an entity has a responsible process for identifying and following these laws. NHTSA intends to coordinate with Federal, state, and local governments, as appropriate, regarding these and other issues associated with ADS operations in their jurisdictions.

The Federal, state, and local regulatory frameworks and programs that also cover ADS operations span a range of different regulatory approaches. At the Federal level, examples include grants for ADS projects funded by other parts of DOT⁸⁴ and pilot projects to explore the potential for ADS to further the mission of other agencies.⁸⁵

⁸² Other potential exceptions could include if remote driving is unexpectedly needed to respond to a hazardous circumstance or if remote driving could enable temporary navigation around a roadway change, such as a construction zone, for which the ADS has not yet been validated.

⁸³ This requirement would maintain NHTSA's practice of imposing a similar term in other exemptions issued under Section 30114(a).

⁸⁴ See, e.g., U.S. Department of Transportation, "Automated Driving Systems Demonstration Grants Program," available at <https://www.transportation.gov/policy-initiatives/automated-vehicles/ads-demonstration-grants>. The Federal Transit Administration also administers grants for ADS. See generally Federal Transit Administration, "Transit Automation Research," available at <https://www.transit.dot.gov/automation-research>.

⁸⁵ National Park Service, "NPS Emerging Mobility: Summary Evaluation of Low-Speed Automated Shuttle Pilots at NPS Sites," June 2022. <https://www.nps.gov/subjects/transportation/upload/NPS-Automated-Shuttle-Pilots-Evaluation-Summary.pdf>.

Examples at the state and local levels include state permitting requirements for ADS-equipped vehicles⁸⁶ and traffic laws that are specific to ADS-equipped vehicles.⁸⁷

The goals of these initiatives are varied, given the diverse regulatory missions of the different jurisdictions. It is not feasible or appropriate to design AV STEP around all of the various approaches that other authorities may take concerning ADS. At the same time, AV STEP would not override any of those other authorities, such as by imposing Federal preemption of state requirements. Instead, NHTSA considers AV STEP best suited to exist in parallel with those other requirements. The proposed requirement that an AV STEP participant comply with all Federal, state, and local laws and requirements would ensure the requirements of those other authorities coexist with AV STEP. This requirement is consistent with how NHTSA has historically approached exemptions for ADS-equipped vehicles that are issued under Section 30114(a).

During the review of an AV STEP application, NHTSA will engage with applicants and other authorities, as appropriate, to explore opportunities to harmonize certain AV STEP requirements with those of overlapping authorities. As a result of such engagement, if a reporting requirement of another authority is identified that is similar to a subject for which NHTSA proposes a customized requirement in AV STEP, a Final Determination Letter could scope AV STEP's customized reporting requirements in a way that harmonizes with another report. Other jurisdictions could likewise harmonize their own processes with AV STEP or otherwise find value in the enhanced Federal oversight and transparency of participating operations when considering whether to allow those vehicles to operate under their own authorities. As one example, the Federal Motor Carrier Safety Administration (FMCSA) has oversight authority for motor carrier use and

⁸⁶ See, e.g., California Department of Motor Vehicles, "Autonomous Vehicles," available at <https://www.dmv.ca.gov/portal/vehicle-industry-services/autonomous-vehicles/#:~:text=The%20DMV%20administers%20the%20Autonomous,and%20applying%20for%20a%200permit.>

⁸⁷ See, e.g., National Conference of State Legislatures, "Autonomous Vehicles Legislation Database," available at <https://www.ncsl.org/transportation/autonomous-vehicles-legislation-database.>

operations of ADS technologies. Opportunities may exist to harmonize, as appropriate, certain requirements in AV STEP operations that involve commercial motor vehicles (CMVs) with any applicable FMCSA activities, in the interest of a consistent Departmental approach. For instance, FMCSA is engaged in rulemaking that would govern motor carrier operation of ADS-equipped CMVs⁸⁸ and other activities related to AV technologies. NHTSA specifically requests comment on other ways that AV STEP could help to harmonize regulatory requirements.

IV. Application and Review (Regulatory Text Subparts B and D)

A. Application Form

NHTSA proposes that all AV STEP applications contain a standard set of information, regardless of program step or whether an exemption is requested.⁸⁹ This proposal would create a common foundation for the program through consistent, structured responses from all applicants. It would also ensure that NHTSA has a fundamental understanding of the systems and requested participation when making decisions on program admission and overseeing operations. NHTSA proposes that this information be furnished through an application form containing three parts: the Operational Baseline; Location Sheet(s); and a Reporting Confirmation Sheet.⁹⁰

1. Operational Baseline

The Operational Baseline portion of an application would focus on critical characteristics of an operation. Section 597.201 of the proposed rule requires 14 items of information, most of which NHTSA proposes to make public because they reflect basic

⁸⁸ See Office of Information and Regulatory Affairs, “Unified Agenda of Regulatory and Deregulatory Actions,” Federal Motor Carrier Safety Administration, RIN 2126-AC17: Motor Carrier Operation of Automated Driving Systems (ADS)-Equipped Commercial Motor Vehicles, , available at <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=2126-AC17>.

⁸⁹ An exemption would require an additional application form specific to that purpose, as discussed later in Section VII.C (Exemption Participation Requirements).

⁹⁰ An example form, based on the proposed requirements, is available in the docket for this rulemaking under the title “NPRM Example of AV STEP Application Form.”

facts about the entity's requested participation.⁹¹ These items are listed below, accompanied by a description of the expected level of detail:

Participation Category. An applicant would indicate whether it requests participation under Step 1 or Step 2.

Applicant(s). Each of the entities requesting to participate would need to be listed. An application could be submitted by a single applicant or multiple applicants (co-applicants). In either situation, every applicant would need to meet the eligibility requirements for participation set forth in § 597.103 of the proposed rule. This field would also require primary and secondary points of contact for each applicant.

Essential System-Level Stakeholders. Applicants would identify any entities that have a significant role in the safety of the operation covered by the application. At a minimum, these would include the vehicle manufacturer, the ADS developer, the fleet operator, and the system integrator. These entities would need to be listed regardless of whether they were applying for the program or would be participating in the proposed operation. This requirement is included because, whether active participants or not, the products or services they provide factor directly into the vehicle's system-level performance.

Vehicle Platform. Applicants would identify a baseline vehicle platform being used. This information includes the vehicle make, model, model year, unloaded vehicle weight,⁹² Gross Vehicle Weight Rating (GVWR),⁹³ and vehicle class.⁹⁴ If the vehicle was certified as FMVSS compliant, the FMVSS certifying entity should also be listed in this field. Different vehicle models could not be considered a single vehicle platform for the

⁹¹ See Section VI (Public Reporting Requirements (Regulatory Text Subpart G)).

⁹² See 49 CFR 571.3.

⁹³ *Id.*

⁹⁴ See 49 CFR part 523.

purposes of this field,⁹⁵ and would instead require separate program applications. As long as all vehicles in an application were the same vehicle model, a single application could be used for different versions of the model, such as differences in the model year, trim level, or GVWR. NHTSA would review any differences within the vehicle model to decide whether any of the vehicles should participate separately. This approach would help to streamline individual applications and preserve the consistency of operations contained in a single application or participation.

Sensing Suite. An applicant would identify any sensors, such as cameras, radar, lidar, and microphones, involved in the perception of the ADS.⁹⁶ For any such sensors on the vehicle, a response to this field would need to identify the specific sensor (i.e., make and model information), the type of sensor, its location on the subject vehicle, and its use in ADS operations.

Crash Detection Capabilities. Applicants would detail the subject vehicle's crash detection capabilities including, if applicable, any units towed by the subject vehicle. This response would need to identify any limitations or thresholds for detecting physical contact relating to a crash. For example, if only certain scenarios involving debris impacts are identified as crashes, a response to this element should explain how those crashes are identified.

Certain Vehicle Modifications. An applicant would identify any modifications to safety features installed as original equipment on the subject vehicles, other than any modifications for which an AV STEP exemption is sought. Modifications associated with an exemption request would be identified in a response to the requirements detailed in

⁹⁵ Even if the traditional use of the term "vehicle platform" often includes multiple vehicle models, NHTSA considers a narrower use of the term appropriate in this context. This narrower use is to account for any developers or manufacturers that do not characterize their purpose-built ADS vehicle platforms as vehicle models.

⁹⁶ ADS perception is defined in SAE International publication J3131 as "an ADS' capability to sense and characterize the entities, events, and situations, in its environment." SAE International, "J3131 MAR2022: Definitions for Terms Related to Automated Driving Systems Reference Architecture," Section 3.1.1.3, (Revised March 2022).

Section VII.B (Exemption Application Requirements).

Data Logging. Applicants would identify the designed data-logging functionality, including the continuously recorded data and event-triggered data logged by a subject vehicle. For each type of data identified, an applicant would also need to describe the onboard or offboard storage protocols and the duration of data retention. For this element, NHTSA anticipates focusing on whether responses explain the scope of data logging for reporting required under AV STEP, such as the regular and event-triggered reporting in §§ 597.500 and 597.501 of the proposed rule.

Onboard Fallback Personnel. A response to this field would identify the seating position(s) of any onboard fallback personnel who may be physically present in the subject vehicles(s) during requested operations. Even though Step 2 applications would largely not rely on the presence of fallback personnel during participating operations, those applications should still list the seating positions of any onboard fallback personnel that may be present on a limited basis.⁹⁷ If the subject vehicles would never use fallback personnel, even on a limited basis, a response could indicate that this field is not applicable.

Use of Remote Driving. A response to this field should indicate whether remote driving may be used to control a subject vehicle at any time during operation. Applicants would need to identify any restrictions in place for any planned use of remote driving, such as speed thresholds or limiting its use to locations with validated network strength. This response would inform whether NHTSA should permit narrow uses of remote driving in a Final Determination Letter beyond those allowed under § 597.105(j) of the proposed rule.⁹⁸ In addition, given the potential risks associated with remote driving,⁹⁹

⁹⁷ The possibility of limited reliance on fallback personnel under Step 2 is discussed in Sections III.B (Program Steps) and V.A.2 (Event-Triggered Reporting).

⁹⁸ More detailed information regarding the technical parameters and safety of any remote driving included in a participation request would also need to be provided to NHTSA under the requirements proposed in Section IV.B (Protocols for ADS Operations).

⁹⁹ See supra n.80.

NHTSA believes that information about the extent of remote driving in a participation should be publicly available. Accordingly, an application that involves remote driving would need to also include a public summary of limitations on the use of remote driving. NHTSA would publish this summary along with other information from an application, as discussed in Section VI (Public Reporting Requirements (Regulatory Text Subpart G)).

Use of Vehicle Assistance. A response to this field would need to indicate whether any remote or onboard vehicle assistance may be used to direct the subject vehicle at any time during a requested operation. The proposed rule defines vehicle assistance as an individual providing information or advice about a situation to an ADS-equipped vehicle in driverless operation (instead of performing the DDT for the vehicle) to help the ADS continue a trip when encountering a situation that the ADS cannot manage. Vehicle assistance may be provided remotely, by an individual not physically present in the vehicle,¹⁰⁰ or by an individual on board (physically present in) the vehicle.¹⁰¹ Any applications indicating that vehicle assistance may occur would need to describe the specific capabilities that this assistance could entail.¹⁰²

Operational Permits Required. An application would indicate whether any other Federal, state, or local permits are required for the operations requested in the application. If so, the application should list each such permit, the regulatory entity requiring a permit, and the status of each permit. For any permits that have already been issued at the time of application, an applicant would need to identify the effective dates of each permit, describe any conditions imposed by those permits, and provide a copy of each such

¹⁰⁰ For additional discussion of “remote assistance,” see SAE International, “J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles,” Section 3.23: Remote Assistance, (Revised April 2021).

¹⁰¹ Unlike Fallback Personnel, as defined in this proposal, vehicle assistance personnel provide information or instruction to an ADS-equipped vehicle rather than directly exercising vehicle control authority.

¹⁰² As with the preceding remote driving field, more detailed information regarding any vehicle assistance included in a participation request would also need to be provided to NHTSA, as detailed in Section IV.B (Protocols for ADS Operations).

permit.

AV STEP Exemption. An application would indicate whether the request to participate in AV STEP includes a request for an AV STEP exemption. If so, an application would also need to include a separate exemption form that covers unique application requirements for the exemption.¹⁰³

Accessibility. An application would summarize any features or design modifications of the vehicles that are the subject of an application that are intended to promote the safe accommodation of passengers with disabilities. This required disclosure would include any such features or modifications that are intended for passengers with physical, sensory, and cognitive disabilities—including passengers who use wheelchairs and other mobility equipment. NHTSA proposes to publish this summary to enable the public to understand the accessibility options offered in an operation.¹⁰⁴ NHTSA also proposes to require an application to include more information and technical detail about any such features or designs in response to the separate application requirements detailed in Section IV.B.3 (Operator, User, and Surrounding Road User Interactions). NHTSA encourages entities to include accessibility features for passengers with disabilities in their vehicle designs and believes that it is important for the public to understand the availability of such features.

2. Location Sheet

The second proposed portion of an application is a Location Sheet. Each application would be required to contain at least one Location Sheet. An application that requests participation in multiple distinct locations would need to include a Location Sheet for each location. Entities may combine operations in multiple locations in the same application or participation, as long as the Operational Baseline characteristics of

¹⁰³ See Section VII.C (Exemption Application Requirements).

¹⁰⁴ See Section VI (Public Reporting Requirements (Regulatory Text Subpart G)).

the operations remain the same across the locations.

AV STEP's use of Location Sheets would provide enough flexibility for an operation to evolve over the course of time, including by adding more Location Sheets during participation as operations expand to new areas.¹⁰⁵ It would also reduce the administrative burden of applications and participations by enabling NHTSA to focus on the aspects of an operation unique to a particular location once the agency understands the baseline approach to an operation that would apply no matter where the operation occurs. The proposed rule would require applications to include the following information for each Location Sheet:

Location Name. Applicants would assign a unique reference name to the operation proposed in the Location Sheet. The Location Name field in a Location Sheet would provide a unique identifier for each location that a participation includes. Much of the reporting described in Sections V.A (Reporting Requirements) and VI (Public Reporting Requirements (Regulatory Text Subpart G)) is segmented by Location Sheet.

Location Limitation. Applicants would define the geographical boundaries for the operations in the Location Sheet, generally by using maps to define this boundary.¹⁰⁶ This field could be changed during an active participation, as discussed in Section V.B.1 (Amendment Process). However, this response should cover the full breadth of operations that are anticipated at the time of an application.

Maximum Number of Vehicles Proposed for Participation. An applicant would identify the maximum number of vehicles for which they seek to participate under the Location Sheet. This number could correspond to the actual number of vehicles that an applicant is ready to operate or reflect a projected number of vehicles.¹⁰⁷ During

¹⁰⁵ The process for adding new Location Sheets during participation is discussed in Section V.B.1 (Amendment Process).

¹⁰⁶ For example, a .kmz/.kml file containing a varied map boundary could be provided. If operations would be constrained to specific route maps, this constraint should be reflected in a response to this field.

¹⁰⁷ If an application requests such a projected number of vehicles, the application information would still need to support the full scope of requested operations.

participation, the actual number of vehicles operating would be reported to NHTSA under the proposed periodic reporting requirements described in Section V.A.1 (Periodic Reporting).

Legal Speed Limits. This field would require information about the posted speed limits on roadways on which a vehicle plans to operate. An applicant would identify specific information for: (1) the road segments in an operation that have the highest legal speed limit; and (2) the road segments with the greatest speed differential between the legal speed limit and the maximum speed allowed for the ADS while operating on the road segment. NHTSA expects that the most efficient way to identify roadway segments will usually be pairs of GPS coordinates for the start and end points. However, an applicant could use other methods to identify the roadway segments, for example, if such segments represent a significant portion of an operation. NHTSA will use this information to understand the speeds of traffic around which a vehicle could operate and whether the vehicle could pose a risk by operating at different speeds from the surrounding traffic.

Vehicle Speeds. An application would identify the highest speed allowed for the ADS upon commencing participation at the location, as well as the highest speed for which participation is requested for the ADS at the location. In many cases, these two speeds may be the same. However, the two answers could diverge, such as if an ADS initially operates at lower speeds to complete further validation before planned speed increases are pursued.¹⁰⁸

Public Ridership. An application would indicate whether the subject vehicle would carry public passengers during the requested operations.¹⁰⁹

Intended Use. An applicant would describe the planned use or uses of vehicles

¹⁰⁸ As with any other proposed requirements, the application information would need to support the full scope of operations requested, even if it included projected future changes.

¹⁰⁹ The proposed rule refers to public passengers as “public ridership.” See § 597.102.

during operations, such as a shuttle or ride hailing service, goods delivery, or research and development.¹¹⁰

Operational Design Domain. An applicant would provide a complete specification of all aspects of the ODD. This response should be a detailed answer that comprehensively explains the entire ODD, which the proposed rule defines as “the operating conditions under which the automated driving system or feature thereof is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of defined traffic or roadway characteristics.”¹¹¹ If an application contains multiple Location Sheets, a response to this element should identify any ODD differences among the Location Sheets. Several industry documents provide guidance on the specification of an ODD.¹¹² However, this general guidance may not necessarily address the full level of detail associated with an ADS developer’s particular approach to defining its system’s ODD. NHTSA seeks comment on incorporating any such guidance into the regulation or otherwise specifying the form in which minimum information about the proposed ODD should be described in an application. An applicant would also need to include a public summary of the ODD. NHTSA proposes to publish this summary along with other information about an application or participation. The public reporting section of this document describes those aspects of the proposal.¹¹³

Vehicle Equipment. An applicant would describe how several attributes of a vehicle covered by the Location Sheet compare to the base model of the vehicle. This information would help NHTSA gauge whether differences in the same vehicle model

¹¹⁰ For an applicant seeking an exemption under 49 U.S.C. 30114(a), additional information on use would be required by the exemption portion of the application.

¹¹¹ See § 597.102 of the proposed rule.

¹¹² See, e.g., International Organization for Standardization, “ISO 34503: Road Vehicles — Test scenarios for automated driving systems — Specification for operational design domain” (2023); and Automated Vehicle Safety Consortium (AVSC), “AVSC00002202004: Best Practice for Describing an Operational Design Domain: Conceptual Framework and Lexicon” (2020).

¹¹³ See Section VI (Public Reporting Requirements (Regulatory Text Subpart G)).

may need to be considered during the application review. This field should disclose how three categories of equipment or vehicle characteristics compare between the subject vehicle and the base model, if applicable: (1) any trim level characteristics that affect safety; (2) any optional technologies that affect safety; and (3) any other distinguishing safety characteristics. If an application contains multiple Location Sheets, a response to this element should also identify any differences among the Location Sheets. For example, if sensor heating elements are used in one location but not necessary in another, that information should be provided in response to this field.

3. Confirmation of Reporting During Participation

The third portion of the application form would focus on information necessary to carry out the reporting requirements discussed in Section V.A (Reporting Requirements) if an applicant is admitted for participation.

First, an applicant would need to confirm its ability to carry out all of the AV STEP reporting requirements if approved for participation. Some reporting requirements may require coordination with third parties, such as Essential System-Level Stakeholders that are not participants, or may involve specific technical capabilities. This confirmation would ensure that an applicant understands these responsibilities up front. If an application has a single applicant, that applicant would be responsible for compliance with all of the reporting requirements. If an application has multiple co-applicants, they could collectively meet the reporting requirements. If reporting responsibilities are to be shared by co-applicants, a response to this element should explain which entity would be primarily responsible for meeting each reporting requirement that is set forth in Subpart E of the proposed rule.¹¹⁴ In addition to clarifying reporting responsibilities for co-

¹¹⁴ Even if reporting is shared among multiple participants, NHTSA proposes that it may suspend, revoke, or take other appropriate action to address a failure to fully comply with all reporting required under AV STEP by any participant.

applicants, this proposed requirement would ensure that data generation and processing capabilities support the AV STEP reporting elements.

Second, this portion of the application would solicit proposals for “customized” reporting terms. For reporting requirements designated as customized, NHTSA has proposed the subject matter for a required report but has not defined a specific metric or threshold for the reporting. Applications would need to propose specific metrics or thresholds to be used for the terms of the reporting. Each such proposal should be informed by the independent assessment submitted in an application (and described further in Section IV.D, Independent Assessment). In developing these proposals, applicants should consider the extent to which the proposed reporting would support an evaluation of the operation, performance, and safety of the subject vehicles. Each proposal should be accompanied by enough information to allow NHTSA to interpret the proposed metrics or thresholds, as well as explain their value and relevance to the applicable requirement. In Section V.A (Reporting Requirements), NHTSA provides high-level examples of potential terms for each of the proposed customized requirements.

The current state of ADS technology necessitates flexibility in reporting certain subjects. Even so, these subjects represent important safety considerations for any ADS operation. Establishing customized terms would provide this necessary flexibility while ensuring meaningful reporting. The proposed approach to customized requirements would enable NHTSA to consider the value of these different types of reporting metrics and thresholds across various participants.

B. Protocols for ADS Operations

Section 597.204 of the proposed rule would require applications to explain two types of protocols critical to the safety of subject vehicle operations. The first pertains to the ADS’ compliance with traffic safety laws and the second covers situations where an ADS is unable to continue performing the driving task reliably. These protocols both

relate to how an ADS will execute roadway responsibilities that may arise during an operation. Detailed information regarding each of these topics in an application would provide necessary context for the proposed reporting on these topics that would occur during participation.¹¹⁵

1. Law Abidance

Compliance with traffic safety laws and local requirements for operating is a critical aspect of safety for ADS-equipped vehicles on public roads. Section 597.204(a) of the proposed rule lists four elements of information required in an application that would enable NHTSA to consider an applicant's strategy for complying with Federal, state, and local laws that apply to the subject vehicles or their operations.

A response to this element would, at minimum, summarize how applicable traffic safety laws are identified (including both initially and during operations), describe how an ADS' compliance with traffic safety laws is monitored,¹¹⁶ and describe any conditions under which the design of the ADS may allow the subject vehicle to violate traffic laws. A response would also need to summarize recognition, interaction, and response strategies for emergency, law enforcement, and construction vehicles, personnel, and equipment, as well as crossing guards and other traffic control personnel. The response should cover laws that explicitly address ADS-equipped vehicles as well as those that apply to road users more broadly.¹¹⁷ NHTSA recognizes that in some situations,

¹¹⁵ See Section V.A (Reporting Requirements).

¹¹⁶ As noted elsewhere by NHTSA, vehicle automation features that contribute to behaviors that cause traffic violations can constitute a motor vehicle defect. This has been demonstrated by partial driving automation system recalls relating to such incidents. See Tesla, Inc., "Part 573 Safety Recall Report, Recall No. 23V-085" (February 15, 2023), available at <https://static.nhtsa.gov/odi/rc1/2023/RCLRPT-23V085-3451.PDF>.

¹¹⁷ A response to this element would not need to include "unwritten rules of the road" or "implicit traffic rules," which are phrases used within the industry to refer to behaviors associated with good roadway citizenship that are not typically defined by traffic laws. However, these concepts would likely be relevant to other aspects of an application, such as certain claims and evidence in the safety case that would be reviewed by an independent assessment. For further discussion of these concepts, see, e.g., Mobileye Technologies Ltd., "The Unwritten Rules of the Road, Codified in RSS" (February 2023), available at <https://www.mobileye.com/blog/responsibility-sensitive-safety-unwritten-rules-of-the-road/> and Aptiv et al., "Safety First for Automated Driving" (2019), available at <https://static.mobileye.com/website/corporate/media/Intel-Safety-First-for-Automated-Driving.pdf>.

temporary deviations from traffic safety laws may be necessary to safely react to roadway conditions. Many traffic safety laws specifically allow for such exigencies. The information provided in response to this element is intended to help NHTSA understand the ADS' approach to determining what behavior is appropriate in these situations.

An applicant's response to this element should also describe a vehicle's response plans for emergency, law enforcement, and other traffic control interactions. In particular, this response would help the agency evaluate how ADS technologies interact with first responders. An ADS-equipped vehicle's behavior should be easily anticipated and understood by these personnel during such interactions.¹¹⁸ NHTSA would use this information to consider whether the ADS may negatively affect safety-critical functions performed by first responders.

2. System Fallback Response

Section 597.204(b) of the proposed rule would require an application to explain protocols surrounding ADS failure scenarios. The response of an ADS-equipped vehicle to these situations is varyingly referred to as minimal risk maneuvers (MRMs), fallback strategy, failsafe response, or other similar terms. For simplicity, this proposal refers to the achievement of a minimal risk condition (MRC), which is defined in the proposed rule as "a stable, stopped condition to which a user or an ADS may bring a vehicle after performing the DDT fallback, including after a DDT takeover, to reduce the risk of a crash when a given trip cannot or should not be continued."¹¹⁹

NHTSA proposes to require an applicant to describe any system fallback strategies or designs, as well as any protocols for their execution or activation. A

¹¹⁸ See AVSC, "AVSC00005202012: Best Practice for First Responder Interactions with Fleet-Managed Automated Driving System-Dedicated Vehicles (ADS-DVs)" (December 2020).

¹¹⁹ See § 597.102 of the proposed rule. This proposed definition is derived from SAE International's definition of an MRC: "a stable, stopped condition to which a user or an ADS may bring a vehicle after performing the DDT fallback in order to reduce the risk of a crash when a given trip cannot or should not be continued." SAE International, "J3016 APR2021: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles," (Revised April 2021).

response to this element should describe any MRCs that might be undertaken by the subject ADS. This description should identify the circumstances under which each MRC would be triggered, detail how MRMs to achieve each MRC would be initiated and executed, and explain any protocols for the ADS following the achievement of each MRC. An applicant should also explain the engineering rationale for selecting each MRC and setting triggering conditions for them.¹²⁰

In addition, an applicant would need to provide an overview of any other protocols associated with averting or achieving a minimal risk condition. This response should focus on protocols that apply to individuals who may interact with the vehicle rather than protocols that are followed by the ADS. This would include any protocols for providing input to the ADS or disengaging the ADS prior to or during an MRM, resuming ADS driving following the achievement of an MRC, and vehicle recovery. This information would provide NHTSA additional context for the MRC strategies employed by an operation, such as the role of any vehicle assistance or onboard test drivers and potential impacts to traffic after an MRC is achieved.

To further understand these issues, NHTSA proposes to require a response to this element to provide information about the personnel responsible for each such protocol. This response should include the role and number¹²¹ of responsible personnel and each such personnel's: (1) responsibilities under the protocol, (2) physical location when performing those responsibilities, (3) expected response time in performing those responsibilities, (4) potential control authority over the subject vehicle, (5) means of exercising that control authority, and (6) any operational restrictions on the use of that control authority. In addition to informing NHTSA's review of an application, this

¹²⁰ For example, do the trigger conditions fully capture any feasible ODD exits, such as sudden weather changes?

¹²¹ For example, a minimum number of personnel in a certain role who would be available to respond relative to a given number of subject vehicles operating on-road.

information would contribute to the agency's assessment, during operations that occur under an AV STEP participation, of whether an ADS-equipped vehicle responded appropriately after an incident occurred.

Lastly, NHTSA proposes to require that an application describe any protocols for vehicle immobilizations that occur without the achievement of an MRC. This description could include protocols for responding to a crash or a catastrophic vehicle failure that results in a vehicle immobilization that the ADS did not initiate. For example, a vehicle could coast to a stop after loss of all motive power.

3. User and Surrounding Road User Interactions

This section of an application is intended to consider the safety of members of the public who may interact with the vehicles that are the subject of an application. Section 597.204(c) of the proposed rule would require that an application include an overview of any design and process measures that are in place to facilitate safe and predictable interactions with members of the public. This element does not include the inherent functionality of the ADS, such as the object and event detection and response (OEDR) involved in avoiding collisions. Although that ADS functionality is, of course, crucial to the safety of both occupants and surrounding road users, an application would need to cover it separately in response to the independent assessment requirements in Section IV.D (Independent Assessment).

To focus the information provided in response to this element, the proposed rule contains four sub-elements of required information. The first three relate to communication and behavioral strategies for promoting safe and predictable interactions with the subject vehicle. NHTSA considers such predictability an important aspect of ADS safety. Through ADS crash reporting, NHTSA has observed incidents in which the unexpected behavior of an ADS-equipped vehicle may have contributed to a collision

even when the ADS was operating as intended. The following are the sub-elements relating to communication and behavioral strategies:

- Any communication strategies to convey information to individuals outside of a subject ADS-equipped vehicle, including individuals with physical, sensory, and cognitive disabilities;
- Any measures to promote the predictability of the ADS' behavior for other road users in the vicinity of the subject vehicle. This response should include information about how the ADS accounts for “unwritten rules of the road” or “roadmanship.”¹²²
- Any communication strategies for non-operator occupants of the subject ADS-equipped vehicle. This disclosure would be expected to encompass the communication of safety information or the availability of safety controls to occupants of the subject vehicles who are not operators.

Examples of responses to this sub-element could include a system's logic for communicating with occupants about whether they are wearing a seat belt during a trip or ways in which a passenger could initiate an emergency stop.¹²³

NHTSA also proposes a fourth sub-element, which would focus on the applicant's approach to ensuring safe and predictable interactions for passengers with disabilities. An application would need to include information in response to this fourth sub-element regarding the response to the Operational Baseline question about accessibility of subject vehicles containing features or design modifications that are intended to promote the safe

¹²² See, e.g., Fraade-Blanar, Laura, Marjory S. Blumenthal, James M. Anderson, and Nidhi Kalra, “Measuring Automated Vehicle Safety: Forging a Framework. Santa Monica,” CA: RAND Corporation (2018), available at https://www.rand.org/pubs/research_reports/RR2662.html.

¹²³ See AVSC, “AVSC00003202006: Best Practice for Passenger-Initiated Emergency Trip Interruption” (June 2020).

accommodation of passengers with disabilities. NHTSA proposes for this sub-element to cover:

- Any features or design modifications that are intended to promote safe accommodation of passengers with disabilities. Information provided in response to this sub-element should describe how, under this design, passengers with physical, sensory, and cognitive disabilities—including passengers who use wheelchairs and other mobility equipment—would safely locate and enter the vehicle, secure themselves and any mobility equipment, input information, interact with the ADS in routine and emergency situations, communicate with any support personnel in such situations, and exit the vehicle.

Promoting the safety of passengers with disabilities is critical for ADS-equipped vehicles to reach their full potential for improving accessible options for mobility. The availability of ADS-equipped vehicles with effective accessibility features would enable greater choice, independence, and access to needed transportation for people with physical, sensory, and cognitive disabilities, as well as others whose current transportation options are limited, such as older adults. However, these benefits cannot be realized without intentional inclusive design choices that consider the needs of such individuals. NHTSA requests comment on this approach to considering the safety of accessible design choices, as well as whether any safety data specific to the experience of passengers with disabilities should be collected as part of AV STEP and how it could inform the program.

C. Data Governance Plan

ADS-equipped vehicles depend on an array of sensors, computer systems, and electronic communications. These technologies introduce cyber risks. To promote good cybersecurity practices for modern vehicles, NHTSA has embraced a multi-faceted

approach that leverages industry consensus standards¹²⁴ and encourages industry to adopt practices that improve the cybersecurity posture of their vehicles. NHTSA has also issued voluntary guidance on cybersecurity best practices for all motor vehicles.¹²⁵ The agency requests comment on how participants should validate to NHTSA that they have taken the proper precautions in evaluating and mitigating cyber risks associated with ADS operations.

While NHTSA is not proposing that participations meet specific cybersecurity standards, this section proposes to require that an application contain a governance plan for data relevant to AV STEP. This plan would outline the applicant's processes for managing the data to ensure its integrity and security. Participants would need a continuous stream of reliable data to responsibly monitor the safety of their ADS operations and comply with the proposed reporting requirements for AV STEP.¹²⁶ NHTSA requests comment on seven potential subjects for the data management plan, listed in § 597.207 of the proposed rule.¹²⁷ In general, these subjects consider organizational processes, including any safeguards or shared responsibilities for operations in which data are available to multiple stakeholders or jointly managed. These seven subjects are listed below, accompanied by a description of the expected level of detail:¹²⁸

A top-level accountability and management process for the data governance plan, including a description of the applicable positions and roles. An explanation of the

¹²⁴ See Section IV.D.1.a) (Conformance with Industry Standards).

¹²⁵ NHTSA, "Cybersecurity Best Practices for the Safety of Modern Vehicles" (September 2022), available at <https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-09/cybersecurity-best-practices-safety-modern-vehicles-2022-tag.pdf>.

¹²⁶ Subpart E of the proposed rule outlines required data reporting during participation.

¹²⁷ These subjects would supplement the data logging information that would be required for an application under § 597.201(f) of the proposed rule, as discussed in Section IV.A.1 (Operational Baseline).

¹²⁸ NHTSA expects that some applications may jointly respond to some of these subjects if information responsive to one is also responsive to others.

relevant processes for each stakeholder that generates or accesses the data,¹²⁹ including the titles and responsibilities of key individuals.

Access control mechanisms to maintain data security and privacy. Training or procedures for granting data access, the means of authenticating such access, and anonymization processes—particularly to the extent they may impact the safety value of the data. This disclosure should include information regarding the protections in place for both onboard vehicle data logging and physical or wireless data transmission.

Processes for maintaining data quality and integrity. Detection and correction of data corruption and data processing errors.

Monitoring and enforcement mechanisms for adherence to the plan. How applicants would oversee the governance plan, such as through automated mechanisms or spot-checking, to ensure that the plan is followed.

Procedures for identifying and responding to incidents that compromise data security or integrity. How the responsible parties would recognize that an incident has occurred¹³⁰ and react to it, including monitoring for and responding to cybersecurity incidents.

Risk management strategies for mitigating internal and external data-related risks, including cybersecurity risks. Risk management strategies not already addressed by other elements in this subsection, such as data backup protocols.

A list of any published industry standards, guidance, or best practices with which the plan conforms. This element does not propose to prescribe standards to which a process must conform. However, if an applicant claims conformance with any standards, those standards would need to be identified in response to this element.¹³¹

¹²⁹ Such as an ADS developer and fleet operator for operations in which these are different entities.

¹³⁰ Including, for instance, if an applicant has a process for quantifying a level of confidence that an incident would be identified, a response to this element could describe those calculations.

¹³¹ While many potentially relevant standards exist, one example of such a standard is the International Organization for Standardization’s road vehicle standard: “Safety and Cybersecurity for Automated Driving Systems — Design, Verification and Validation.” (2020).

D. Independent Assessment

NHTSA proposes to require that AV STEP applications contain assessments conducted by an independent third party. The independent assessment requirements are proposed to enhance the efficiency and efficacy of NHTSA's review. An assessment from a third party with expertise in the subject technologies would provide value to this process. In rapidly evolving technology fields, such as ADS, independent assessments provide an opportunity for the oversight of such technologies to remain agile and adapt with the changing state of the art, while also more efficiently managing voluminous data.¹³² The ADS technologies in AV STEP applications would be complex, technically specialized, and accompanied by extensive documentation. An independent assessor's review would streamline NHTSA's review by pinpointing important aspects of a system and add a neutral perspective on an applicant's claims. In addition, the proposed assessments would provide NHTSA with insight into the value of different third-party ADS review methodologies and subject matters.

These assessments would be informative but not determinative. A favorable assessment would not necessarily lead to admission into AV STEP. Instead, NHTSA would consider the perspective provided by an assessment along with the full context of the other application materials. This role resembles NHTSA's engagement with third parties in other oversight activities.¹³³ Likewise, the automotive industry often uses third parties to assess vehicle design or corporate processes. The proposed assessment for AV

¹³² Outside of the automotive industry, independent assessments have long existed as standard practice for sophisticated technologies, such as software systems. For instance, industry standards and best practices for third-party audits of software systems have been in place for decades and provide routine and pivotal support for many aspects of software development. *See, e.g.*, Institute of Electrical and Electronics Engineers, "IEEE 1028-2008: IEEE Standard for Software Reviews and Audits" (August 2008); International Organization for Standardization, "ISO/IEC 20246:2017: Software and systems engineering - Work product reviews" (February 2017).

¹³³ Examples include third parties performing failure analyses in defects investigations, contractors adding specialized expertise in vehicle testing, and independent monitors promoting accountability in regulatory compliance oversight.

STEP builds on these practices.¹³⁴ NHTSA seeks comment on the proposed independent assessment, particularly regarding the scope, timing, and logistics of reviews and assessor qualification requirements and disclosures.

1. Focus of Independent Assessment

AV STEP proposes a comprehensive independent assessment of the subject vehicles, which would encompass an applicant's holistic approach to vehicle safety. This assessment would consider the full extent of ADS operations requested in an application. The proposed rule organizes this assessment around three subjects: a) conformance with relevant industry standards, best practices, and guidance; b) a safety case, including safety management systems; and c) specific policies and capabilities.

NHTSA proposes to apply the same independent assessment requirements for applications requesting participation under Step 1 and Step 2. However, an independent assessment at Step 2 would need to be more rigorous because it would need to consider whether the ADS could be exclusively relied on during operations. In contrast, an independent assessment at Step 1 could consider the fallback personnel's ability to mitigate certain risks rather than fully reviewing the ADS' ability to address those risks. For instance, a review of a Step 1 safety case could consider safety claims to be satisfied by fallback personnel even if the evidence available for the ADS would not support those claims. In contrast, at Step 2, an ADS would be solely responsible for the DDT within its ODD, and the independent assessment would need to reflect these heightened expectations.

a) Conformance with Industry Standards

First, NHTSA proposes to require third-party review of the conformance of subject vehicles with relevant industry standards, best practices, and guidance pertaining

¹³⁴ See, e.g., Pete Bigelow, "Self-driving tech companies take a hard look at their own blind spots, Automotive News," (October 14, 2024), available at <https://www.autonews.com/mobility-report/autonomous-driving-companies-seek-independent-safety-reviews/>.

to the design, development, or operation of the ADS.¹³⁵ Industry standards are established through consensus processes in which a written standard is refined by the collective contributions of members of the standard-setting bodies, who possess substantial expertise. Industry standards conformance provides valuable insight into safety design and the extent to which applicants adopt state-of-the-art practices. Considering industry standards conformance also aligns with the goals of the National Technology Transfer and Advancement Act of 1995 (NTTAA).¹³⁶

For the conformance review, an independent assessment would need to consider which industry standards are relevant to the ADS under review. Because the relevant standards will likely differ based on the system in question and the standards used by a manufacturer during the development process, NHTSA is not currently proposing to prescribe particular standards with which conformity is required. This flexibility accounts for the current early stage of industry standards pertaining to ADS, which continue to evolve along with the technologies. A variety of standards currently exist, with the approaches of some standards overlapping or conflicting with others. Affording an assessor the flexibility to identify the most relevant standards in place at the time of the assessment would allow the assessment to adapt to the ADS safety community's prevailing views on safety approaches and best practices.

For the standards identified as relevant, the independent assessment would need to determine full conformance, partial conformance, or nonconformance with each standard. If an entity had previously obtained an independent assessment for a standard (such as for an applicant's internal purposes), NHTSA anticipates that a third party conducting an assessment for AV STEP could consider this prior review instead of re-assessing to the

¹³⁵ While not all best practices or guidance may be considered "standards," for simplicity, they are collectively referred to as "standards" or "industry standards" hereafter.

¹³⁶ See Pub. L. 104-113 (1996).

standard. To do so, the third-party assessor for AV STEP would need to verify the approach, results, and continued applicability of the prior assessment.

For each standard with which partial conformance or nonconformance is determined, an assessor would also need to assess any justification provided by an applicant for not conforming with the standard or portion of the standard and consider any potential safety implications of the nonconformances. If a third-party reviewer's reasoning for not assessing conformance with a published industry standard relies upon an alternative standard,¹³⁷ the reviewer should assess conformance with the alternative standard and explain how the two standards compare.

In addition, the independent assessment would need to evaluate whether, collectively, the degree of conformance with relevant standards represents a responsible approach to developing and operating the subject vehicles. Despite the evolving landscape of industry standards, understanding how an ADS conforms to industry standards in the aggregate would help NHTSA ascertain the level of due diligence applied to the system's development. Disregarding industry standards without carefully considering how the safety goals of those standards could be met may be indicative of whether the system was developed in a responsible way that reflects state-of-the-art safety practices for ADS.

Finally, to inform how the assessed approach to industry standards should shape any further development of the system, an assessor would also need to provide recommendations regarding: (1) the list of industry standards with which conformance should, in full or in part, be achieved or maintained during operations; and (2) how to address any safety gaps that would not be covered even if this recommended conformance was met. Collectively, the recommendations regarding these two subjects

¹³⁷ This alternative standard could include a standard used in the entity's development process, such as a company-specific standard, in lieu of a comparable published standard.

would help NHTSA consider the practical impacts of the reviewed approach to industry standards.

b) Safety Case

The second subject for which NHTSA proposes to require an independent assessment is the safety case¹³⁸ detailing how the safety of the subject vehicle, including the safety of the vehicle's occupants and surrounding road users, is assured for the operations requested in an application. Many diverse stakeholders have generally encouraged the agency to consider such safety cases for ADS. For example, in response to NHTSA's 2020 "Framework for ADS Safety" Advance Notice of Proposed Rulemaking (ANPRM),¹³⁹ a wide variety of organizations—including consumer advocacy groups,¹⁴⁰ ADS developers,¹⁴¹ and local authorities¹⁴²—advocated for NHTSA to collect and review safety cases. Such comments informed the safety case review requirements that NHTSA proposes in this subsection.

In general, an independent assessment of an applicant's safety case would be required to review the validity and soundness of the safety case. This review would entail considering whether the safety case claims for the operations of the subject vehicle are supported by sufficient evidence, as well as whether appropriate processes exist for maintaining the safety case throughout the operations. Where a standardized safety case framework has been adopted,¹⁴³ or where conformance with industry standards supports

¹³⁸ This proposal defines a safety case as "a structured argument, consisting of claims supported by a body of evidence, that provides a complete, comprehensible, and valid case that a system is acceptably safe for a given use in a specified environment." See § 597.102 of the proposed rule.

¹³⁹ 85 FR 78058 (December 3, 2020).

¹⁴⁰ Center for Automotive Safety, Docket No. NHTSA-2020-0106, Comment ID NHTSA-2020-0106-0763 (April 2, 2021), available at <https://www.regulations.gov/comment/NHTSA-2020-0106-0763>.

¹⁴¹ Waymo, Docket No. NHTSA-2020-0106-0771 (April 28, 2021), available at <https://www.regulations.gov/comment/NHTSA-2020-0106-0771>.

¹⁴² City of New York, Docket No. NHTSA-2020-0106-0764 (April 2, 2021), available at <https://www.regulations.gov/comment/NHTSA-2020-0106-0764>.

¹⁴³ Such as that published by the UL Standards and Engagement organization: American National Standards Institute (ANSI), "UL Standard ANSI/UL4600: Standard for Evaluation of Autonomous Products:" (March 2022).

safety case claims, this safety case assessment could incorporate the industry standards assessment described in the prior subsection.

As with industry standards for ADS more generally, standardized safety case frameworks for ADS have not yet been universally adopted. A variety of approaches to arguing the safety of ADS design and operations are currently used across the ADS safety community. NHTSA currently prefers to encourage the evolution of these different approaches so that their maximum potential benefit can be realized. This proposal does not prescribe a specific format for safety cases. However, to mitigate the potential for variability in safety cases, NHTSA proposes to require assessment of a set of minimum considerations fundamental to operational safety.

Specifically, the proposed rule would require detailed analysis for these nine aspects of a safety case:

Safety Risk Assessment. Whether the safety case comprehensively identifies and assesses safety risks, including potential vehicle and operational hazards and faults.

Safety Risk Management. Whether the safety case contains appropriate risk management, including mitigations, for the risks identified.

System Evolution. Whether the safety case contains appropriate processes for maintaining or improving safety over time.

Safety Performance Indicators. Whether the safety case relies on appropriate safety performance indicators and thresholds.

Conformance with Traffic Safety Law. Whether appropriate processes exist for identifying applicable traffic safety laws in an area of operation and overseeing their conformance during operations.

Vehicle Fallback and Assistance. Whether the safety case contains appropriate processes for ensuring the effectiveness of any expected fallback or vehicle assistance.

Human Factors. Whether the safety case appropriately accounts for human factors considerations that may affect safety, including, where applicable, those related to fallback personnel, vehicle assistance, vehicle occupants, or surrounding road users.

Crash Avoidance. Whether the safety case appropriately identifies and considers the variety of crash-imminent situations that could occur within the operations.¹⁴⁴

*Tool Qualification.*¹⁴⁵ Whether software tools used to evaluate expected ADS performance are representative and accurate.

These nine aspects of the safety case review would probe the robustness of the analytical framework used to develop and oversee the ADS. In addition, NHTSA proposes for an assessment of the safety case to further evaluate the safety processes that govern such development and oversight by also including a review of the safety management systems¹⁴⁶ in place to oversee the safety of subject vehicles, including during development and operations. This review should focus on the organizations responsible for the safety of operations involving the subject vehicles, including any Essential System-Level Stakeholders that would remain engaged with an operation during AV STEP participation.

As with the prior elements, NHTSA is not prescribing a specific type of safety management system for this requirement but, instead, proposes eight elements for the required review:

¹⁴⁴ This should cover the full extent of potential crash circumstances within the system's ODD, including the full range of environmental conditions, such as poor lighting or adverse weather conditions, as well as the full range of other road users that a subject vehicle could encounter, such as those using mobility aids or those with sensory impairments.

¹⁴⁵ For further discussion of tool qualification, particularly with regards to summarizing the tool qualification approaches outlined by industry consensus standards, including ISO 26262, *see, e.g.*, M. Conrad, G. Sandmann, and P. Munier, "Software Tool Qualification According to ISO 26262" (April 2011), available at <https://www.mathworks.com/content/dam/mathworks/tag-team/Objects/s/68068-2011-01-1005-mathworks.pdf>.

¹⁴⁶ *See, e.g.*, AVSC, "AVSC00007202107: Information Report for Adapting a Safety Management System (SMS) for Automated Driving System (ADS) SAE Level 4 and 5 Testing and Evaluation" (July 2021).

- Whether the leadership fosters a positive safety culture and demonstrates a safety commitment throughout the organization. This element focuses on how leadership support for safety management policies may affect their use in the organization. For instance, if leadership prioritizes achieving development milestones in a way that tacitly discourages internal reporting of safety concerns, internal reporting policies that read well may not be followed in practice. Such policies are more likely to reach their full potential if leadership rewards identifying and resolving safety issues early.
- Whether those responsible for the implementation of the safety management systems possess appropriate resources, authorities, and accountability. This element would include considerations that affect the responsibilities of the workforce that would oversee safe ADS operations. A review under this element may span working conditions, such as work intensity, fatigue risk, shift length, length between shifts, and human-to-vehicle ratios for fallback or vehicle assistance personnel.
- Whether there are appropriate policies and processes for encouraging the reporting and timely investigation of safety-related concerns from internal staff and members of the public.
- Whether appropriate capabilities and policies exist for monitoring the location and state of each participating vehicle.
- Whether appropriate processes exist to monitor safety performance indicators.
- Whether sufficient capabilities and policies exist for timely responding to a vehicle incident or immobilization and, if necessary, to clear a disabled

vehicle from the roadway. This review must estimate a range of time for an expected response.

- Whether an appropriate plan exists for reaching timely decisions regarding future operations if an emergency arises. For instance, this element should consider the decision-making processes for determining when and how operations should be curtailed or paused after an incident.
- Whether there are appropriate processes in place for how Essential System-Level Stakeholders will engage with each other regarding ongoing operations, including for carrying out software updates, operational updates, vehicle maintenance, and the collection and reporting of safety data.

Collectively, these two focuses of a safety case assessment would provide insight into whether robust safety assurance frameworks exist for the public operation of subject vehicles and whether sufficient organizational support underpins those frameworks.

c) Policies and Capabilities

Finally, NHTSA proposes to require an independent assessment to cover three other topics. Each of these topics may already be covered by a comprehensive safety case or by industry standards conformance. If so, to the extent an assessment already reviewed these topics, it could be incorporated in satisfying these requirements. However, the proposed rule separately enumerates the following topics to ensure that they would be covered by an assessment:

Community Engagement. Whether policies for engaging with state and local authorities, local communities, and other entities affected by the subject vehicle's operation are sufficiently robust to identify the relevant stakeholders, provide them with appropriate information regarding operations, engage with them about concerns, and

meaningfully address those concerns as needed. These relevant stakeholders may range from law enforcement, first responders, and local regulatory authorities to labor organizations representing the transportation workforce to residents that live in the area in which the subject vehicles would operate. The appropriate engagement processes likely depend on the stakeholders and operations in question. However, examples of potentially effective engagement strategies from NHTSA's past experience administering ADS exemptions in AVEP include town halls hosted by an ADS developer to allow members of the community to express their views on local operations, demonstrations with local law enforcement of how to interact with the vehicle during an emergency situation, and coordination with local officials and law enforcement about how proposed operations may affect local traffic patterns.

Training and Qualifications of Personnel. Whether the personnel responsible for developing and maintaining the safety case or executing safety critical processes possess appropriate qualifications and training. This should include consideration of training procedures and materials used, on both an initial and ongoing basis. ADS-equipped vehicles rely, and are expected to continue to rely, on a skilled human workforce. Working conditions and training are a key component of achieving safe ADS operations. To help the agency explore the potential scope of information that a review of this element should cover, NHTSA requests comment on the following topics pertaining to how workforce considerations may affect ADS safety: (1) what data could participants in AV STEP provide to further the Department's understanding of impacts, both positive and negative, to the safety of the transportation workforce; and (2) what data could participants in AV STEP provide regarding safety-promoting working conditions, including training, certifications, workplace location, shift length, and workload, for both vehicle assistance and fallback personnel?

Data Capture. Whether the data capture capabilities for the subject vehicle suffice to meet the data reporting requirements in AV STEP.¹⁴⁷

2. Summary Report Requirements

NHTSA proposes to require that information regarding an assessment be submitted in an application in the form of a summary report prepared by the independent assessor. NHTSA is not proposing a particular format, as the specific subjects under assessment will likely impact the optimal format. However, for each subject an assessment is required to review, a summary report would need to provide an overview of the assessor's findings and the basis for each finding.

A report would also be required to provide an overview of how these findings were made. To do so, a report would describe the materials reviewed during the assessment, such as by outlining the material and the means of review. A report would also describe the process and format of the review. For instance, this description could include information regarding the review approach (such as analysis methods and tools or in-person meetings and reviews) and the procedures used to structure the review (such as procedures for identifying relevant standards or reviewing the safety case). A report would further describe the methods used to identify potential inconsistencies, gaps, logical fallacies, or other concerns about the information provided for review. And to help understand how the assessment was overseen, a report would describe any processes in place to manage the assessment.

The proposed rule lists two additional aspects of an assessment that would be addressed in a summary report to help NHTSA consider how the findings of the assessment translate to the agency's review of the operations requested in an application.

¹⁴⁷ This aspect of an assessment would focus on the data logging capabilities of the vehicle and their ability to support the requirements detailed in Subpart E of the proposed rule. It would not necessarily need to cover the data governance plan information described earlier in this section.

First, the report would need to provide an overview of any concerns identified during an assessment, including all recommendations made to the applicant(s) regarding those concerns.¹⁴⁸ Second, the report would define the parameters under which the assessment and its conclusions are valid. This overview should account for potential future changes to operations, system design, or processes for which the assessment would remain valid. The overview should also explain any limitations or qualifiers to the conclusions of the assessment. This information would help NHTSA to consider whether any changes to an operation during participation exceeded the scope of a prior assessment.¹⁴⁹

Lastly, a report would need to describe any access restrictions that limited the assessment.¹⁵⁰ This information, along with the context information submitted by an applicant under the next subsection, would help NHTSA gauge whether any procedural difficulties may have impacted the assessment's informative value.

3. Assessment Context Requirements

NHTSA proposes to require an applicant to submit additional information about the broader context of the independent assessment. The proposed rule focuses on two topics for this context. First, an applicant would need to explain any measures taken in response to each of the recommendations listed in the independent assessment summary report. To explain these measures, an applicant would likely need to not only describe the changes made but also explain how they were responsive to the recommendations. In addition, this element would provide an applicant with an opportunity to explain the reasoning for not following any recommendations.

¹⁴⁸ This information would help NHTSA evaluate the extent to which an applicant sought to implement an assessor's feedback when reviewing an applicant's response to the information required under § 597.205(e) of the proposed rule.

¹⁴⁹ Section V.A.3 (Update Reporting) and § 597.502 of the proposed rule describe how changes to an operation would be overseen.

¹⁵⁰ For example, if an applicant refused to make certain documentation or data available to the assessor.

Second, the applicant would need to describe any other independent assessments initiated for the subjects required of an AV STEP assessment.¹⁵¹ This information would inform whether an applicant engaged in forum shopping for a favorable assessment. For instance, this element would reveal if an assessment submitted in an application replaced a less favorable assessment or if an assessment was terminated early to avoid unfavorable findings. This information would help inform the credibility of the conclusions in an assessment submitted under AV STEP. For instance, if an assessment submitted under AV STEP was favorable to an applicant but the applicant prematurely terminated a prior assessment to avoid unfavorable findings, that context could raise questions about the credibility of the completed assessment. Nevertheless, NHTSA recognizes that there may be good faith reasons to terminate, replace, or update a prior assessment. To account for this possibility, NHTSA proposes to require the disclosure of information about the prior assessments but is not proposing to automatically disqualify assessments that were preceded by other assessments.

4. Reliability and Credibility Disclosures

To help NHTSA consider the informative value of an assessment, an application would need to contain information about the reliability and credibility of the assessor. This information would focus on the assessor's independence, qualifications, and resources.

a) Assessor Qualifications and Resources

NHTSA proposes to require that an assessment be conducted by a qualified assessor with adequate resources. The proposed rule would require an assessment to be carried out by an assessor (including its personnel) with suitable education, technical

¹⁵¹ Section 597.205(e) of the proposed rule explains the specific content that would be required for this description.

expertise, experience, and accreditations. The relevant qualifications would depend on the technical fields implicated by the analyses undertaken in each assessment. In addition, an assessor would need to maintain appropriate policies and practices for conducting and organizing an assessment. This requirement would ensure that reviewers apply their expertise in a structured and consistent manner, such as through standard procedures for completing and supervising assessments. Finally, assessors would need to maintain appropriate facilities and resources for the assessments. These could include physical facilities and resources as well as software capabilities.

An application would need to contain supporting information regarding these attributes. Specifically, the proposed rule would require the submission of the curriculum vitae of key personnel involved in the assessment, any accreditations relevant to the review, and a description of all policies or protocols that governed the assessment. NHTSA may ask for additional information about the assessor as part of the review process.

b) Assessor Independence

The informative value of an independent assessment depends upon the assessor retaining independence to objectively apply its expertise. To that end, § 597.205(f) of the proposed rule would address two types of conflicts of interest: (1) disqualifying conflicts; and (2) potential conflicts for which disclosure is required. Even so, the conflict-of-interest situations expressly listed in the proposed rule may not be exhaustive.¹⁵²

When conducting a case-by-case review of the credibility of assessments under this program, NHTSA would consider any other indication of a conflict of interest that may appear. The proposed requirements would provide a foundation for this inquiry. As

¹⁵² Other agencies have acknowledged this limitation when considering third-party reviews for their own programs. For example, the Food and Drug Administration has stated that: it is not feasible to identify or state categorically or inflexibly all of the criteria for judging that a third party is free of conflicts of interest. 61 FR 14789, 14794 (April 3, 1996).

an additional safeguard, NHTSA proposes to require each application submitted for AV STEP to contain a certification from the assessor that the assessment represents the assessor's independent judgment and that none of the disqualifying conflicts of interest discussed in the next paragraph exist.

NHTSA proposes to consider three situations as causing such a significant risk of bias that the assessment would not fulfill AV STEP's independent assessment requirements. The first such situation is if an assessor¹⁵³ is owned, operated, or controlled (directly or indirectly) by a party with a financial interest in a particular disposition of the application. The most common example of this situation would likely be full or partial ownership by an Essential System-Level Stakeholder or one of its subsidiaries,¹⁵⁴ but this situation could also arise through grants or other types of funding. The second disqualifying situation is if an assessor has any ownership or financial interest in an interested party to the application. An assessor that is an investor in an Essential-System Level Stakeholder would be one example of this second situation.¹⁵⁵ The third situation is if the fee structure for an assessment depends in any way on the outcome of the assessment or application. This situation could include a fee structure contingent on admission into AV STEP or on the submission of an application that includes the proposed assessment.

Even if an assessor does not have one of these disqualifying conflicts, an assessment's objectivity could be compromised by an assessor's history with the subjects under review. The proposed rule expressly lists two such situations: (1) if an assessor

¹⁵³ As proposed, the assessor in these situations would also include any personnel or contractors used by the assessor for the review.

¹⁵⁴ NHTSA understands that some companies have internal auditing organizations. This requirement would preclude those organizations from conducting an independent assessment for AV STEP. Nevertheless, NHTSA recognizes the value that internal auditing practices can add and expects those practices to reflect positively on the safety management systems under review in an assessment.

¹⁵⁵ This requirement is not meant to prohibit de minimis or sufficiently diversified interests. *Cf.* 28 U.S.C. 208; 5 CFR part 2640.

participated in the design, manufacture, or distribution of a product;¹⁵⁶ or (2) if an assessor was otherwise separately engaged in the development of a project within the scope of the assessment.^{157,158} In either of these two types of situations, an assessor's judgment may be clouded by a direct stake in some of the decisions under review. However, given the nuances of these scenarios and the possibility that potential bias could be mitigated, NHTSA is not proposing to categorically disqualify an assessment where these circumstances exist. Instead, NHTSA proposes to require disclosure to allow the agency to consider how they affected the credibility of the assessment.

E. Application Review

The proposed AV STEP application review is a three-phase process that considers the unique facts and circumstances of each request. NHTSA would consider the totality of the information available when issuing a Final Determination Letter governing the terms of participation.

Individualized review is necessary to account for the intricacies of each ADS and the operations that may be requested. The safety of the ADS depends on the full context of an operation. The relevant safety considerations for ADS are often as varied as the driving tasks that an ADS seeks to perform. Nuances of an operation—such as the time a nearby school dismisses students or how a system accounts for seasonal changes in vegetation—can meaningfully affect the risk of an operation. For these reasons, NHTSA proposes a review process that allows the agency to consider the most relevant aspects of each operation.

¹⁵⁶ An assessor that previously conducted internal reviews for a company during the ADS design process would be an example of this first situation.

¹⁵⁷ An example of this second situation could involve an entity that, before conducting an assessment, was engaged to help shape the project that is the subject of the request, such as by reviewing and recommending locations for operations.

¹⁵⁸ Neither of these scenarios is meant to cover situations where the recommendations of an assessor during an assessment for AV STEP leads to changes in the product or proposed operation. NHTSA specifically encourages such recommendations and requests information about them in an application. *See* §§ 597.205(c) and 597.205(f) of the proposed rule.

The proposed procedures are also intended to expedite review. Reviews of ADS are complex and data-intensive. Aspects of the proposal, including the independent assessment and other upfront submission requirements, are specifically designed to enable efficient and transparent review.¹⁵⁹

NHTSA proposes three review phases: Initial Review (Phase 1); Follow-up Review (Phase 2); and Preliminary Determination (Phase 3). The first phase would immediately follow the submission of an application. NHTSA would provide each applicant with a notice of receipt of the application, which would identify an agency point of contact for the review and advise whether any required information appeared to be missing from the application. During Phase 1, NHTSA would likely schedule introductory meetings with the applicant(s) and any entities that performed an independent assessment.¹⁶⁰ NHTSA would focus on understanding the request and identifying any follow-up items.

The second review phase would begin with NHTSA's issuance of a Follow-Up Index to an applicant, identifying items for which NHTSA requests additional information. Follow-up may involve either discussions or a written response and may be iterative. The extent of this engagement would depend on the breadth of follow-up required and the completeness and timeliness of an applicant's responses.

After all follow-up has been addressed, NHTSA would initiate Phase 3 of the review process by issuing a proposed decision ("Preliminary Determination") to the applicant(s). This Preliminary Determination would contain the terms and conditions proposed to govern participation. Providing proposed conditions to applicants would

¹⁵⁹ As discussed in Section VI (Public Reporting Requirements (Regulatory Text Subpart G)), NHTSA proposes to publish the dates on which an application was received, progressed through each review phase, and reached a final decision. This will enable stakeholders and the public to observe the typical timing for an application review.

¹⁶⁰ Section 597.106(b) of the proposed rule would establish, as a condition of the program, NHTSA's ability to communicate freely and without restriction with any entity that performed an independent assessment submitted as part of an application.

facilitate resolving or mitigating any problems before a final decision is issued. For instance, an applicant might be able to eliminate the need for a condition by curing or clarifying an issue. Similarly, providing an applicant with the opportunity to review the conditions up front would encourage dialogue about refinements that could accomplish the agency's goals in a less burdensome or more technically feasible way.

Section 597.403 of the proposed rule would establish a consistent set of considerations for NHTSA when selecting terms and conditions. Specifically, NHTSA would evaluate the extent to which any required reports may further NHTSA's understanding of a vehicle's performance, operations, or ADS; the feasibility of analyzing any reported information; and the extent to which the terms and conditions are consistent with motor vehicle safety and further the purposes of 49 U.S.C. 30101.

During the application review process, NHTSA would assess an applicant's proposed metrics and thresholds and develop terms for each customized requirement, as discussed above. NHTSA would consider the extent to which the proposed terms fulfill the required subject of reporting and their anticipated value for overseeing the subject vehicle. This consideration would balance the need for consistent reporting subjects with the reality that many safety topics for ADS currently lack established approaches to judging performance. Different entities currently use a variety of metrics to measure the safety of certain subjects, and the differences among stakeholders' systems and approaches may cause some metrics to be more informative for some systems than others.

Under the proposed procedures, on the tenth business day after issuing a preliminary determination, NHTSA would generally issue a final decision that adopts the proposed terms.¹⁶¹ This timeline would be extended if any applicant requests, in writing,

¹⁶¹ The proposed procedures would allow NHTSA to withdraw a Preliminary Determination at any time before issuing a final decision. For example, this could occur if NHTSA becomes aware of new information after issuing a Preliminary Determination.

additional time or a change to a Preliminary Determination.¹⁶² Upon such a request, any necessary next steps for an application would be determined on a case-by-case basis. To limit this process and enable timely determinations, unless NHTSA has granted a longer extension request, NHTSA may finalize any Preliminary Determination that has been pending for 60 days even if an applicant continues to request changes. The agency expects that it would likely consider extension requests for longer than 60 days for applicants seeking, in good faith, to resolve outstanding issues. However, this 60-day timeframe provides a backstop that would ensure efficient use of agency resources.

V. Participation (Regulatory Text Subparts E and F)

Proposed requirements for participation in AV STEP include: (1) general reporting on a quarterly basis; (2) event-triggered reporting of certain incidents and events during operations; and (3) reporting on updates to an operation. NHTSA also proposes an amendment process for changes in terms or conditions of participation and a concern resolution process that the agency would use to investigate and respond to any concerns that arise during participation.

A. Reporting Requirements

NHTSA proposes a reporting framework to help NHTSA oversee the performance of ADS-equipped vehicles admitted to AV STEP. For these reporting requirements, the agency drew on its experience overseeing ADS-equipped vehicle performance in other contexts, such as other exemptions and enforcement activities.¹⁶³

¹⁶² Similarly, at any time after the issuance of a Preliminary Determination, an applicant would be able to request, in writing, that the Preliminary Determination become final. If this occurs, NHTSA would aim to issue a Final Determination Letter sooner than ten business days.

¹⁶³ See, e.g., NHTSA, “Second Amended Standing General Order 2021-01: Incident Reporting for Automated Driving Systems (ADS) and Level 2 Advanced Driver Assistance Systems (ADAS)” (April 2023), available at <https://www.nhtsa.gov/laws-regulations/standing-general-order-crash-reporting>; and NHTSA and Cruise, LLC, “In re: Cruise, LLC Standing General Order 2021-01 Reporting, Consent Order” (September 26, 2024), available at <https://www.nhtsa.gov/sites/nhtsa.gov/files/2024-09/cruise-consent-order-2024-web.pdf>.

Table V-1 provides a high-level depiction of the reporting requirements detailed in Subpart E of the proposed rule. In addition to these generally applicable requirements, NHTSA may set further reporting requirements on a case-by-case basis, through terms and conditions in a Final Determination Letter.

Table V-1 – AV STEP Reporting Requirements Overview

Periodic Reporting For Each Location Sheet	Extent of Operations <ul style="list-style-type: none"> • Number of Vehicles Operated & Vehicle Identifiers • Zip Code(s) of Operation • Vehicle Miles Traveled (VMT) with ADS Engaged, segmented by: Zip Code, Hour of Day, & Presence of Onboard Fallback Personnel • Operational Context
	Operational Performance <ul style="list-style-type: none"> • Vehicle Recovery Events • Otherwise Unreported Contact Events • Aggressive Jerk and Acceleration/Deceleration Instances • Instances of Unplanned Interruptions to ADS Operation
	Step 1 Specific <ul style="list-style-type: none"> • Customized – Fallback Personnel Performance Metrics
	Step 2 Specific <ul style="list-style-type: none"> • Minimal Risk Condition Description, Duration, and Location • Customized – Objective Performance Metrics, Design Adherence Metrics, & Process Adherence Metrics
	AV STEP Exemption Specific: VMT Segmentation by VIN
Event-Triggered Reporting	<ul style="list-style-type: none"> • Otherwise Unreported Crash Data* • Citable Offenses • Reportable Changes
Reportable Changes	Operational Changes that Exceed Customized Thresholds

* NHTSA proposes for current reporting requirements to largely satisfy this element; subsection 2 discusses this proposal in further detail.

1. Periodic Reporting

To continually assess the performance of participating operations, NHTSA proposes that certain data be reported on a quarterly basis. These periodic reporting requirements are in § 597.500 of the proposed rule. As proposed, each quarterly report would be due on the final business day of the first month that follows the reporting period. This schedule would provide participants with nearly a month to process data and prepare reports for the previous quarter. This quarterly timeframe would balance the need for timely performance updates with the burden of more frequent reporting. NHTSA

seeks comment on whether this quarterly cadence is appropriate and whether any reporting requirements should be revised, added, or removed.

a) Reporting Requirements for All Participants

NHTSA proposes a set of baseline reporting requirements for all participants, to ensure receipt of standard information about all participating operations. This proposed standard reporting would be by Location Sheet for a given reporting period. The first five requirements below are proposed to capture the extent of operations, while the latter five requirements are proposed to cover aspects of ADS performance during operations. These proposed reporting requirements, detailed in § 597.500(c) of the proposed rule, are:

Number of Vehicles Operated. The total number of vehicles that operated under the Location Sheet during the reporting period. As proposed, this number would include any vehicles that accumulated vehicle miles traveled (VMT) on public roads. However, NHTSA requests comment on whether it should specify a de minimis VMT threshold below which a vehicle need not be reported.

Vehicle Identification Number (VIN). The VIN of each vehicle included under the preceding requirement. This would link a particular vehicle to the associated terms and conditions of a participation.

Zip Codes of Operation. Each zip code in which a vehicle operated on a public road.

Vehicle Miles Traveled (VMT) with the ADS Engaged. The aggregate vehicle miles traveled with the ADS engaged, segmented by:

- (1) Hour of day;¹⁶⁴

¹⁶⁴ For example, a report could state that “x” VMT were accrued between 8:00 a.m. and 9:00 a.m. and “x” VMT were accrued between 9:00 a.m. and 10:00 a.m.

- (2) Presence of onboard fallback personnel; and
- (3) Each zip code, which would serve as the primary means of segmenting VMT to better understand where operations occur within the geographic area of a Location Sheet. Alternatively, the agency could require that participants report VMT data by road type in addition to zip code. This information would reveal how driving environments are represented in operations. The agency seeks comment on this alternative, particularly as to feasibility.

Operational Context. This requirement would provide insight into how a particular participating operation compares to other, non-AV STEP operations conducted by the same key entities and help NHTSA and the public understand whether numbers reported under AV STEP represent a large or small proportion of those broader operations. This context would also help avoid misleading the public about the state of a participant's technology.¹⁶⁵ To do so, NHTSA proposes reporting on two types of comparisons. The first would consider how the number of subject vehicles that participated under each Location Sheet compared to the number of vehicles for three types of total operations (if they involved the same combination of vehicle manufacturer, ADS developer, and fleet operator, regardless of AV STEP participation): (1) operations on public roads in the United States; (2) operations on public roads in a geographical area that overlaps the area for the Location Sheet; and (3) operations on public roads that involve the same vehicle model as the subject vehicle. The second comparison would be similar but based on VMT instead of vehicle numbers. Specifically, it would consider how the VMT accumulated with the ADS engaged on public roads under each Location Sheet compared to the VMT for the same three types of broader operations described earlier in this paragraph.

¹⁶⁵ This might occur, for example, where participation is sought at Step 2 in a very limited environment when most of the applicant's operations outside of AV STEP are less mature.

Vehicle Recovery Events (VREs). Describe each VRE involving a subject vehicle. NHTSA proposes to define a VRE as any instance in which a vehicle needed to be recovered during roadway operations by personnel other than those already on board the subject vehicle. This would include, but not be limited to, recovery after achieving an MRC. A report for this requirement should include, for each VRE, the duration and location of the vehicle's immobilization before its recovery and the reason that vehicle recovery was required. A report for this requirement should also, wherever applicable, cross-reference any other report required by AV STEP associated with the VRE, such as a report of a crash or contact event.

Otherwise Unreported Contact Events. Describe any contact event that does not meet the event-triggered crash reporting criteria discussed in Section V.A.2 (Event-Triggered Reporting). The proposed rule defines a contact event as any event in which a subject vehicle comes into physical contact with another vehicle, road user, individual, animal, or physical object. This definition would not include benign intentional contact, such as upon a passenger entering or exiting a vehicle while it is stationary, or intentional tire contact with a curb¹⁶⁶ below speeds of 5 miles per hour. The less serious nature of contact events that do not meet the injury or property damage thresholds for crash reporting reduces the need for more immediate reporting. Nevertheless, this reporting could provide valuable insight on ADS performance. The agency seeks comment on whether the reporting threshold for these contact events may be refined to better distinguish potentially meaningful events.

*Instances of Aggressive Vehicle Jerk.*¹⁶⁷ Report the total number of instances of a rate of change in vehicle acceleration that exceeds a customized threshold. NHTSA is

¹⁶⁶ For example, when coming to a stop at low speeds to maximize passing space for other vehicles.

¹⁶⁷ For discussion of the use of jerk as a suggested predictor of safe vehicle motion control, *see* AVSC, "AVSC00006202103: Best Practice for Metrics and Methods for Assessing Safety Performance of ADS" (March 2021).

considering two options for the applicable thresholds and the subsequent reporting requirement. First, the agency could allow applicants to submit proposed thresholds during the application process. Ideally, these would consist of thresholds that an entity already uses internally. This information could enable a greater level of insight if applicants propose more stringent thresholds than those that the agency might impose. It would also enable NHTSA to review the reporting through the same lens used by an entity to review its own operations. Alternately, the agency could establish default thresholds but accept proposals of lower thresholds.¹⁶⁸ While such a requirement would add some consistency to this reporting, it could dissuade applicants from proposing more stringent thresholds.

Instances of Aggressive Vehicle Acceleration or Deceleration. Report the total number of instances of vehicle acceleration or deceleration exceeding a customized threshold.¹⁶⁹

Unplanned Interruptions. Report the total number of each of the following types of interruptions to the ADS, if unplanned:

- Initiation of an MRM by: (1) the ADS; (2) an occupant of the subject vehicle; or (3) remote personnel. This reporting requirement would encompass instances in which an MRC is achieved as well as instances in which an MRM is initiated but an MRC is not achieved (for any reason).
- DDT takeovers¹⁷⁰ other than those reported under the prior element. Most of these interruptions will likely entail intervention by onboard fallback personnel to disengage the ADS and take control of the vehicle. If an ADS initiated or completed an MRM and fallback personnel subsequently

¹⁶⁸ For instance, it may be less burdensome for an entity to report based off of a more stringent internal threshold than to set up a new process for collecting events based on NHTSA's default threshold.

¹⁶⁹ See the discussion for *Instances of Aggressive Vehicle Jerk* regarding potential approaches to establishing such thresholds.

¹⁷⁰ See § 597.102 of the proposed rule for definition of *DDT Takeover*.

assumed control of the vehicle to resume driving, the situation would be reported under the prior element rather than this one to avoid double counting events.

- Instances in which any direct control authority of the vehicle is exercised remotely, other than those reported under the two preceding elements. For example, if remote steering was used to correct the path of a vehicle but the ADS retained responsibility for lateral control of the vehicle and an MRM was never executed.
- Instances in which onboard vehicle assistance alters the ADS' operations. This requirement would capture situations in which an individual providing vehicle assistance from within the subject vehicle corrects or changes the anticipated behavior of the ADS.¹⁷¹ This requirement would not cover a situation where an individual providing remote vehicle assistance only confirms the projected ADS behavior. For instance, if an ADS-equipped vehicle encountered a potential obstacle in the roadway and requested vehicle assistance regarding whether to proceed on an identified path, this element would count situations where the assistance changed the path identified by the ADS but not situations where assistance simply confirmed the ADS' prospective path.¹⁷²
- Instances in which remote vehicle assistance alters the ADS' operation. This element covers the same situation as the preceding element, but for

¹⁷¹ In some situations, personnel may be physically present in the vehicle but acting in a vehicle assistance role rather than as onboard test drivers who would have the ability to exercise full control over the vehicle's DDT.

¹⁷² If the ADS initiates an MRC in circumstances where it requests vehicle assistance, but none is received within a certain time frame, such an event would require reporting under the first category of interruptions. If subsequent vehicle assistance changed the behavior projected by the ADS, that would require vehicle assistance reporting as well.

vehicle assistance provided from a physical location outside of the subject vehicle.

- Any occurrence other than the five types of interruptions described above that significantly alters the intended operation of the ADS. Although the preceding categories would likely make up the majority of unplanned interruptions, this category provides a catch-all for any other circumstances in which unplanned interruptions could occur. For instance, it would include a situation where a vehicle component experienced a catastrophic failure that caused the vehicle to stop operating without any initiation of an MRC.

NHTSA recognizes that the ADS community has a range of perspectives on the value of considering unplanned interruptions (such as disengagements) when assessing ADS performance. Some stakeholders express concern that disengagements do not provide a meaningful point of comparison between ADS¹⁷³ because disengagement metrics are affected by many factors that vary across operations. For instance, a lower rate of disengagement may simply mean that a system is traveling on less complicated roads than another system. Relying too heavily on disengagement numbers to assess ADS safety could disincentivize fallback personnel from intervening for safety. Nevertheless, NHTSA's experience in receiving this type of data in other contexts indicates the data's value. For instance, periodic reporting can illustrate how a particular system is performing on a given route, such as by pinpointing particularly difficult intersections or identifying how other variables, such as seasonal changes or weather patterns, can affect the same ADS operations over time.

¹⁷³ See, e.g., Levi Sumagaysay, "Self-driving companies: Don't measure us by 'disengagements,'" Protocol (February 26, 2020).

Finally, NHTSA is also considering an additional reporting requirement for instances in which vehicle assistance or remote driving inputs are not executed by the vehicle. Examples of this reporting could include instances in which an ADS does not follow a route provided by vehicle assistance due to a change in the roadway environment, such as a VRU entering the vehicle's path, or instances in which a malfunction or design flaw causes the ADS to not follow an input to the system. NHTSA is not currently proposing to include this reporting element because the agency believes these situations would either be a desired result of intended functionality or, for ADS failures, largely covered by other proposed reporting elements. However, NHTSA seeks comment on the frequency of such occurrences and their reporting value.

b) Step 1 Unique Reporting

In addition to the standard requirements in the previous subsection, participants at Step 1 would be required to report safety metrics to gauge the performance of fallback personnel under customized terms.¹⁷⁴ These reports would occur with the same periodic cadence as the other requirements in this subsection (V.A.1) and be segmented by Location Sheet. Applications for Step 1 participation would need to contain proposed metrics for this requirement and include the information required for customized terms in § 597.206 of the proposed rule. Possible examples of these types of safety metrics include reporting of violations of fallback personnel processes or data associated with distraction monitoring. For instance, SAE J3018 provides that companies engaged in ADS testing should use a “monitoring system in the test vehicle capable of detecting and recording

¹⁷⁴ Section IV.A.3 (Confirmation of Reporting During Participation) discusses NHTSA’s proposed approach to using customized terms for certain reporting requirements.

incidents of prolonged inattention, error and/or misuse by [in-vehicle fallback test drivers] during test trips.”¹⁷⁵

Currently, many different approaches exist for monitoring the effectiveness of onboard test drivers in performing the DDT fallback function, and many stakeholders have their own unique standards for doing so. As a result, it would be premature to impose standard metrics for this assessment. Establishing customized terms would instead enable these metrics to fit each stakeholder’s processes and allow NHTSA to consider a range of approaches.

c) Step 2 Unique Reporting

This proposal includes additional reporting requirements for Step 2 participation to account for the elevated scope and maturity expected of Step 2 systems. This reporting would also occur on a quarterly basis and be segmented by Location Sheet. Section 597.500(e) of the proposed rule includes four reporting requirements for Step 2 participants. First, it would require reporting of the VIN, duration, location, and cause of each minimal risk condition that was achieved. For this requirement, the agency is considering defining the relevant duration as either the period of time that elapses between the initiation of an MRM and the termination of an achieved MRC, or the period of time that elapses between the time MRC is achieved and its termination. Resumption of ADS operation, completion of a VRE, and DDT takeover are all examples of events that would be considered as terminating achievement of an MRC.

For the remaining three proposed reporting requirements, Step 2 participants would be required to report metrics for the following subjects under customized terms:¹⁷⁶

¹⁷⁵ SAE International, “J3018 DEC2020: Safety-Relevant Guidance for On-Road Testing of Prototype Automated Driving System (ADS)-Operated Vehicles,” Section 6.3: IFTD State Monitoring, (Revised December 2020).

¹⁷⁶ Section IV.A.3 (Confirmation of Reporting During Participation) discusses NHTSA’s proposed approach to using customized terms for certain reporting requirements.

- *The safety performance of the ADS, including adherence to the expected driving behavior and scenarios in which there is an increased likelihood of a crash.* Metrics proposed for this term should be feasible to measure without proprietary access to the ADS.¹⁷⁷ This would enable the agency to evaluate whether metrics that rely on data that can be collected and analyzed independent of the ADS, such as via a separately-installed measurement device, can effectively monitor safety performance.¹⁷⁸ For example, this element could involve tracking and analyzing a safety envelope metric¹⁷⁹ or other instantaneous safety metrics.¹⁸⁰
- *The extent to which the system-level performance of the ADS adheres to design assumptions or expectations.* This element could involve a variety of metrics, such as those regarding object and event detection and response (OEDR) reaction time,¹⁸¹ other system latency considerations, or

¹⁷⁷ In practice, AV STEP participations will involve direct access to vehicle data. As such, the data actually used for this metric may be collected via proprietary access to the ADS even if that data could also have been measured independently.

¹⁷⁸ NHTSA is already undertaking research in this area, as explained in a recent report to Congress: NHTSA is researching the development of ground truth trip recorder tools that can be installed on an ADS equipped vehicle. Such a system would record the surround view data with its own independent perception stack to identify scenarios and ADS behaviors of interest that are encountered during public on-road driving. The ground truth trip recorder is separate from the ADS itself and would not interfere with any aspects of the ADS functionality. *See* NHTSA, “Report to Congress: Automated Vehicles,” <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-06/Automated-Vehicles-Report-to-Congress-06302023.pdf>.

¹⁷⁹ AVSC, “AVSC00006202103: Best Practice for Metrics and Methods for Assessing Safety Performance of ADS” (March 2021) describes a violation of a safety envelope metric as “a violation of a kinematically defined state space around a vehicle that represents a buffer between the subject vehicle and other objects in the environment,” and notes that “the separation threshold may be contextually modified.” This AVSC best practice also discusses the potential correlation of these types of metrics to safety outcomes and provides additional relevant references.

¹⁸⁰ ISM and MPrISM are examples of instantaneous safety metrics. *See, respectively*, Joshua Every et al., “A Novel Method To Evaluate The Safety Of Highly Automated Vehicles,” No. 17-0076, available at <https://www-esv.nhtsa.dot.gov/Proceedings/25/25ESV-000076.pdf> and Bowen Weng et al., “Model Predictive Instantaneous Safety Metric for Evaluation of Automated Driving Systems” (May 2020), available at <https://arxiv.org/abs/2005.09999>.

¹⁸¹ Defined as “the time it takes for the ADS to initiate a measurable response following the onset of an initiating event in the context of scenario-based testing in a controlled environment (e.g., track testing or simulation)” by AVSC, “AVSC00006202103: Best Practice for Metrics and Methods for Assessing Safety Performance of ADS” (March 2021).

metrics regarding the identification and reduction of system errors.¹⁸²

- *Adherence to internal safety processes during the subject vehicle’s development or operations.* This element could include reporting of response times relative to established thresholds or metrics associated with understanding what proportion of issues that may arise result from best practice violations.

2. Event-Triggered Reporting

In addition to the periodic reporting discussed above, NHTSA also proposes to require AV STEP participants to report certain incidents or events on an ad hoc basis when they occur. Section 597.501 of the proposed rule sets forth three such “event-triggered” categories of reporting.

Crash reporting is the first proposed category of event-triggered reporting. NHTSA proposes to largely incorporate the current scope of crash reporting under NHTSA’s Second Amended Standing General Order (SGO) 2021-01, which was issued in April 2023.¹⁸³ To incorporate the scope of the SGO, § 597.501(b) of the proposed rule would incorporate the SGO definition of a crash. The content required for a crash report would be set by a term in the Final Determination Letter. NHTSA expects this content to match the most current Incident Report Form for the SGO.¹⁸⁴

The SGO has enabled NHTSA to quickly identify crashes and assess whether they should be investigated. NHTSA anticipates that most—if not all—participants in AV STEP would also be responsible for reporting under the SGO. As long as the SGO or any

¹⁸² Specific system error reduction concepts—for example, identification of observed anomalies relative to model assumptions or object classification accuracy and precision—can be found in ANSI, “UL Standard ANSI/UL4600: Standard for Evaluation of Autonomous Products,” (March 2022).

¹⁸³ NHTSA, “Second Amended Standing General Order 2021-01: Incident Reporting for Automated Driving Systems (ADS) and Level 2 Advanced Driver Assistance Systems (ADAS)” (April 5, 2023) available at https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01_2023-04-05_2.pdf.

¹⁸⁴ The current Incident Report Form is available as appendix C to the SGO. *See id.*

analogous form of reporting remains in place, reports outside of AV STEP should provide NHTSA with effective oversight of crashes involving subject vehicles. To avoid duplicate reporting between AV STEP and the SGO, § 597.501(f) of the proposed rule would treat a timely report under the SGO (including any future form it may take)¹⁸⁵ as meeting the AV STEP crash reporting requirement, as long as the SGO report contained all of the information required for a crash report in this program. As explained in the prior paragraph, the scope of crash reporting in AV STEP would be set by the combined requirements of the proposed rule and terms of a Final Determination Letter. NHTSA expects the scope of this reporting to mirror the most current version of the SGO. Therefore, timely crash reporting under the SGO would typically satisfy crash reporting for AV STEP. If an SGO report containing the information required by a Final Determination Letter is submitted for a subject vehicle, a participant would simply need to submit notice of the Location Sheet applicable to the report (as well as potentially submit any video, as discussed in the next paragraph).

NHTSA also proposes to expand on the current scope of SGO reporting in two ways. First, NHTSA proposes to require reporting of all crashes involving subject vehicles regardless of the engagement status of the ADS, whereas the SGO applies only if the ADS was engaged at any point within 30 seconds of a crash. This expanded reporting would ensure that any crashes involving AV STEP vehicles are known.¹⁸⁶ Second, NHTSA proposes to require a participant to submit any video footage possessed by an Essential System-Level Stakeholder for any incident that meets the most urgent

¹⁸⁵ NHTSA is considering a rulemaking relating to the SGO's requirements since the SGO was issued as an enforcement order and is scheduled to sunset in April 2026 if not renewed. *See* Office of Information and Regulatory Affairs, "Unified Agenda of Regulatory and Deregulatory Actions," RIN 2127-AM63: Incident Reporting Requirements for Automated Driving Systems and Level 2 Advanced Driver Assistance Systems, available at <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202404&RIN=2127-AM63>.

¹⁸⁶ A report would also need to indicate whether the ADS was engaged at any point during the time surrounding the crash.

level of proposed crash reporting.¹⁸⁷ NHTSA often obtains video footage of ADS crashes to help assess incidents as part of its follow-up with entities on their SGO reports. Crashes that would require video reporting in AV STEP would also be reportable under the current scope of the SGO. As described in the prior paragraph, those SGO reports would likely satisfy the need to report the crash in AV STEP apart from providing this video footage and advising NHTSA of the Location Sheet applicable to the crash.

For the second category of event-triggered reporting, NHTSA proposes to require participants to report citable offenses of traffic safety law violations. This reporting would include any violations that result in an actual citation, as well as any known violations that did not result in citations. For actual citations, this reporting standard is straightforward and would require reports for any citations issued by an authority responsible for enforcing traffic safety laws where the vehicle is operating. For violations that did not result in citations, NHTSA proposes to scope reporting to events for which a participant is aware and understands, in good faith, the behavior to constitute a violation of an applicable traffic safety law. The “known” threshold for non-ticketed violations means that this reporting requirement would not create an affirmative duty to search for those incidents. Instead, as part of the application requirements proposed for AV STEP, participants would provide information about their processes for identifying applicable traffic safety laws and monitoring adherence to them.¹⁸⁸ These processes should ensure that participants are not willfully ignoring behavior that may form non-ticketed violations. Likewise, these processes should ensure that the participants exercise reasonable judgment as to whether necessity permits a vehicle to deviate from the general rule of conduct expected by a traffic safety law. For instance, vehicles may appropriately

¹⁸⁷ This would apply to any crashes that meet the one-day reporting requirement of the SGO. Because the processing of video files may add logistical difficulty to a report, NHTSA proposes to require video to be submitted within two business days after an Essential System-Level Stakeholder obtains possession of the video.

¹⁸⁸ As proposed, the Protocols for ADS Operations and Independent Assessment portions of an application would include information about traffic safety law compliance. *See* Section IV.A (Application Form).

cross a double yellow line or drive onto the shoulder to avoid an obstacle or when directed by law enforcement.

The last category of proposed event-triggered reporting relates to changes in the extent to which fallback personnel are used for a Step 2 participation. Under the AV STEP eligibility requirements, vehicles participating at Step 2 should generally operate without fallback personnel during participating operations. However, NHTSA recognizes that some Step 2 participants may rely on fallback personnel sparingly. For example, a participant could temporarily introduce onboard fallback personnel as a safeguard after the release of a software update or rely on fallback personnel for a subset of the participating fleet that would be engaged in specific validation operations. NHTSA does not intend the scope of Step 2 to disincentivize such limited uses of fallback personnel if a participant deems them beneficial for safety.

At the same time, Step 2 participation should demarcate readiness to operate with an ADS competent enough to not need fallback personnel when operating in its ODD. Therefore, participants in Step 2 should not functionally operate as Step 1 participants through the widespread and sustained use of fallback personnel. To oversee this balance and provide more transparency regarding operations, NHTSA proposes that participants at Step 2 be required to report the percentage of subject vehicles using fallback personnel at each location. If this percentage changes, a participant would need to report that change by the time it occurs. As under Step 1, any Step 2 vehicle would be prohibited from carrying public passengers when operating with fallback personnel.¹⁸⁹

NHTSA is also considering whether, as a fourth category of event-triggered reporting, participants should be required to report cyber-related incidents with a potential safety impact. The agency seeks comment on such a requirement, particularly regarding how cyber incidents should be defined and thresholds for reporting such

¹⁸⁹ See Section III.C (Terms and Conditions) for more explanation of this restriction.

incidents, timing requirements for reporting such events, and how such requirements may relate to NHTSA's existing requirements for safety-related defect reporting.

3. Update Reporting

NHTSA expects a participant's authorized ADS operations to evolve over time. Routes or other aspects of an operation may need to be refined, an ADS should continue to mature, and participants should maintain and refine their internal processes. To accommodate this continuous improvement, NHTSA proposes a reporting framework for updates that occur during AV STEP participation. This reporting framework is designed to ensure NHTSA is notified of meaningful changes without slowing the pace of progress. If a change is significant enough to affect important premises of NHTSA's original decision on an application, this framework also would enable NHTSA to request more information before the change could take effect.

This change reporting supplements rather than supplants the amendment process described in the next subsection. If a reportable change would violate a term or condition of a Final Determination Letter, a participant would need to separately request and receive an amended letter before any such change could take effect. For such a change, the report described in this subsection would still be necessary.

Final Determination Letters would contain terms that set customized thresholds for changes that would need to be reported to NHTSA. Applicants would propose such thresholds.¹⁹⁰ These proposals should be based on the extent to which changes may alter information submitted in an application or reviewed by an independent assessor for the assessment submitted with an application. They should avoid capturing routine changes or those contemplated in an application. NHTSA's goal in proposing these thresholds is

¹⁹⁰ Section IV.A.3 (Confirmation of Reporting During Participation) discusses NHTSA's proposed approach to using customized terms for certain reporting requirements.

to craft standards specific to a particular operation that account for the information upon which the agency's decision on the application was based.

Any change that exceeds these customized thresholds would need to be reported to NHTSA. A report would need to describe the change, identify the date on which it is proposed to occur, and contain an independent assessor's position on whether the change would materially affect an earlier independent assessment of the safety case for the operation. This requirement would not entail a new independent assessment for each reportable change. Instead, the agency anticipates a much narrower independent review of whether the prospective change would alter a critical aspect of the safety case or exceed the bounds of the safety case in a way not accounted for by the earlier independent assessment. As proposed, an independent assessment summary report submitted as part of an application would need to include an overview of the parameters under which the assessment and its conclusions are valid.¹⁹¹ NHTSA expects these parameters to significantly inform whether reportable changes would materially affect a prior assessment.¹⁹²

NHTSA proposes to require seven days of advance notice for reportable changes an independent assessor has indicated will not materially affect a prior assessment. NHTSA would not plan to require affirmative approval of any such non-material changes. However, advance notice would provide NHTSA with an opportunity to request more information or explore concerns before a change takes effect. In contrast, any changes that an independent assessor has indicated will materially affect a prior assessment would require written NHTSA approval before they could occur. As part of its review, the agency could require a more robust update to any portions of an independent assessment affected by such changes.

¹⁹¹ See § 597.205(d)(3)(vi) of the proposed rule.

¹⁹²As proposed, this position could be provided by an assessor other than the one that conducted the original analysis.

B. Agency Protocols

1. Amendment Process

As proposed, the terms and conditions in a Final Determination Letter would govern the scope of participation. Changes to these terms and conditions would require NHTSA's review and approval through the issuance of an Amended Final Determination Letter. This NPRM proposes a process through which a participant could request amendments to a Final Determination Letter. During NHTSA's review of an amendment request, a program participant would remain able to continue AV STEP participation under the existing terms.

The specific contents of an amendment request would vary depending on the scope of changes requested. However, any amendment request should describe each requested change and how it may affect the system design, process, or operations. In addition, the amendment request would be required to include an updated response to each of the affected elements of the participant's AV STEP application, apart from the independent assessment.¹⁹³

Certain changes that are expected to occur during normal operations would not require written approval from NHTSA, even if they might potentially implicate terms in a Final Determination Letter. A participant could make such changes at any time by providing written notice to NHTSA by the time the change takes effect. These changes, detailed in § 597.601(e) of the proposed rule, include: (1) changes to a participant's contact information; (2) changes to the geographical boundaries of an approved location, as long as all other information in the application remains the same; and (3) the addition of entirely new locations through Location Sheets, as long as the new locations are

¹⁹³ The change reporting framework described in the prior subsection is designed to consider how changes would affect the conclusions of a prior independent assessment. If changes that prompted an amendment request also met the change reporting thresholds, those reports would provide insight into how the changes bear upon an assessment.

substantially similar operations to at least one already approved location. Any such new location under this third type of change could not expand the total number of vehicles for which participation has been permitted without requiring an amendment to that effect. In addition, the new location would need to involve the same ODD (other than the geographical location), vehicle equipment, intended use, and approach to public ridership as for the previously approved participation location(s). If any of those conditions are not met, a participant could add a new location only by requesting an amendment and receiving approval from NHTSA.

In contrast, certain changes to a participation are so fundamental that NHTSA proposes that they would not be eligible for an amendment and, instead, would require a new application. These proposed changes are: (1) any change to a program step; or (2) the removal, replacement, or addition of an Essential System-Level Stakeholder. In addition, for participations with an AV STEP exemption, a new application would be required for any change to: (1) the type of AV STEP exemption; (2) the exempted subject vehicle;¹⁹⁴ (3) the FMVSS or bumper standard (including subsection) for which an FMVSS Exemption is granted; (4) the device or element made inoperative for a Make Inoperative Exemption; or (5) the FMVSS subsection affected by the requested modification for a Make Inoperative Exemption.

The next subsection describes the proposed procedure through which NHTSA may unilaterally amend the terms or conditions of a Final Determination Letter in response to concerns that arise during participation. In addition, NHTSA may change a term with the consent of all participants, such as to issue a technical correction or to refine a condition.

¹⁹⁴ This category would include changes to the subject vehicle platform, such as requesting a new model year or vehicle model. This proposal includes a separate procedure to add exemptions for identical vehicles to those already in receipt of an exemption, as described in Section VII (Requirements for AV STEP Exemptions (Regulatory Text Subpart C)).

2. Concern Resolution Process

The oversight goals of AV STEP necessitate an effective and transparent process for resolving concerns that arise during participation. This process should enable NHTSA to swiftly modify the terms of participation when required for safety, while also, when possible, affording program participants opportunities to participate in the resolution process. To account for these considerations, NHTSA proposes procedures for reviewing and resolving concerns that arise during AV STEP participation.¹⁹⁵

NHTSA proposes a response process for AV STEP in which issues would be classified as either: (1) apparent issues; and (2) severe apparent issues. Apparent issues would consist of any circumstance that calls into question the safety of an operation, compliance with AV STEP responsibilities, or the reliability of information provided under the program.¹⁹⁶ A concern may emerge even before a problem has materialized in real-world operations or risen to the level of an unreasonable risk to motor vehicle safety under the Safety Act.

Once a concern arises, the agency would undertake a preliminary review aimed at ascertaining whether an apparent issue exists and, if so, the severity. Severity would be determined on a case-by-case basis, considering how timely a response to the problem would need to be. As proposed, the biggest difference in apparent and severe apparent issues is the imminency with which a concern may need to be addressed during existing operations. NHTSA expects that severe concerns would typically entail significant safety problems or the disregard of program requirements in a manner that undermines confidence in ongoing operations. The severity of an apparent issue may also reflect how

¹⁹⁵ This process would not replace NHTSA's traditional defects process under the Safety Act. No part of AV STEP, including this proposed concern resolution process, is intended to supplant or affect NHTSA's defect process. Participants would not be absolved from any obligations under the Safety Act to identify and provide notice of safety defects nor would NHTSA be precluded from using its defect process or other applicable authorities for participants in AV STEP. *See* 49 CFR part 573 and 49 U.S.C. 30116 et seq.

¹⁹⁶ Although these types of concerns are expected to most commonly involve potential safety issues, they may also entail process violations, such as deviating from approved program parameters, failing to report required information, or problems with the accuracy or completeness of information submitted.

quickly a risk is likely to manifest itself in operations. While the severity of a concern will depend on the specific circumstances, potential examples of severe apparent issues could include crashes stemming from a problem with an ADS that also exists in other continuing operations or learning that participants violated terms and conditions of a permission in a manner that calls into question the safety of their operations.

The agency may engage with participants to learn more about the concern during this preliminary review. If a concern is substantiated, the agency would notify the participant of the apparent issue, describe it with reasonable particularity, advise whether it is categorized as severe, and describe any impending modifications of a term or condition of a Final Determination Letter to mitigate the concern. NHTSA would seek to develop a narrow modification tailored to the scope of the issue but could impose a full suspension from participation if needed.¹⁹⁷ In other contexts, NHTSA has found that working with the affected stakeholders throughout the review of a problem increases the chances the problem can be addressed in a way that prioritizes safety while limiting the scope of operational impacts.

For apparent issues identified by NHTSA but not categorized as severe, any modifications of participation terms listed in the notice would automatically take effect 10 business days after the agency issues a notice to a participant. For issues designated as severe, the timing of the modification would be determined on a case-by-case basis. NHTSA would aim to provide as much notice as possible for severe apparent issues, but if needed, modifications for severe apparent issues could become effective as soon as issued. In practice, if a situation is serious enough to warrant an immediate modification of a permission, NHTSA expects a company's internal policies would independently lead

¹⁹⁷ This practice would match NHTSA's practice in administering Section 30114(a) exemptions. For instance, if an ADS demonstrates problems navigating a particular intersection or roadway feature, such as a traffic circle, NHTSA has typically aimed to curtail operations around the feature rather than suspend all operations. This tailored approach, in particular, highlights the need for the flexibility of a case-by-case concern resolution process.

the company to take appropriate and timely measures, such as curtailing its operations while it evaluates the issue.

NHTSA would retain the discretion to further modify or cancel a planned modification to the terms of participation, including by extending the time by which the modifications would take effect. For instance, a participant may moot a problem by implementing a sufficient mitigation or deciding to voluntarily suspend operations of all affected vehicles.¹⁹⁸ NHTSA intends this framework to encourage participants to use responsible incident response protocols that quickly and proactively address problems.

Reinstating any curtailed aspects of an operation would also be handled case-by-case. Given the variety of potential issues and their range of complexity, NHTSA anticipates working iteratively with participants and project stakeholders to develop tailored plans for resolving each issue. If mitigations or corrections are required, participants would need to develop proposed mitigations, prepare corrective action plans, and demonstrate their sufficiency to the agency. NHTSA would review the proposed mitigations and develop a return-to-service plan. Where possible and consistent with safety, participants would be afforded flexibility in how vehicles could be returned to service, such as by deciding whether to implement mitigations on a rolling basis or all at once. NHTSA has used a similar process for the reinstatement of suspended ADS operations with Section 30114(a) exemptions and believes this approach would translate well to AV STEP.

VI. Public Reporting Requirements (Regulatory Text Subpart G)

NHTSA intends for AV STEP to boost transparency surrounding ADS technology and, through this increased access to information, lay the groundwork for greater public

¹⁹⁸ As appropriate, NHTSA could also unilaterally revoke an operation from AV STEP or suspend it through the modifications described in this section.

understanding of participating operations. To promote such transparency, NHTSA proposes to publish certain information about each application and participation.¹⁹⁹ This information focuses on the topics most relevant to the public's engagement with the vehicles. Given the importance of this information to the public, its availability via NHTSA's intended public AV STEP reporting would be a condition of AV STEP application and participation.²⁰⁰ In addition to specific comment requests below, the agency seeks comment on any topics that are important to the public's engagement with ADS operations that are not covered by the proposed public reporting elements.

Upon receipt of an application, NHTSA proposes to publish a subset of information from the application, including much of the material in the Operational Baseline and Location Sheet sections of an application. Through this information, NHTSA intends for the public to understand the scope and nature of requested participation. In addition to publishing the date an application was received, NHTSA would publish the current application review phase to provide transparency regarding the status of each application. Published information about an application would identify the relevant stakeholders, describe the subject vehicles, and identify any use of fallback personnel, remote driving, or vehicle assistance. NHTSA also proposes to publish information about the operations requested under each Location Sheet of an application. This information would cover the location, vehicle numbers, maximum vehicle speed, speed limits, intended use of the vehicles, whether the applicant seeks to transport public passengers, and a summary of the ODD.

In addition to these elements, NHTSA proposes to publish a list of each industry standard, best practice, or guidance with which the subject vehicle fully conforms

¹⁹⁹ See Subpart G of the proposed rule.

²⁰⁰ Due to the public-facing nature of the specific information NHTSA proposes to publish, the agency does not believe a claim of confidential business information (CBI) is appropriate in this context and would not provide an assurance of privacy for that information. See 5 U.S.C. 552(b)(4); 18 U.S.C. 1905; *Food Marketing Inst. v. Argus Leader Media*, 139 S. Ct. 2356, 2363 (2019).

according to the independent assessment submitted as part of the application. In proposing to publish this information, NHTSA recognizes that entities, including ADS developers, sometimes proactively publish claims of conformance to industry standards.²⁰¹ Including this express disclosure provision in the rule enables entities to understand how the agency intends to publicly communicate about an application or participation and allows them to make informed decisions about whether to apply to this voluntary program. NHTSA specifically requests comment on its proposal to publish industry standards conformance.

NHTSA proposes to publish each Final Determination Letter, including any Amended Final Determination Letter, that reflects a decision on an application. A letter granting admission to AV STEP would contain the full set of terms and conditions that govern participation.²⁰² Thereafter, NHTSA would publish information about each participation's operational status, including the dates of participation. Doing so would allow the public to understand whether an operation remains active, is inactive, is under a suspension, or has concluded.²⁰³ To help the public understand ongoing operations, NHTSA proposes to publish certain information from quarterly reports. This information would include the number of subject vehicles operated on public roads, a list of zip codes where such operations occurred, and the number and location of any vehicle recovery events.²⁰⁴

²⁰¹ See, e.g., Argo AI, LLC, "Press Release: Argo AI Conforms to Autonomous Vehicle Testing Standards According to Leading Independent Auditor" (December 20, 2021), available at <https://www.prnewswire.com/news-releases/argo-ai-conforms-to-autonomous-vehicle-testing-standards-according-to-leading-independent-auditor-301447984.html#:~:text=The%20result%20of%20T%C3%9CV%20S%C3%9CD's,being%20compliant%20with%20these%20applicable>.

²⁰² To the extent this letter memorializes information for which an applicant requested treatment as CBI under NHTSA's regulations in 49 CFR part 512, those portions of the letter may require redaction.

²⁰³ For the proposed definitions of these statuses, see § 597.701(b)(1) of the proposed rule.

²⁰⁴ NHTSA is not currently proposing to separately publish crash reporting through this program. As proposed, an SGO report would fulfill a crash report requirement in AV STEP. As such, NHTSA does not expect extensive crash reporting unique to this program and believes the transparency goals of crash reporting are already met through NHTSA's periodic publication of SGO reports.

In general, the information proposed for publication focuses on public-facing information about an operation. However, in other contexts, stakeholders have expressed interest in NHTSA collecting and publicizing information about VMT for ADS operations. The periodic reporting to NHTSA proposed for AV STEP includes several categories of VMT, as well as an element entitled “Operational Context,” which would indicate how such VMT compares to analogous operations outside of AV STEP. NHTSA requests comment on whether any of this information should be published for AV STEP.

In general, information would be published for AV STEP as it is submitted to the agency. While NHTSA’s publication of the information would not be an endorsement of its accuracy, as with any other reporting requirement, an entity is responsible for ensuring the accuracy of the information reported to NHTSA, and the agency would take appropriate action if it became aware of incorrect information. NHTSA is considering how best to present all of this information as well as exploring information technology solutions for doing so. In addition to the above-described information, the agency would consider periodically publishing broader insights gained through administering AV STEP.

VII. Requirements for AV STEP Exemptions (Regulatory Text Subpart C)

As described in Section II (Program Context), this proposal includes two types of exemptions: (1) an FMVSS Exemption under 49 U.S.C. 30114(a); and (2) a Make Inoperative Exemption under 49 U.S.C. 30122. For consistency, where possible, the same AV STEP requirements would apply to all vehicles regardless of whether an exemption is sought. However, several additional requirements are proposed only for vehicles seeking exemptions. Some requirements would apply to both types of AV STEP exemptions and others to only one of the two exemptions. A Final Determination Letter would set the full terms and conditions for an exemption. Vehicles exempted under AV STEP would retain

their exempt status only while participating in AV STEP.²⁰⁵

A. Exemption Eligibility Requirements

In addition to the general eligibility requirements, at least one applicant for each AV STEP FMVSS Exemption must satisfy an eligibility requirement specific to exemptions as specified in § 597.103 of the proposed rule. If the vehicles for which exemptions are sought require importation into the United States, at least one applicant must be the importer of record for each vehicle. This requirement would ensure accountability for the importation process. For vehicles that do not require importation, at least one applicant must be the manufacturer of each subject vehicle. This requirement is necessary because, absent an exemption, the manufacturer is the only party eligible to participate in AV STEP that is responsible for compliance and certification of the vehicle with all applicable FMVSS.²⁰⁶

B. Exemption Application Requirements

Each application would need to specify whether it includes a request for an FMVSS Exemption under Section 30114(a) or Make Inoperative Exemption under Section 30122(c). Either exemption would require an additional application form. The application requirements for an AV STEP exemption are proposed in § 597.202 of the proposed rule, and include the following:

Vehicle Information: An application for an exemption would need to include identifying information about each vehicle for which an exemption is sought, as well as the total anticipated number of vehicles for which each exemption will be sought during AV STEP participation. Under the process described in the next subsection, this number would be used to cap the actual number of vehicles that could receive an exemption. In

²⁰⁵ Under § 597.303(f) of the proposed rule, vehicles imported into the United States under an AV STEP exemption could remain in the country after AV STEP participation ends, as long as they do not operate on public roads.

²⁰⁶ See 49 U.S.C. 30115.

addition, an application would need to identify each proposed vehicle label to meet the exemption labeling requirements detailed in the next subsection.

Insurance Disclosure: NHTSA proposes that an entity requesting either exemption confirm it will maintain insurance coverage from a regulated insurance company at all times in an amount sufficient to cover liability for damages, including for bodily injury or death, that may result from the operation of the vehicle in the manner and location(s) described in the application. This requirement resembles one currently used in NHTSA exemption programs under 49 U.S.C. 30114(a).²⁰⁷ NHTSA has found this disclosure helpful in confirming that sufficient coverage exists while allowing state law to govern specifics about such coverage.

Safety Comparisons and Mitigations: An applicant for an exemption would need to describe, in detail, each requirement of an FMVSS or bumper standard for which there is noncompliance or, in the case of a Make Inoperative Exemption, the device or element rendered inoperative. It would also need to describe any mitigations of associated safety impacts and how the vehicle's safety compares to that of a compliant vehicle, including comparisons of the crash protection for vehicle occupants and the safety of vulnerable road users. An application for a Make Inoperative Exemption would also need to describe each modification at issue and the extent to which the vehicle's original manufacturer was consulted regarding the modification. This disclosure would provide insight into how well the system-level effects of the modification are understood by the applicant. NHTSA would consider all of this information when assessing whether risks have been sufficiently addressed to justify the exemption sought.

NHTSA proposes that any FMVSS or bumper standard may be the subject of an

²⁰⁷ This question is used in the existing process for temporary import exemptions, including in the ADS-equipped Vehicle Exemption Process, which implements 49 CFR part 591. See NHTSA, "Form: Temporary Import Exemption Application for Vehicles, Section 2: Vehicles Interacting with the Public," Question 2.2.

AV STEP exemption request, consistent with NHTSA's other exemption programs.

However, NHTSA requests comment on whether any standards should be ineligible for exemption under AV STEP.²⁰⁸

Eligibility of Domestic and Imported Vehicles: As proposed, both domestic and imported vehicles could apply for an FMVSS or Make Inoperative Exemption through AV STEP. NHTSA proposes to treat domestic and imported vehicles equally in the proposal, apart from unique requirements necessary for the importation process.

For the proposed Make Inoperative Exemption, this approach is consistent with Section 30122, which does not make any distinction between imported and domestic vehicles. NHTSA's regulations implementing other make inoperative exemptions likewise do not distinguish between imported and domestic vehicles. For the proposed FMVSS Exemption, this approach implements the express language of Section 30114(a), which contains no restrictions on a vehicle's country of origin. In this respect, the language of Section 30114(a) is consistent with other provisions in Section 30114, which apply equally to domestic and imported vehicles. For instance, Section 30114(b) authorizes an exemption for replica vehicles through similarly broad language that applies generally to any motor vehicles. NHTSA's regulations implement Section 30114(b) through a replica vehicle exemption program that applies to vehicles built both in the United States and abroad.²⁰⁹

In the past, NHTSA has implemented Section 30114(a) only for imported vehicles. The original statutory language for Section 30114(a) first arose to refine exemptions that the agency was already issuing in the imports context in conjunction with the U.S. Customs Service.²¹⁰ NHTSA implemented Section 30114(a) authority in

²⁰⁸ For instance, in 2022, NHTSA amended occupant protection standards to account for ADS-equipped vehicles that lack traditional manual controls. 87 FR 18560 (March 30, 2022).

²⁰⁹ See 49 CFR part 586.

²¹⁰ See 58 FR 12905, 12906 (March 8, 1993) (explaining the legislative and regulatory history of the provision).

the imports context through the regulatory framework codified in 49 CFR part 591. Because the text of Section 30114(a) is not by its terms limited to imported vehicles, however, NHTSA has since initiated a rulemaking to consider creating an equivalent to the part 591 exemptions for domestic vehicles.²¹¹ Separately implementing Section 30114(a) exemptions for domestic vehicles in the AV STEP rulemaking would be consistent with this ongoing work to equalize the opportunities for domestic vehicles.

Since AV STEP exemptions would span imported and domestic vehicles, an AV STEP exemption application would need to identify whether any vehicles require importation into the United States to ensure that requirements for importation were met. NHTSA proposes to amend the agency's HS-7 declaration form to add a new box for vehicles imported under an AV STEP exemption. A new box is needed because none of the existing fields for the HS-7 form fit the AV STEP exemptions.²¹² All vehicles currently imported under a Section 30114(a) exemption use Box 7 of the form. However, Box 7 is limited to research and demonstration purposes under Section 30114(a) and is also specific to the importation restrictions in 49 CFR part 591. Thus, a new box is needed to declare that a vehicle does not conform to all applicable FMVSS and Bumper Standards but is being imported pursuant to an AV STEP exemption. NHTSA requests comment on whether the agency should amend 49 CFR 591.5 to specify that AV STEP vehicles may be imported in this way.

Proposed Section 30114(a) Purpose: An application for an FMVSS Exemption would need to identify which purpose in 49 U.S.C. 30114(a) is the basis for the exemption. The applicant would bear the burden of persuasion to demonstrate that a

²¹¹ This rulemaking remains ongoing. See Office of Information and Regulatory Affairs, "Unified Agenda of Regulatory and Deregulatory Actions," RIN 2127-AM14: *Expansion of Temporary Exemption Program to Domestic Manufacturers for Research, Demonstrations, and Other Purposes*.

²¹² See Declaration HS-7, Importation of Motor Vehicles and Motor Vehicle Equipment Subject to Federal Motor Vehicle Safety, Bumper and Theft Prevention Standards, available at https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/hs7_111920_v3_secured.pdf.

statutory purpose applies to the requested vehicles.²¹³ While any purpose enumerated in Section 30114(a) could be claimed for an exemption, NHTSA's experience administering AVEP suggests that most ADS exemption requests claim research, investigations, or demonstration purposes.²¹⁴ Any of these statutory purposes claimed under Section 30114(a) should be proportionate to the scope of a requested exemption, given the increased potential risk from exposure to larger numbers of noncompliant vehicles. For instance, if a request claimed a research purpose, the extent of the research interest should scale with the scope of the requested exemption. As a high-level example, the research purposes and scope of operations may be misaligned if a request claimed to research how ADS operations improve mobility options in rural communities but the operations in question occurred primarily in urban environments. To that end, § 597.202(b) of the proposed rule contains application requirements that allow the applicant to explain the rationale for a stated purpose, its relation to the exemption sought, and whether that purpose is expected to remain valid throughout the exemption.

NHTSA proposes to allow vehicles exempted under AV STEP to engage in commercial activities. The statutory language of Section 30114(a) does not prohibit commercial activity, provided a statutory purpose is met.

For Section 30114(a) exemptions administered under part 591, NHTSA has typically set terms that prohibit certain public-facing commercial activities, such as charging fares during passenger-carrying services or imposing fees in goods delivery

²¹³ See 58 FR 12905, 12906 (March 8, 1993).

²¹⁴ NHTSA has explained that "research" and "investigations" often entail some sort of "test or experiment." 58 FR 12905, 12906 (March 8, 1993). NHTSA has similarly stated that a demonstration of a motor vehicle has traditionally involved exhibiting its operation or use, both in the showroom and on the road. *Id.* Earlier versions of the statute also listed "studies" as an express statutory purpose. See 15 U.S.C. 1397(j). NHTSA has looked to ordinary use of the word "study" when construing this term, explaining that the primary meaning of the word 'study' is 'the application of the mind to the acquisition of knowledge.' 58 FR 12905, 12907 (March 8, 1993). NHTSA has historically considered vehicles of "technological interest" as emblematic of vehicles contemplated by this purpose. *Id.* Although the term "studies" was dropped in the 1994 recodification of the Safety Act, Congress made clear that this recodification was non-substantive. Compare 15 U.S.C. 1397(j), with Pub. L. 103-272, 108 Stat. 947 (1994). As such, and given the overlap in terminology in research, demonstration, investigations, and studies, the recodification maintained the prior scope under this more streamlined set of terms.

services. This restriction is designed to limit situations in which the Section 30114(a) purposes are claimed as a pretense for other private interests.²¹⁵ That approach reflects the practical difficulty of disentangling an entity's stated research, demonstration, or other interest from the inherent commercial motivations that may accompany an operation that generates revenue. A commercial operation prohibition sets a bright line that prevents the comingling of these motivations and ensures the statutory purpose is the reason the exemption is sought.

However, since AV STEP proposes to accommodate more complex exemptions than part 591, NHTSA considers a more nuanced approach to commercialization appropriate. The procedural safeguards proposed for AV STEP would provide NHTSA with information necessary to ensure an appropriate statutory purpose for the exemption even if an operation is commercialized. These safeguards would include a robust disclosure of any commercialization and a justification for how the statutory purposes are nevertheless met. In addition, NHTSA proposes to require any AV STEP exemption involving commercial activity to demonstrate that the claimed Section 30114(a) purpose furthers a public, rather than purely private, interest. It is difficult to weigh an applicant's competing private interests, especially when one involves monetary gain. However, if an applicant can establish that a claimed Section 30114(a) purpose furthers a public interest, the agency could consider whether it justifies the requested exemption, even if some commercialization were to occur.

NHTSA does not propose to delineate appropriate public interests in advance. Given the wide range of potential societal benefits from ADS, NHTSA intends for an applicant to describe and substantiate the public interest instead. Examples of potential public interests could range from environmental, accessibility for people with disabilities,

²¹⁵ 58 FR 12905, 12907 (March 8, 1993) (expressing concern with a purpose, such as static display, that can be undermined, however, by importations under subterfuge, where the hidden but real intent of the importer is to operate the vehicle on the public roads for his or her private enjoyment.).

equity, or labor impacts to interests relating to the improvement of transportation efficiency. As NHTSA explained recently in another exemption context: ADS vehicles have the potential to benefit our transportation system significantly beyond the analysis required in the safety determination. As NHTSA considers the potentially transformative impact of ADS technology, it is also considering its role in encouraging the use of ADS vehicles in ways that maximize their benefit to society. Specifically, NHTSA is exploring its role and responsibility in considering environmental impacts, accessibility, and equity when an exemption is sought for an ADS equipped vehicle. Climate, accessibility, and equity, in addition to road safety, are important public interest goals of the Department and NHTSA. NHTSA will also continue to consider how exemptions affect the development of advanced vehicle technologies.²¹⁶

The information submitted through an application would enable NHTSA to review the claimed statutory purpose in light of any expected commercialization.

C. Exemption Participation Requirements

The proposed rule also includes several participation requirements specific to exempted vehicles. In general, an exemption would expire at the end of a vehicle's AV STEP participation. However, imported vehicles that relied on the exemption to enter the United States could remain in the country as long as they did not operate on public roads or otherwise engage in interstate commerce. In addition to the operational control requirements for all AV STEP participants, an AV STEP exemption holder would need to maintain ownership and possession of each exempted vehicle and could not license it for use, unless otherwise permitted by NHTSA. This restriction ensures that tighter control is exercised over the vehicles to account for their nonconformance with safety standards. As with all participations, the terms of a Final Determination Letter could generally be

²¹⁶ 87 FR 43602, 43607 (July 21, 2022).

amended under AV STEP's proposed amendment process. However, NHTSA proposes to require a new application for several fundamental changes to an exemption.²¹⁷

NHTSA also proposes to require vehicles receiving either exemption to display at least two labels—one on the vehicle's exterior and one on the interior—stating that the vehicles might not conform with all applicable FMVSS. Exterior labels would inform surrounding road users or those entering the vehicle, whereas interior labels would inform vehicle occupants.²¹⁸ NHTSA would review each label proposed by an applicant during the review of an application and set terms for the labels in the Final Determination Letter.

The Final Determination Letter would also list the specific vehicles receiving an exemption at that time, as well as cap the maximum number of vehicles that may be exempted.²¹⁹ As long as the list of exempted vehicles has not exceeded this cap, an exemption holder would be able to notify NHTSA of an intent to apply the exemption to additional vehicles. Unless NHTSA provides otherwise within 30 days of this notice, those additional vehicles would be exempt and subject to the same terms as previously exempted vehicles of the same type. The proposed rule would not set a limit on the number of vehicles that may receive an exemption in each participation, because NHTSA proposes the terms of a Final Determination Letter to govern vehicle numbers.²²⁰ However, NHTSA requests comment on whether the proposed rule should include such a limit.

This procedure is proposed to remain consistent with NHTSA's practice of

²¹⁷ See § 597.601(d)(3) of the proposed rule.

²¹⁸ As proposed in § 597.105(g) of the proposed rule, the interior label would only be necessary for vehicle occupants. As such, if the design of a subject vehicle precluded passengers, no such interior label would be required.

²¹⁹ As with other terms in a Final Determination Letter, an exemption-holder could request to amend this cap during participation.

²²⁰ Since the original promulgation of part 591, NHTSA has recognized that Section 30114(a) may support issuing exemptions to multiple vehicles at once *See* 57 FR 2043, 2046 (January 17, 1992) (noting that the exemption could apply to a fleet of test vehicles).

issuing Section 30114(a) exemptions for existing vehicles rather than prospectively for vehicles that have not yet been built.²²¹ It would also avoid the burden of restarting the application process for new vehicles. Moreover, NHTSA believes that the agency, applicants, and the public should understand the volume of exemptions expected over the course of a participation. This information would help NHTSA assess the full scope of the anticipated participation when reviewing an application, provide applicants with more regulatory certainty for their vehicle manufacturing plans, and better enable the public to understand the extent of expected ADS-equipped vehicle activity.

D. Exemption Public Reporting

NHTSA proposes to publish additional information about AV STEP exempted vehicles beyond the information that NHTSA proposes to make public about all AV STEP participations. That additional information is set forth in § 597.701(a) of the proposed rule and includes the type of exemption requested or received, the exempted FMVSS or bumper standard requirements, a summary of risk mitigations, and the Section 30114(a) purpose for FMVSS Exemptions.

VIII. Public Comments

NHTSA requests comment on all aspects of this proposed rule. This section describes how you can participate in this process.

How do I prepare and submit comments?

²²¹ This usual approach to Section 30114(a) exemptions differs from how NHTSA currently administers exemptions under Section 30113 through part 555. Specifically, 49 CFR 555.7 provides: unless a later effective date is specified in the notice of the grant, a temporary exemption is effective upon publication of the notice in the *Federal Register* and exempts vehicles manufactured on and after the effective date. 49 CFR 555.7(f) (Processing of applications). Some entities have expressed that part 555's current limitation to vehicles manufactured on or after the date the exemption is granted presents difficulties. NHTSA has received a petition for rulemaking from an ADS developer to this effect. NHTSA is currently considering a proposed rule to change this provision to allow part 555 exemptions to be granted to vehicles manufactured prior to the issuance of the grant of petition, if they are identical to the vehicles for which the exemption was sought. See Office of Information and Regulatory Affairs, "Unified Agenda of Regulatory and Deregulatory Actions," DOT, RIN 2127-AM57: Temporary Exemption From Motor Vehicle Safety and Bumper Standards.

Your comments must be written and in English.²²² To ensure that your comments are correctly filed in the docket, please include the docket number NHTSA-2024-0100 in your comments. If you are submitting comments electronically as a PDF (Adobe) file, we ask that the documents submitted be scanned using the optical character recognition (OCR) process, thus allowing NHTSA to search and copy certain portions of your submissions.²²³ Please note that pursuant to the Data Quality Act, in order for the substantive data to be relied upon and used by NHTSA, it must meet the information quality standards set forth in the Office of Management and Budget (OMB) and DOT Data Quality Act guidelines. Accordingly, we encourage you to consult the guidelines in preparing your comments. OMB's guidelines may be accessed at <https://www.whitehouse.gov/omb/information-regulatory-affairs/information-policy>. DOT's guidelines may be accessed at <https://www.transportation.gov/dot-information-dissemination-quality-guidelines>.

Tips for Preparing Your Comments

When submitting comments, please remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, *Federal Register* date and page number).
- Explain why you agree or disagree, suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

²²² See 49 CFR 553.21.

²²³ OCR is the process of converting an image of text, such as a scanned paper document or electronic fax file, into computer-editable text.

- Provide specific examples to illustrate your concerns and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified in the DATES section above.

How can I be sure that my comments were received?

If you submit your comments by mail and wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

How do I submit confidential business information?

If you wish to submit any information under a claim of confidentiality, you should submit your complete submission, including the information you claim to be confidential business information (CBI), to the NHTSA Chief Counsel. When you send a comment containing CBI, you should include a cover letter setting forth the information specified in our CBI regulation.²²⁴ In addition, you should submit a copy from which you have deleted the claimed CBI to the Docket by one of the methods set forth above.

NHTSA is treating electronic submission as an acceptable method for submitting CBI to the agency under 49 CFR part 512. Any CBI submissions sent via email should be sent to an attorney in the Office of the Chief Counsel at the address given above under FOR FURTHER INFORMATION CONTACT. Likewise, for CBI submissions via a secure file transfer application, an attorney in the Office of Chief Counsel must be set to receive a notification when files are submitted and have access to retrieve the submitted

²²⁴ See 49 CFR part 512.

files. At this time, regulated entities should not send a duplicate hardcopy of their electronic CBI submissions to DOT headquarters.

If you have any questions about CBI or the procedures for claiming CBI, please consult the person identified in the FOR FURTHER INFORMATION CONTACT section.

Will NHTSA consider late comments?

NHTSA will consider all comments received before the close of business on the comment closing date indicated above under **DATES**. To the extent practicable, we will also consider comments received after that date. If interested persons believe that any information that NHTSA places in the docket after the issuance of the NPRM affects their comments, they may submit comments after the closing date concerning how NHTSA should consider that information for the final rule. However, NHTSA's ability to consider any such late comments in this rulemaking will be limited due to the time frame for issuing a final rule.

If a comment is received too late for us to practicably consider in developing a final rule, we will consider that comment as an informal suggestion for future rulemaking action.

How can I read the comments submitted by other people?

You may read the materials placed in the docket for this document (*e.g.*, the comments submitted in response to this document by other interested persons) at any time by going to <http://www.regulations.gov>. Follow the online instructions for accessing the dockets. You may also read the materials at the NHTSA Docket Management Facility by going to the street addresses given above under **ADDRESSES**.

IX. Regulatory Notices and Analyses

A. Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures

NHTSA has considered the impact of this rulemaking action under Executive Order (E.O.) 12866, "Regulatory Planning and Review," as supplemented by E.O. 13563, "Improving Regulation and Regulatory Review," and amended by E.O. 14094, "Modernizing Regulatory Review," as well as under DOT's regulatory procedures. Although the rule does not meet the \$200 million threshold for significance pursuant to section 3(f)(1) of E.O. 12866 as amended, this NPRM has been designated as significant and was reviewed by the Office of Management and Budget (OMB) under E.O. 12866. This section summarizes NHTSA's assessment of potential benefits and costs relating to this proposal.

NHTSA proposes AV STEP as a voluntary national program that would be available for two categories of vehicles. The first category consists of vehicles that can lawfully operate on public roads regardless of participation in AV STEP, as long as they comply with all other Federal, state, and local laws. These vehicles include those that are compliant with and certified to all applicable FMVSS, those that have received exemptions under other NHTSA programs, and those that may operate on public roads pursuant to the FAST Act, as provided for by 49 U.S.C. 30112(b)(10). The second category consists of vehicles that would seek an exemption from NHTSA through AV STEP. Under this proposal, vehicles that do not comply with all applicable FMVSS or those that originally complied but are taken out of compliance by an ADS retrofit could seek exemptions through AV STEP.

NHTSA has qualitatively assessed many of the costs and benefits of AV STEP because the agency does not currently have sufficient data to calculate all costs and

benefits. Data is limited because the novel aspects of this proposal and ADS-equipped vehicles create significant uncertainties. NHTSA seeks comment and additional data regarding the potential impacts of this proposed program.

1. Need for Regulation

The AV STEP proposal was developed to address several complexities relating to the current nascent state of ADS technology. Those challenges, as well as the ways in which AV STEP proposes to address them, are explained in Section II (Program Context) of this NPRM. Specifically, that section explains how definitive, objective ADS safety assessment test methods are lacking, and that this proposal is designed to account for the current ADS technological landscape as well as complement NHTSA's other activities pertaining to ADS.

ADS technology is in a transitional period of development. The technology has reached a point at which ADS operations are increasingly occurring and expanding on public roads. However, the technology is still in a relative state of infancy. Most ADS operations focus on testing or demonstrating the ADS. The tools used to evaluate the safety of an ADS are likewise in early stages of development. Existing industry standards and best practices for ADS safety continue to evolve and are often used differently across the industry. As the performance capabilities of ADS continue to mature, the expectations about the performance of the technology will likewise evolve. As a result, more information and development are needed before ADS technology will be ready for minimum performance standards, such as FMVSS.

However, safety must remain a priority, even though ADS technologies are in a nascent state of development. Many ADS-equipped vehicles are currently operating on public roads across the United States, in proximity to other road users. Some of those ADS operations are carrying public passengers. As such, the operation of ADS-equipped vehicles entails a safety responsibility to the public, even as the technology continues to

develop. The Safety Act formalizes this responsibility by requiring vehicles and vehicle equipment, including ADS, to be free of safety defects. NHTSA oversees these Safety Act responsibilities, and the agency's oversight relies on access to information about the vehicles and their ADS to monitor for safety-related defects.

AV STEP would complement NHTSA's existing oversight, transparency, rulemaking, and research efforts relating to ADS in a way that builds on the agency's precedent for the technology and enhances the agency's ability to carry out each of these statutory responsibilities when regulating ADS. The additional information that AV STEP would provide about ADS operations on public roads would improve NHTSA's oversight of vehicles that participate in the program. Likewise, AV STEP would help to increase the amount of information that is publicly available about participating ADS-equipped vehicle operations.

In addition, evolving approaches to assessing ADS safety merit a flexible safety assessment framework that is designed for the current transitional stage of ADS. Focusing on the engineering rigor and level of due diligence applied to an ADS' development and operation would allow a review to probe the safety of an ADS even though proven performance standards do not currently exist. This approach to safety reviews would also allow the review framework to evolve as best practices and understanding of ADS safety evolve. This document proposes such a framework for AV STEP and would enable NHTSA to gain insight into how a company's safety practices and metrics for assessing safety correspond to real world ADS performance.

Finally, over the last several years, the number and complexity of FMVSS exemption requests involving ADS-equipped vehicles has significantly increased. In addition, questions have arisen about how the make inoperative prohibition in 49 U.S.C. 30122 affects ADS equipment retrofits. Currently, NHTSA's regulations lack a way for an entity to request a Make Inoperative Exemption in order to equip a compliant vehicle

with an ADS in a way that would take the vehicle out of compliance with an FMVSS. AV STEP would address both of these situations by providing a framework through which NHTSA could consider FMVSS Exemptions under 49 U.S.C. 30114(a) or Make Inoperative Exemptions under Section 30122 for ADS-equipped vehicles. The agency designed AV STEP to review and oversee complex ADS operations, which would improve the agency's ability to efficiently administer FMVSS Exemptions for ADS-equipped vehicles under Section 30114(a) and afford eligible entities an opportunity to request a Make Inoperative Exemption for an ADS retrofit.

2. Uncertainties and Assumptions

As part of the cost-benefit analysis for this rulemaking, NHTSA estimated the costs that would arise from compliance with the key aspects of the application and participation requirements that are proposed for AV STEP. This analysis is informed by the agency's past regulatory activity pertaining to ADS, such as exemptions issued under Section 30114(a) through the AVEP process, reporting under the SGO, and voluntary agency initiatives involving ADS, such as AV TEST and VSSAs. The agency's experience administering those programs helped shape the proposed requirements for AV STEP, as well as informed the agency's expectations about both the level of interest that ADS companies may have in participating in AV STEP and the burden that such participation would entail. Nevertheless, the specific type of national program proposed in this NPRM is new, as are many aspects of the ADS technology that it covers. As a result, inherent uncertainties exist regarding the projected impacts of this rule.

First, uncertainty exists as to the number of entities that would apply to AV STEP. Since NHTSA proposes AV STEP as a voluntary program, the number of entities directly affected by this proposal would depend upon the level of interest in participation amongst eligible entities.

As a starting point in estimating the number of entities interested in participating, NHTSA first estimated the number of entities that would be eligible to participate in AV STEP. The pool of eligible applicants is limited to entities that meet the proposed eligibility requirements in § 597.103 of the proposed rule. Eligible entities would be vehicle manufacturers, ADS developers, fleet operators, or system integrators of ADS-equipped vehicles.

The SGO reporting provides a starting point for estimating the total number of eligible entities who may qualify to apply to AV STEP. The SGO contains a service list of entities that NHTSA has identified as potentially engaged in activities relating to ADS and SAE Level 2 ADAS in the United States. NHTSA actively maintains this service list and has updated it in amended versions of the SGO, as the agency becomes aware of new entities or updates regarding previously served entities. The service list for the latest version of the SGO, which was issued in April 2023, contains 114 entities.²²⁵ Apart from a small number of component suppliers and several other miscellaneous entities that were project stakeholders in particular operations, most of the entities on the SGO's service list are vehicle manufacturers, system developers, fleet operators, or system integrators of vehicles equipped with automation technologies. Thus, the entities on the SGO service list helps estimate the potential pool of eligible applicants for AV STEP.

However, the SGO encompasses both Level 2 ADAS and ADS, whereas AV STEP is proposed to only encompass ADS. As such, the full service list for the SGO is broader than the pool of eligible applicants for AV STEP. Instead, a more analogous segment of the SGO data is the number of entities that have submitted ADS reports under the SGO. When submitting a crash report under the SGO, an entity must indicate whether

²²⁵ The SGO service list can be found at the end of the published Order. *See* NHTSA, "Second Amended Standing General Order 2021-01" (April 2023), available at: <https://www.nhtsa.gov/document/sgo-crash-reporting-adas-ads>.

the vehicle automation system that is the subject of the report is classified as an ADS or Level 2 ADAS. Thus far, 42 entities have submitted ADS crash reports under the SGO.

This number would not account for any new ADS entities that may emerge during the course of AV STEP. Given the evolving state of ADS technology, companies engaged in ADS operations are in a constant state of change, with new startups frequently created and existing companies often winding down. This state of change adds uncertainty to any estimated number of eligible entities. In addition, the figure of 42 entities that have submitted an ADS crash report does not account for SGO entities involved in ADS who have not yet experienced a reportable crash. The level of participation interest from eligible entities that have not submitted an ADS report under the SGO is less certain because the absence of any reporting may suggest that the company is not involved in extensive public road ADS operations. To estimate the potential interest of these entities in AV STEP, NHTSA analyzed entities' engagement with other ADS regulatory activities, such as VSSA, other NHTSA exemption programs, and state and local ADS permitting programs. Through this, the agency identified additional entities that may have some future interest in participating in AV STEP. Given these considerations, NHTSA considers the figure of 50 entities a reasonable starting point for estimating the number of entities that are currently engaged in ADS operations on public roads in the United States at a level that may generate interest in participating in AV STEP.

Additionally, given the potential growth of the ADS industry, NHTSA believes that it is reasonable to assume that the number of entities engaged in more extensive ADS operations will continue to grow over the coming years. Therefore, rather than exclusively relying on the number of entities that have already reported an ADS crash under the SGO, NHTSA considers an estimate of 60 eligible entities a more appropriate

estimate for AV STEP. NHTSA seeks comment on this estimate of the eligible pool of participants.

Since AV STEP is proposed as voluntary, NHTSA does not expect all eligible entities would decide to apply to the program. In addition, as proposed, AV STEP would permit joint applications from essential system-level stakeholders on a project. As a result, some of these eligible entities may jointly apply to AV STEP for operations that they work on together. This may further reduce the total number of unique applications compared to the total number of eligible entities.

Finally, NHTSA considers many of the incentives to participate in AV STEP applicable to all eligible entities. However, an eligible entity's particular level of interest in participating would likely be affected by the type of participation requested. This is particularly the case for FMVSS and Make Inoperative Exemptions requested through AV STEP because vehicles subject to those requests would not be permitted to operate on public roads in the United States without an exemption (attained through either existing exemption programs or through AV STEP). In contrast, vehicles that are compliant with all applicable NHTSA requirements could conduct operations without AV STEP. As a result, entities with ADS-equipped vehicles in need of an exemption because they do not comply with all applicable NHTSA requirements would be more likely to apply to AV STEP. Entities with compliant ADS-equipped vehicles may have less obvious interest in the program, as discussed further in Section III (Program Structure (Regulatory Text Subpart A)).

These variables create uncertainty in the number of eligible entities that would apply to participate in AV STEP. Given these considerations, NHTSA estimates that one in 12 of the entities eligible to participate in AV STEP would apply to the program annually. Given that some eligible entities will likely take time to gain familiarity with the program and consider whether to participate, the agency expects participation to ramp

up over the first 3 to 5 years followed by a tapering-off of new applicants. For purposes of this analysis, NHTSA estimated an average of five applicants to AV STEP each year.

For purposes of this analysis, NHTSA did not adjust the anticipated number of participants in AV STEP for any estimated denials of applications. In practice, as explained in this document, NHTSA may deny an application based on concerns that arise during the application review process or suspend or revoke permission to participate based on concerns that arise during participation. However, sufficient data does not currently exist to project the number of applications that would be denied or the number of participations that would be suspended or revoked. Moreover, AV STEP, as proposed, is structured to reduce the likelihood of deficient applications. The proposed requirements for AV STEP set forth clear expectations for an application, and the proposed application review process would afford applicants an opportunity to rectify issues prior to NHTSA's final decision on an application. As proposed, NHTSA could also set terms and conditions in an AV STEP Final Determination Letter that restrict the requested operation, enabling NHTSA to address certain issues with a requested operation without resorting to a full denial. As a result of these considerations, NHTSA estimated that AV STEP participation will increase by the number of applicants every year. As explained above, the agency estimated that an average of five entities would apply annually during the first seven years of the program.

The agency also expects that, over time, some entities will conclude operations that participated in AV STEP. For example, an entity could cease ADS operations entirely or choose to operate differently in a way that would require a new, distinct application. The continuing changes to the ADS industry landscape discussed above, with frequent acquisitions and market exits influenced by varied unpredictable factors, such as funding, make projections difficult. For the purposes of this analysis, NHTSA has estimated that by the seventh year after initiation of the program, a total of 35 entities

would have applied for and been accepted into AV STEP. At the same time, NHTSA expects that, starting in the fourth year after the initiation of AV STEP, some program participations would conclude (for a variety of reasons, as noted earlier) such that total participation in the program would reach 29 participants in the seventh year of the program. NHTSA seeks comment and data on these assumptions and estimates.

A second notable uncertainty inherent to this proposal is the rate at which ADS technology will progress and the extent to which the technology will be adopted by the public. This proposal recognizes that the potential of ADS is still largely unproven. ADS technologies have the potential to improve safety as well as provide other societal benefits. The impacts of ADS, however, will ultimately be the cumulative result of numerous engineering, deployment, policy, and other choices. Likewise, the capabilities and expectations of ADS are likely to evolve significantly in the coming years.

To account for this evolving technological landscape, certain proposed AV STEP requirements are crafted to evolve over time or allow for a customized approach that can account for the unique attributes of individual applications. For instance, NHTSA proposes for independent assessments to consider relevant industry standards, guidance, and best practices, which should evolve as the industry's understanding of the technology improves. Likewise, as proposed, NHTSA would oversee operations that participate in AV STEP through terms and conditions set in a Final Determination Letter. Those terms would be tailored to the details of each operation, such as the types of subject vehicles, the ODDs in they would operate, and the use cases for such operations. As a result, those terms would depend on the types of applications that NHTSA receives and the capabilities of the ADS equipped on those vehicles. Thus, the specific impacts of this proposal would be largely contingent on the unknown future levels of ADS maturity.

Another uncertainty in this rulemaking is the extent to which the independent assessment proposed for AV STEP would represent unique costs for an applicant. As

explained in Section IV.D (Independent Assessment), an application would need to contain a summary report of an independent assessment covering three focus areas regarding the subject vehicles' ADS and operations: (a) their conformance with industry standards; (b) the applicant's safety case; and (c) specific other policies and ADS capabilities. NHTSA developed these requirements based on the agency's experience with independent assessments conducted for other sectors of the automotive industry, as well as the burgeoning practice of ADS companies voluntarily obtaining independent assessments for their own operations.

Nevertheless, the assessment proposed for AV STEP is new, as are independent assessments for ADS. As ADS technologies mature and the independent assessment landscape grows, NHTSA expects that companies will more commonly undertake third-party assessments as part of their own development processes. Nevertheless, the extent to which companies would voluntarily conduct assessments in the future is still uncertain, as is the scope of those assessments.

For purposes of this analysis, NHTSA estimates that half of AV STEP applicants will have already voluntarily obtained an independent assessment of their ADS operations before applying to AV STEP or would have done so even if they did not apply to AV STEP. This estimate is based on the agency's understanding of the current frequency with which ADS companies initiate such assessments and the expectation that, given the history of other safety-critical industries with independent assessments, the voluntary usage of these assessments will grow as ADS practices and operations evolve. As a result, NHTSA has discounted the projected costs of an independent assessment for AV STEP to account for this estimate that applicants would have incurred similar costs from assessments in the absence of AV STEP.

3. Costs

NHTSA assessed, in 2023 dollars, multiple categories of costs for this proposal. First, the agency assessed costs for which NHTSA could estimate monetized impacts of the rule. These costs primarily relate to the costs that an entity would incur to apply to AV STEP and participate in the program if admitted, as well as the costs that NHTSA would incur to administer the program. NHTSA also assessed several types of costs as baseline costs that would be incurred even in the absence of AV STEP. Finally, NHTSA assessed several types of costs qualitatively because insufficient data currently exist to support any approach to estimating their monetized impact.

Two characteristics of this proposal are overarching considerations in NHTSA's assessment of costs. First, given that AV STEP is proposed as a voluntary program, any costs incurred by an entity would be voluntarily incurred because the entity has chosen to engage with the program. Moreover, entities that apply to AV STEP would have other regulatory options to legally operate their vehicles. This includes entities that request exemptions under AV STEP, who could decide instead to comply with NHTSA's requirements so that no exemptions are needed. Likewise, certain entities requesting an FMVSS exemption through AV STEP could alternatively request an FMVSS exemption under two other NHTSA programs, set forth in 49 CFR parts 555 and 591. An FMVSS exemption could also offset certain costs of complying with the FMVSS, such as designing a vehicle or equipment to meet a particular performance standard or conducting certification testing. As such, entities that elect to engage with AV STEP would presumably consider the benefits of this program to justify its costs.

The Make Inoperative Exemption proposed for AV STEP would be new. No such exemption process for ADS-equipped vehicles is currently available in NHTSA's regulations. However, as explained in this document, this exemption would be largely proactive and would provide additional regulatory flexibility for entities to pursue ADS

retrofits to compliant vehicles in ways that they could not otherwise consider. In addition, only a portion of ADS-equipped vehicles are equipped with ADS through aftermarket modifications. As a result, this exemption would be of interest to only a limited subset of ADS-equipped vehicles, which themselves currently represent only a very small percentage of all motor vehicles on public roads in the United States.

Second, this document proposes a set of procedures to organize the information NHTSA would receive for its review of AV STEP applications and administration of AV STEP participation. This rulemaking would not exempt or admit any particular vehicles into AV STEP. Those decisions would be left to future NHTSA adjudication of applications. As explained throughout this document, while the information proposed for AV STEP would be helpful in informing NHTSA's review, the agency would reserve discretion for its ultimate adjudications of AV STEP admission, including exemptions. Thus, many potential impacts associated with AV STEP would ultimately stem from NHTSA's decisions on those applications rather than the procedures proposed in this document. Because there are requirements set forth in the rule that would accrue as a result of participation however, such as reporting to NHTSA, NHTSA considers the costs of those requirements for program participants in this analysis.

a) Baseline Costs

NHTSA estimates that several notable requirements for AV STEP would not involve significant unique costs for an applicant or participant. This is because those costs are part of the baseline and would be incurred by the entity in the absence of AV STEP. As a result, NHTSA does not consider those costs attributable to AV STEP and has not included them in the estimated costs of this proposal. Subsection 2 (Uncertainties and Assumptions) above explains one of them: the cost of an independent assessment for applicants that would have voluntarily conducted an assessment even apart from AV

STEP. Other baseline costs pertain to data generation and storage, crash reporting, and information submitted as part of application or reporting requirements for FMVSS exemptions.

NHTSA does not anticipate data generation and storage costs for AV STEP beyond those costs incurred by entities during operations in the baseline. The agency designed the program to largely use data that entities should already generate and store as part of responsible operations. The application and reporting requirements proposed for AV STEP focus on a company's internal processes and assessment methods for its operations. This proposal expressly recognizes that those practices may vary between entities. To account for this variation, NHTSA proposes to tailor the most technology-dependent reporting elements to the data and metrics already used by a company, to the extent that these would further the goals of AV STEP. These are framed as "customized" requirements in the proposed rule. For such requirements, applications would need to include proposals for specific metrics or thresholds that could be used for the terms of customized reporting. As a result, this reporting is expected to correspond to data that a company is already using, reducing the likelihood that these requirements would entail new data generation or storage capabilities.

Likewise, NHTSA does not anticipate crash reporting costs from AV STEP beyond those incurred in the baseline from other crash reporting requirements. As proposed, entities would be required to submit several types of reports about crashes involving a subject vehicle. The first type of required report would consist of reports of crashes that occur during or near a time that the vehicle's ADS is engaged. Crash report under the SGO is expected to satisfy this ADS crash reporting requirement in AV STEP.²²⁶ As explained in Section V.A.2 (Event-Triggered Reporting), the crash reporting requirements in AV STEP are largely designed to mirror the crash reporting requirements

²²⁶ For NHTSA's cost analysis of SGO reporting requirements, see 86 FR 74217 (December 2021).

under the SGO. To avoid duplicate reporting, a timely crash report under the SGO would satisfy obligations to report that information for AV STEP. NHTSA expects participants in AV STEP to be reporting entities under the SGO. As such, NHTSA would not expect AV STEP participants to incur reporting requirements for ADS crashes beyond those incurred in the baseline.

The second type of crash reporting proposed for AV STEP would require, participants to submit video footage of the most severe types of crashes that are reported. The SGO does not require crash reports to include video.²²⁷ However, NHTSA usually requests video for the most serious crashes reported under the SGO, as part of the agency's follow-up on SGO reports. NHTSA also typically requires video submission for crashes involving ADS-equipped vehicles exempted under other NHTSA programs. As such, baseline costs in the absence of AV STEP already include costs associated with the submission of video footage, and the video reporting requirement proposed in AV STEP would not expand on the amount of effort required of a reporting entity to process video footage and transmit it to NHTSA. Therefore, NHTSA considers the costs of submitting video footage in AV STEP to be costs that exist in the baseline and not costs attributable to this program.

Finally, costs associated with an FMVSS exemption in AV STEP also exist in the baseline because they would be incurred if an entity sought an FMVSS exemption under a different NHTSA exemption program instead. As explained in Section III (Program Structure (Regulatory Text Subpart A)), apart from AV STEP, certain ADS-equipped vehicles could request FMVSS exemptions under two other NHTSA regulations: (1) 49 CFR part 591, which implements Section 30114(a) exemptions; and (2) 49 CFR part 555,

²²⁷ The other difference between the proposed AV STEP crash reporting requirement and the SGO is that AV STEP proposes to require reports of all crashes whereas the SGO only requires reports of crashes that occur with the ADS engaged during or immediately preceding the crash event. This difference is covered under Section IX.A.3.c)(2) (Participation Costs).

which implements Section 30113 exemptions.²²⁸ The application and reporting requirements proposed for AV STEP are based on information that NHTSA receives when administering each of those exemptions, either directly as part of an application or through follow-up with an applicant. Specifically, the proposed application for an FMVSS Exemption under AV STEP focuses on each noncompliance and the ways in which an applicant mitigated any safety risks from each noncompliance. Entities that request FMVSS exemptions under AVEP or part 555 must provide similar information about each noncompliance for which an exemption is requested.

As such, even in the baseline, an entity that requested an FMVSS Exemption under one of NHTSA's other exemption programs would incur the costs of providing this information. If AV STEP did not exist, NHTSA expects most, if not all, of the applicants for an FMVSS Exemption under AV STEP would request exemptions under either part 591 or part 555. As such, NHTSA considers costs from the requirements for an FMVSS Exemption in AV STEP to be baseline costs that would be incurred without this program.

b) Non-Quantified Costs

Several types of potential costs of an AV STEP application or participation are dependent on currently unknown future variables. As such, NHTSA analyzed these qualitatively. The first such cost is the cost to applicants associated with the application review process. For AV STEP, NHTSA proposes a phased application review process that entails follow-up with an applicant on their application, as well as coordination on terms and conditions of participation. The amount of engagement necessary for this process will depend significantly on variables such as the thoroughness of an application,

²²⁸ NHTSA has previously analyzed costs of FMVSS exemption processes under Section 30114(a) (the authority that the agency proposes to use for AV STEP) for the TIE program. As discussed in Section II.B.2 (NHTSA Exemptions), the TIE program is used for both non-ADS exemptions and ADS exemptions. Thus, ADS operations represent only a portion of the cost analysis for the TIE program. For this analysis, *see* 87 FR 41861 (July 2022).

the complexity of the operations requested, and the responsiveness of an applicant. Those factors are largely within the control of the applicant and influenced by the capabilities of the ADS that is the subject of an application.

Costs associated with the concern resolution process are also dependent on similar variables. The concern resolution process proposed for AV STEP would be initiated only if problems arose during a participation. NHTSA cannot currently predict the frequency or nature of such problems. Likewise, the agency also cannot currently predict the types of resolutions that may be necessary under this process, as these would turn on the specific mitigations for a problem and a participant's willingness to cooperate when concerns arise. NHTSA also cannot predict the extent to which a participant may have mitigated those concerns on their own even in the absence of AV STEP.

Finally, NHTSA did not quantify safety costs as part of this proposal. The overall objective of this proposal is to further public safety, and NHTSA expects AV STEP to have a net safety benefit. The variety of benefits to motor vehicle safety from this proposal are explained throughout this document. NHTSA does not expect safety costs to result from AV STEP, particularly since compliant vehicles that participate in AV STEP could conduct the same operations on public roads without this program.

NHTSA likewise does not expect the FMVSS or Make Inoperative Exemptions in AV STEP to entail negative safety impacts. As explained in Section VII.B (Exemption Application Requirements), applications for FMVSS or Make Inoperative Exemptions would need to identify each requirement or modification for which an exemption is needed, explain all associated mitigations of safety impacts, and explain how the vehicle's safety compares to that of a compliant vehicle. NHTSA would consider all of this information, in conjunction with the other information submitted in an application, when assessing whether risks have been sufficiently addressed to justify granting the

exemption sought. Given these requirements, NHTSA does not expect FMVSS nonconformance to lead to negative safety impacts.

c) Quantified Costs

NHTSA's analysis of the quantified costs for AV STEP estimated the burden to applicants of preparing an application as well as the burden to participants from reporting or preparing amendment requests during participation. NHTSA's general methodology for estimating these costs entailed projecting the annual burden that an applicant or participant would incur for each program requirement. Specifically, these costs were calculated by predicting the types of personnel that would be necessary to complete each requirement, the burden hours for each of those types of personnel, and the wage rates for such personnel. NHTSA used the National Occupational Employment and Wage Estimates of the U.S. Bureau of Labor Statistics in conducting this analysis.²²⁹ In general, most burden hours were assumed to be incurred by one or more of the following occupational categories: Administration Specialist (\$34.04 per hour); Operations Specialist (\$80.60 per hour); Engineer (\$84.74 per hour); Senior Manager (\$116.22); or Lawyer (\$120.64 per hour).²³⁰ The labor rates for these occupational categories are based on average rates for multiple occupational titles/codes within a particular category (and as listed in the National Occupational Employment and Wage Estimates of the U.S. Bureau of Labor Statistics). For example, wage rates for the "Engineer" category are based on an average of the wage rates for: Electrical and Electronic Engineers (17-2070), Industrial Engineers (17-2112), Mechanical Engineers (17-2141), Computer Engineers (17-2061),

²²⁹ See U.S. Bureau of Labor Statistics, "National Occupational Employment and Wage Estimates, United States" (May 2023), available at https://www.bls.gov/oes/current/oes_nat.htm#11-0000.

²³⁰ These labor costs include wages and fringe benefits, including paid leave, bonuses and overtime pay, health and other types of insurance, retirement plans, and legally required benefits (Social Security, Medicare, unemployment insurance, and workers' compensation insurance). NHTSA estimated that the fringe benefits are approximately 42.2 percent of the average hourly wage. For the information that NHTSA used to derive this, see Bureau of Labor Statistics, "Employer Costs for Employee Compensation" (September 2024), available at: <https://www.bls.gov/news.release/ecec.htm>.

Computer Systems Analysts (15-1211), Computer and Information Research Scientists (15-1221), and Software Developers (15-1252). NHTSA will publish spreadsheets in the docket for this rulemaking that reflect the estimates summarized below.

These projections were informed by NHTSA's engagement with regulated entities in NHTSA programs that contain certain requirements analogous to those proposed in AV STEP, such as the agency's review of applications and oversight of exemptions under AVEP or follow-up with entities after a reported SGO crash. Through administering these programs, NHTSA has gained experience with the types of personnel that typically handle various types of responsibilities as well as the level of work that certain tasks typically entail. NHTSA seeks comment on these estimated costs and requests data that may further inform the agency's projections.

(1) Application Costs

The first set of costs that NHTSA estimated are those that would be incurred by an applicant to prepare and submit an AV STEP application. These costs would arise from the four major areas of proposed application requirements, as discussed in Section IV (Application and Review (Regulatory Text Subparts B and D)): 1) application form information requirements; 2) required information regarding certain protocols for ADS operations; 3) required information regarding the applicant's data governance plan; and 4) independent assessment requirements.

When projecting the burden that filling out application forms would impose, NHTSA separately considered the costs of each requirement within the four proposed form sheets. One set of operational baseline sheet responses would need to be provided for each application, as would one set of responses to a second sheet regarding confirmation of ongoing reporting. Together, these would be expected to incur a total of 207 burden hours. NHTSA expects that these hours would be accrued by personnel with

the occupational titles listed above and would impose a total cost of \$17,501 per application.

Similarly, responses to a single Location Sheet would be expected to incur a total of 145 burden hours, with a cost of \$12,482. While at least one Location Sheet would be required for each application, multiple Location Sheets could be submitted for a single application. Accordingly, NHTSA projected that one in ten applicants would submit two Location Sheets, and that one in ten applicants would submit three Location Sheets. This accounts for NHTSA's observation that once an ADS operation expands beyond its initial location, subsequent expansions occur more frequently. The agency translated this projection into an estimated average of 1.3 Location Sheets per application, which would result in a total Location Sheet average cost of \$16,227 per application from 189 average burden hours.

As proposed, the application form would require a separate sheet for information about any exemptions requested under AV STEP. NHTSA considers these costs part of the baseline costs for FMVSS Exemptions, as discussed in Section IX.A.3.a) (Baseline Costs). Thus, requests for Make Inoperative Exemptions would incur the only separate cost for this portion of an application. As explained in the introduction of this Costs section, NHTSA expects that Make Inoperative Exemptions will represent only a limited proportion of AV STEP interest. Accordingly, the agency projected that one in fifteen applications to AV STEP would include a request for a Make Inoperative Exemption. The agency estimated that preparing this sheet for each Make Inoperative Exemption request would entail 232 burden hours at a cost of \$22,737. But using the projected one in fifteen multiplier, this would translate to an average of 15 burden hours with an average cost of \$1,516 per application.

The second and third types of proposed requirements for an application would respectively require an applicant to provide information about certain protocols for the

requested ADS operations and certain aspects of the data governance plan for those operations. Only one set of such information would need to be provided per application for each of these subjects. NHTSA estimated that detailing and submitting the protocols for ADS operations would entail 286 burden hours, for a cost of \$26,676 per application. The agency further estimated that detailing and submitting the data governance plan would entail 210 burden hours, for a cost of \$19,511 per application.

When projecting the burden of the proposed independent assessment requirements, NHTSA separately estimated the amount that an applicant would pay to an independent assessor and the burden that applicants would incur directly when engaging with and preparing certain required information about independent assessments for an application. As explained in Section IX.A.2 (Uncertainties and Assumptions), these costs are largely unknown. Nonetheless, NHTSA considered available data regarding similar assessments from other industries²³¹ and the agency's experience in non-ADS contexts.

NHTSA projected that paying for an independent assessment of the scope proposed for AV STEP would cost an applicant \$800,000 on average. However, as explained in Section IX.A.2 (Uncertainties and Assumptions), NHTSA assumed that more than half of applicants will already have undertaken some form of an independent assessment or would have undertaken such an assessment even in the absence of AV STEP. As such, NHTSA believes that it is appropriate to offset this projected cost and has assumed an average cost of \$400,000 per application.

NHTSA projected additional burdens for an applicant's engagement with an independent assessment, as well as an applicant's preparation of information about the assessment for an application. NHTSA estimated that this additional burden would entail 304 burden hours, with a total cost of \$25,301 per application. Together with the

²³¹ See, e.g., Commission for Energy Regulation, "Safety Case Fees Structure and Methodology" (February 2016), available at: <https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CER16032-Safety-Case-Fees-Version-2.pdf>.

\$400,000 cost explained above, the agency estimated an average cost of \$425,301 per application for the proposed independent assessment requirements.

Overall, these estimated application burdens sum to an average net cost of \$506,732 per application, due (in part) to a net average of 1,211 burden hours. As noted in Section IX.A.2 (Uncertainties and Assumptions), it is difficult to project how many eligible entities would apply to AV STEP. In general, NHTSA would expect to receive fewer applications in the years immediately following a Final Rule, due to the time that would be needed for interested entities to undertake independent assessments and prepare applications. The agency would expect to receive increasing numbers of applications in subsequent years, particularly as more entities reach the more mature state of ADS development for which AV STEP has been shaped. Although NHTSA expects such fluctuation, the agency believes that assuming an average of five applications annually over the first seven years of the program would be appropriate. Multiplying this with the estimated average net cost of an application, NHTSA estimated that the average annual cost to industry associated with the preparation and submission of AV STEP applications would be \$2,533,660 due (in part) to a net average of 6,055 burden hours.

(2) Participation Costs

NHTSA estimated the costs of participation by projecting the costs of each of the reporting requirements in AV STEP, as well as the costs of preparing a request for an amendment during participation. Participation in AV STEP may entail other costs as well, such as those incurred through the concern resolution process if problems arise during an operation. However, as explained in Section IX.A.2 (Uncertainties and Assumptions), those costs are unpredictable because they are contingent on variables that are currently unknown. The proposed AV STEP reporting requirements break down into

three main categories: (1) periodic reporting; (2) event-triggered reporting; and (3) reportable changes to an operation.

As proposed, AV STEP would include periodic reporting that occurs on a quarterly basis. To estimate periodic reporting costs, NHTSA projected the burden of several subsets of the quarterly reporting requirements. These estimates assume that administration and operations specialists would primarily prepare these responses, with support from engineers and senior managers. First, all entities in AV STEP would be required to report the ten elements of information that are set forth in § 597.500(c) of the proposed rule. NHTSA estimates that a participant's responses to this information would require a total of 216 burden hours, for a cost of \$14,373. Given that four such reports would be required each year, this would translate to 864 burden hours, for a cost of \$57,492 annually. Since the information reported under these elements largely entails standardized characteristics about an operation, such as VMT or performance metrics, some entities may find ways to reduce these estimated costs by automating the collection and organization of this information.

The second proposed type of periodic reporting requirement is specific to the step at which an entity is participating. Step 1 participants would need to report customized metrics regarding fallback personnel performance and Step 2 participants would need to report customized metrics for the ADS, as well as information about MRCs. NHTSA estimates that this requirement at Step 1 would entail 46 burden hours, for a cost of \$3,624 per report. At Step 2, NHTSA estimates that this requirement would entail 176 burden hours, for a cost of \$14,447 per report. As these reports would also be required four times a year, these would translate to annual burdens of 184 burden hours, for a cost of \$14,496, at Step 1 and 704 burden hours, for a cost of \$57,788 at Step 2. One of the benefits of NHTSA's proposal to use customized reporting requirements is that entities may propose metrics and thresholds that they already use for other purposes. As such,

some entities may be able to offset portions of these costs through customized reporting that mirrors metrics used apart from AV STEP.

The third proposed type of periodic reporting requirement is only for vehicles that participate under an AV STEP exemption. For this requirement, an entity would need to report the VMT segmented by each exempted vehicle's VIN. The first category of periodic reporting, discussed above, includes reports of several data elements pertaining to the VMT of subject vehicles. As a result, NHTSA's estimates for the first category of periodic reporting already include the costs of reviewing and organizing VMT data for vehicles operating under AV STEP. That same data would support the VMT reporting requirement for AV STEP Exemptions. As such, NHTSA expects that the estimated costs for the first category of periodic reporting would already account for the costs of this reporting requirement.

The next category of reporting during participation is event-triggered reporting of incidents within a specified timeframe after their occurrence. This requirement encompasses crash reporting, the submission of videos for particularly severe crashes, and the reporting of citable offenses. Most crash reporting under this requirement will likely entail ADS crash reports. As explained in subsection a) (Baseline Costs) above, NHTSA does not consider costs for ADS crash reporting to be attributable to AV STEP because all of these reporting costs exist in the baseline due to separate NHTSA requirements.

In this document, NHTSA also proposes to require AV STEP participants to report crashes involving subject vehicles even if the ADS was not engaged during or near the time of the crash. NHTSA did not estimate separate costs for this reporting, however, because the agency's experience with a similar requirement in other exemption programs indicates that such crashes are infrequent enough to result in de minimis reporting costs. The final proposed crash reporting requirement would require an entity to submit video

footage for the most severe types of crashes. NHTSA also did not estimate unique costs for this reporting requirement, as explained in Section IX.A.3.a) (Baseline Costs) above, because video footage of such crashes is typically obtained through the SGO and other NHTSA exemption programs.

For the last type of incident reporting, NHTSA estimated that annual reporting for citable offenses will require 336 burden hours, for a cost of \$30,050 per participant. ADS developers and operators already regularly collect and analyze such performance data as part of their normal product monitoring and improvement programs. However, NHTSA did not specifically offset these estimates for this work because those practices vary among entities.

As explained in Section V.A.3 (Update Reporting), for the third type of reporting proposed, AV STEP participants would also need to submit certain information about changes that occur during participation. The Final Determination Letter would set the parameters for when such reports are needed. Depending on the extent of a reported change, the required information may entail updated independent assessments. While the agency anticipates that AV STEP operations will continually evolve over the course of program participation, NHTSA expects that eligible entities would endeavor to minimize the need to submit these update reports. Applicants could do so by ensuring that the independent assessments submitted in an application are as comprehensive as possible, since the scope of an independent assessment would inform the parameters for this reporting. This would make it more likely that a greater proportion of updates would not require reports. Although the number of reportable changes under this requirement will likely vary for each participant, NHTSA estimates that, on average, each participant would submit one update report per year. The agency estimated that the cost of preparing and submitting the information required for an update report would entail 237 burden hours, with a cost of \$20,575.

Whether a reportable update requires an updated independent assessment would depend on a number of variables that are dependent on the specific changes at issue. The agency assumed for the purposes of this analysis that half of these reportable updates would require an updated independent assessment. While the cost of these updated independent assessments is also likely to vary significantly according to the specific nature of the changes, NHTSA estimated that each such assessment would cost a participant, on average, one eighth of what a complete independent assessment would cost (as discussed in the preceding subsection), or \$100,000. Using the projection that this would only be necessary for half of the assumed update reports, NHTSA annualized this cost to \$50,000. Combining this with the burden of preparing and submitting the update report, NHTSA estimated that update reporting would incur an average annual cost of \$70,575 per participant.

As with this update reporting, given that NHTSA expects participating operations to continue to evolve, the agency expects that participants will also incur costs that result from the preparation and submission of amendment requests. Under this proposal, a participant that wished to change any of the terms or conditions contained in a Final Determination Letter could request to do so through the submission of such amendment requests. NHTSA proposes specific required information that an amendment request would need to include, as discussed in Section V.B.1 (Amendment Process). The agency has estimated that preparing such information would entail 400 burden hours, with a cost of \$35,757 per amendment request. NHTSA projects that each participant would request one amendment every two years. Accordingly, the agency estimated that the annual average burden of submitting amendment requests would entail 200 burden hours, for a cost of \$17,879 per participant.

Combining all of these participation costs, NHTSA estimated that the proposed AV STEP participation requirements would impose an average annual burden of 2,081

burden hours, with a cost of \$212,138 per participant. The agency further projected the average number of annual participants that would be expected during the first seven years of the program. Using the previously discussed average of five applicants per year over this time period, and assuming that, starting in the fourth year of the program, two participations would conclude each year, NHTSA estimated that there would be an average of 17 active participants annually. Multiplying this by the burden of each participation, the agency estimated that AV STEP participation would represent an annual burden for participants of 35,377 burden hours, with a cost of \$3,606,346.

(3) Costs of NHTSA's Review and Oversight

NHTSA will also incur costs, through its review of AV STEP applications and oversight of AV STEP participants. The agency will thoroughly review applications under the process proposed in Section IV.E (Application Review). NHTSA estimated that its review of an application would entail 953 burden hours across administrative and engineering staff in pay grades from GS-9 through GS-14, GS-15 and Senior Executive Service leadership positions, and legal staff. Using corresponding wages from the Office of Personnel Management²³² and assuming Washington, D.C. locality pay, NHTSA estimated that these burden hours would translate to a cost of \$102,748 per application.

Agency personnel would oversee AV STEP participants through monitoring of the reporting discussed in the preceding subsection, as well as through the concern resolution process discussed in Section V.B.2 (Concern Resolution Process). While NHTSA did not quantify the latter, as explained in Section IX.A.3.b) (Non-Quantified Costs), the agency estimated that monitoring and analyzing the information it would receive from AV STEP participants would entail an average of 329 burden hours annually per participant, across the same types of personnel identified in the previous

²³² Office of Management and Budget, "Salaries and Wages" (January 2024), available at: <https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/>.

paragraph. These burden hours would translate to an estimated annual cost of \$35,237 per participant.

NHTSA further used these values as well as the applicant and participant numbers the agency projected (as discussed in the two preceding subsections) to estimate its average annual burden across the first seven years of the program. For the projected average of 5 applicants per year, NHTSA estimated that reviewing AV STEP applications would require 4,700 burden hours, with a cost of \$513,740. For the projected average of 17 participants over the first seven years of program, NHTSA estimated that overseeing AV STEP participants would require 5,593 burden hours, with a cost of \$599,029. Combining these, NHTSA estimated that its average annual burden to administer AV STEP over the first seven years of the program would entail 10,293 burden hours, with a cost of \$1,112,769.

(4) Total Program Costs

Summing the burdens explained under subsections (1) and (2) above, NHTSA estimated that the average annual burden to all AV STEP applicants and participants, over the first seven years of the program, would amount to 41,432 burden hours, with a cost of \$6,140,006. Combining this with the estimated burden AV STEP would entail for NHTSA, as explained in the preceding subsection, the agency estimated that the program would entail a net annual average burden of 51,725 burden hours, with a cost of \$7,252,775. Over this first seven years of the program, this would present a net burden of 362,075 burden hours, with a cost of \$50,769,425.

4. Benefits

As explained throughout this NPRM, including in subsection 1 (Need for Regulation) above, NHTSA intends for AV STEP to enhance the transparency and oversight of ADS-equipped vehicles, accelerate learning relating to ADS safety, and

provide an efficient framework for reviewing ADS operations and exemptions. NHTSA has qualitatively assessed these benefits because the nature of how they may arise and uncertainties surrounding the progression of ADS technology preclude sufficient data to quantify them. Nevertheless, NHTSA considers each of these benefits significant. This section summarizes those benefits, which are also discussed throughout this proposal.

AV STEP would further safety in several important ways. First, AV STEP would provide a new type of assessment framework tailored specifically for the nascent stage of ADS technology. This would enhance the agency's ability to review and oversee the safety of participating ADS-equipped vehicles. Second, AV STEP would likely motivate some ADS companies to more thoroughly refine their own approaches to ADS development and operations if interested in participating in this program. AV STEP's proposed clear, upfront application and participation requirements should allow prospective participants to understand the level of safety commitment needed for this program and to prepare for this commitment. AV STEP may also accelerate the pace at which ADS safety practices evolve, such as by creating a broader market for independent assessments, evaluating the use of industry standards, and probing the effectiveness of safety metrics. The insight gained through AV STEP would also help to inform NHTSA's consideration of potential FMVSS for ADS.

NHTSA expects that AV STEP would also provide an effective framework for administering exemptions to ADS-equipped vehicles. In turn, this would enable the agency to effectively process and oversee complex exemptions involving ADS, including potential future requests to retrofit compliant vehicles with ADS. This would improve regulatory flexibility for innovative ADS technologies in a way that still prioritizes the safety of those vehicles.

In addition, the information that NHTSA proposes to publish about AV STEP applications and participations would increase transparency surrounding ADS operations.

The data NHTSA would make available would better inform the public about where participating operations are occurring, the nature and status of those operations, and opportunities to interact with those vehicles. In turn, this additional information would enable the public to make more informed decisions about how to engage with ADS technologies.

ADS safety and transparency is a prerequisite to other societal benefits ADS technology may offer. ADS has the potential to positively impact many aspects of society, including the environment, accessibility for people with disabilities, and equity. The public safety benefits that NHTSA expects from AV STEP could improve the prospects for ADS technologies to achieve non-safety benefits as well.

AV STEP also offers an opportunity to improve regulatory harmonization for jurisdictions with overlapping engagement with ADS technologies. As explained in Section III (Program Structure (Regulatory Text Subpart A)), AV STEP would require that participants comply with all applicable Federal, state, and local laws. During the review of an AV STEP application, NHTSA would engage with applicants and other authorities, as appropriate, to explore opportunities to harmonize certain AV STEP requirements with those that other jurisdictions may impose. Those authorities may likewise consider harmonizing their own requirements with AV STEP. As a result, AV STEP would offer an opportunity to enhance regulatory collaboration and dialogue in a way that could benefit both regulatory authorities and regulated entities.

Similarly, NHTSA anticipates that AV STEP may increase the opportunities for ADS companies with responsible safety practices to demonstrate their public commitment to safety in a more objective and transparent way. In turn, this may help those entities establish public trust and build potential relationships with other entities looking to engage with ADS business partners that prioritize safety. As such, this program offers the potential to encourage more responsible growth of ADS technology.

5. Regulatory Approaches Considered

This section presents three alternatives to the proposed rule that NHTSA considered when developing this proposal. None of these options were incorporated into the lead proposal as they would not address the complexities of regulating ADS technologies as well or otherwise appropriately balance encouraging AV STEP participation with the need for program participation to entail a meaningful commitment to safety.

a) Baseline (No Action)

The no action alternative would maintain the status quo and not propose a national program for ADS-equipped vehicles. NHTSA does not prefer this alternative because, as described throughout this NPRM, NHTSA believes that AV STEP would address multiple unique challenges posed by the evolving state of ADS technology. Currently, detailed information about ADS-equipped vehicles operating on public roads is often limited. More information about participating vehicles would enhance NHTSA's oversight of those vehicles and increase the amount of public transparency. The information gleaned through this program could also inform and expedite NHTSA's consideration of future standards for ADS by providing greater insight into the effectiveness of ADS safety assessment methods and metrics. As a result, keeping the status quo would maintain the challenges that the agency has identified throughout this document.

b) Less Stringent Program Alternative

The second alternative considered by NHTSA when developing this rule entailed a less stringent version of the proposal that placed a greater priority on encouraging participation through reduced application and participation requirements. For example,

the agency considered reducing the stringency by adding an entry level of program participation that would remove the substantive technical review of an application and focus exclusively on more limited participation reporting. In such a scenario, this entry level of participation would be available only for vehicles that do not need an exemption under AV STEP. Because those vehicles can operate currently without AV STEP, some entities with such vehicles may be more motivated to participate if participation burdens are reduced.

NHTSA did not include such an entry-level of participation in the lead proposal because the agency believes that adding such a less stringent participation option, particularly at the outset of this program, would disrupt the appropriate balance between encouraging participation and ensuring participation is meaningful. Encouraging participation should not come at the expense of the robustness of the program. Participation should remain meaningful in terms of the types of information submitted to the agency and the scrutiny of the agency's oversight. At least some minimum requirements for participation should exist for the sake of consistency between entities and to ensure that Program participation translates to a commitment to responsible safety practices.

The alternative of an entry-level option for compliant vehicles to participate in AV STEP would strike this balance differently than the primary proposal by prioritizing increased participation over meaningful participation. Although this alternative might boost FMVSS-certified vehicle participation, it would mean that some vehicles are admitted into AV STEP without a substantive review. Including both unreviewed operations (*e.g.*, those entities requesting participation for FMVSS compliant vehicles) and operations that would be reviewed within AV STEP (*e.g.*, those entities requesting participation for vehicles needing an exemption), could increase confusion for interested applicants and the public. Further, this alternative would stratify step eligibility

requirements based on whether vehicles were seeking an exemption under AV STEP instead of based on the ADS' use of fallback personnel during operations. Applicants may not necessarily understand the differences in these participation options, which could lead to confusion as to which step an entity should request for program admission. In addition, those differences may not be apparent to the public, which could lead to public perception that entry-level participation is more meaningful than would actually be the case. These risks of confusion could undermine the transparency goals of AV STEP.

Finally, NHTSA intends for AV STEP to require a participant's meaningful commitment to responsible safety practices and due diligence in the design and development of an ADS and its operation. A key aspect of this meaningful commitment is providing NHTSA with critical safety information through an application. Providing a participation option that would not entail such a safety commitment may disincentivize certain companies from participating at higher levels with their compliant vehicles because they could forego such a commitment and still participate in AV STEP.

Even without an entry-level participation step, NHTSA still believes that many entities will have strong incentives to participate in AV STEP with their compliant vehicles. Those incentives are discussed further in Section II (Program Context). As such, NHTSA does not currently consider this alternative to be an effective option for satisfying the goals of this rulemaking.

c) More Stringent Program Alternative

The third alternative considered by NHTSA when developing this proposal was a more stringent version of the Program. One structural way to increase the stringency of AV STEP would be to omit Step 1, which would narrow the program to vehicles that would operate without fallback personnel during participating operations on public roads.

This alternative would require all participants to meet the most stringent aspects of the program to participate in AV STEP. As explained in Section IV (Application and Review (Regulatory Text Subparts B and D)) and Section V (Participation (Regulatory Text Subparts E and F)), the requirements for AV STEP are designed to become more stringent as the responsibility of the ADS increases. For instance, under the lead proposal, an independent assessment at Step 2 would need to be more rigorous than at Step 1 because it would need to consider whether the ADS could be exclusively relied on during operations. In contrast, an independent assessment at Step 1 could consider fallback personnel's ability to mitigate certain risks rather than fully reviewing the ADS' ability to address those risks.

NHTSA does not consider this more stringent alternative an optimal balance of participation and stringency. Whereas a less stringent alternative would favor participation numbers at the expense of meaningful participation, this more stringent alternative would move too far in the opposite direction. Excluding ADS operations that rely on fallback personnel would miss a valuable opportunity to improve transparency and insight surrounding the safety of a significant portion of current ADS operations. Fallback personnel play an important role in the safety of ADS development and are frequently used across industry. One of the primary goals of AV STEP is to provide a framework for assessing the safety of ADS while the technology remains in a state of development. Omitting operations that rely on fallback personnel at all times from this framework would limit the potential for AV STEP to accomplish this goal.

Moreover, this more stringent alternative would likely take an oversimplified approach to the realities of the development cycle for ADS operations. In practice, most ADS operations continue to use fallback personnel under certain circumstances or for specific vehicles even once they begin some operations without fallback personnel. For example, a portion of a fleet could operate without fallback personnel while the

remainder of the fleet continues to use fallback personnel to validate certain aspects of an operation, such as new software versions or new potential routes. Fallback personnel may also need to be temporarily reintroduced for safety reasons if concerns arise about the ADS' performance. As such, NHTSA considers the option to participate in AV STEP with fallback personnel an important program characteristic that accounts for the reality of ADS operations and that avoids disincentivizing the use of fallback personnel for safety.

B. National Environmental Policy Act

NHTSA has analyzed this proposed rule for the purposes of the National Environmental Policy Act. NHTSA is aware of the November 12, 2024 decision in *Marin Audubon Society v. Federal Aviation Administration*, No. 23-1067 (D.C. Cir. Nov. 12, 2024). To the extent that a court may conclude that the Council on Environmental Quality (CEQ) regulations implementing NEPA are not judicially enforceable or binding on this agency action, NHTSA has nonetheless elected to follow those regulations at 40 CFR parts 1500–1508, in addition to DOT's procedures/regulations implementing NEPA at DOT NEPA Order 5610.1C, to meet the agency's obligations under NEPA, 42 U.S.C. §§ 4321 et seq.

In accordance with 49 CFR 1.81, 42 U.S.C. § 4336, and DOT NEPA Order 5610.1C, NHTSA has determined that this rule is categorically excluded pursuant to 23 CFR 771.118(c)(4) (planning and administrative activities, such as promulgation of rules, that do not involve or lead directly to construction). This rulemaking is not anticipated to result in any environmental impacts, and there are no extraordinary circumstances present in connection with this rulemaking.

The rulemaking proposes a procedural framework for organizing information that NHTSA receives to inform future adjudications of participation in AV STEP. NHTSA's decisions on AV STEP participation and any actions taken while overseeing participants

would constitute separate agency actions that are independent of this proposal. Similarly, the information required by the proposed rule should largely already exist or be planned for subject vehicles independent of this proposal. Finally, all vehicles that are eligible to participate in AV STEP under this proposal would either do so voluntarily or under an exemption that is analogous to exemptions already available under NHTSA's regulations. As such, this proposal is not expected to significantly affect the quality of the human environment compared to the baseline regulatory framework for subject vehicles in the status quo.

C. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 et seq., as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice of proposed rulemaking or final rule, it must evaluate the potential effects of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). The Small Business Administration's regulations at 13 CFR part 121 define a small business, in part, as a business entity "which operates primarily within the United States." (13 CFR 121.105(a)(1)). A regulatory flexibility analysis is not required if the head of an agency certifies the proposed or final rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a proposed or final rule will not have a significant economic impact on a substantial number of small entities.

NHTSA has undertaken an initial regulatory flexibility analysis to understand the possible impacts of this rulemaking on small entities. NHTSA requests comment from small businesses that would be eligible for and interested in AV STEP regarding this analysis and the potential impacts of this proposal. Ultimately, given the analysis

presented below and the burden estimates in Section IX.A (Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures), NHTSA believes this proposal is unlikely to have a significant economic impact on a substantial number of small businesses. As such, the agency seeks comment, in particular, on whether any significant impacts to small businesses would be expected to result from AV STEP. A description of the reasons why action by the agency is being considered and the objectives of and legal basis for the proposal rule are explained elsewhere in the preamble and not repeated here.

Description and estimate of the number of small entities to which the proposal or final rule will apply:

For the purposes of receiving Small Business Administration (SBA) assistance, the thresholds for considering entities to be small businesses vary for each North American Industry Classification System (NAICS) code.²³³ These criteria for determining small business size, as stated in 13 CFR 121.201, may be monetary or based on number of employees. As proposed in this NPRM, vehicle manufacturers, ADS developers, fleet operators, and system integrators would be eligible to participate in AV STEP. As such, a variety of business categories may be affected by this proposal and the applicable small business size thresholds under the SBA's regulations may vary accordingly:

- A vehicle manufacturer may qualify as a small Automobile and Light Duty Motor Vehicle Manufacturing business (NAICS 336110) or as a small Heavy Duty Truck Manufacturing business (NAICS 336120) if it has fewer than 1,500 employees.

²³³ U.S. Small Business Administration, "Table of Small Business Size Standards" (March 2023), available at: https://www.sba.gov/sites/default/files/2023-06/Table%20of%20Size%20Standards_Effective%20March%2017%2C%202023%20%282%29.pdf.

- An ADS developer that is not a vehicle manufacturer or fleet operator may qualify as a small business under technology-specific NAICS codes, such as those for Software Developers (NAICS 513210, for which a 47 million dollar threshold is used) or Custom Computer Programming Services (NAICS 541511, for which a 34 million dollar threshold is used).
- A fleet operator may similarly fall under a variety of NAICS codes, such as those beginning with “484” (Truck Transportation), “485” (Transit and Ground Passenger Transportation), or “492” (Couriers and Messengers). The monetary thresholds for being considered a small business under these classifications range from 19 to 34 million dollars.
- A system integrator that does not qualify as any of the above may be considered under Motor Vehicle Electrical and Electronic Equipment Manufacturing (NAICS 336320) or Other Motor Vehicle Parts Manufacturing (NAICS 336390), among other possible classifications. For both of these, an entity must have fewer than 1,000 employees to be considered a small business by the SBA.

As this list illustrates, it is difficult to identify the NAICS codes and associated thresholds used by the SBA for all of the individual entities that may be eligible to apply to AV STEP under this proposal. For purposes of this analysis, NHTSA uses the 1,000-employee threshold to consider whether eligible entities may qualify as a small business. NHTSA expects this threshold to encompass any entities that may qualify as a small business under applicable monetary thresholds as well. The companies eligible to apply to AV STEP would predominantly consist of entities, such as ADS developers, that are relatively new and employ less than 1,000 individuals and are unlikely to have annual receipts in excess of the applicable monetary thresholds. As such, it is unlikely that a monetary threshold would identify additional small entities not already accounted for by

this employee threshold. NHTSA seeks comment on whether this employee threshold fully encompasses eligible small entities and, if not, data to identify other such entities based on monetary thresholds.

To identify entities with less than 1,000 employees, the agency analyzed entities that have reported under NHTSA's SGO ADS requirements, submitted VSSAs to the agency, received exemptions under AVEP, or that NHTSA has other reason to believe would be potentially eligible for AV STEP. NHTSA estimates that 25 of these entities have fewer than 1,000 employees and considers these entities to be small businesses for the purpose of this analysis. Given that AV STEP application and participation would be voluntary, the agency does not expect that all 25 of these entities would ultimately be affected by these proposals.

Description of the projected reporting, record keeping and other compliance requirements for small entities:

As proposed, AV STEP would be a voluntary program that would include both initial application requirements as well as ongoing participation requirements. Due to its voluntary nature, NHTSA expects that eligible small businesses would only apply if they deem it economically prudent to do so and if they would be able to comply with these requirements. AV STEP participation would not be a Federal requirement for entities with ADS-equipped vehicles that can already lawfully operate on public roads, because these entities could operate those vehicles even if they were not a part of this program.

Moreover, since AV STEP is designed to complement other NHTSA programs, those other programs may provide preferable alternatives for certain small entities with smaller scale operations. As explained in Section II.B.2 (NHTSA Exemptions), AV STEP is especially designed for the review and oversight of ADS-equipped vehicle operations at scale. Many of the proposed requirements and objectives of AV STEP reflect this goal, such as fleetwide reporting metrics or reviews of an organization's

safety management systems for conducting complex operations. NHTSA maintains other programs that entities with smaller scale operations may consider capable of providing analogous benefits to AV STEP in a less burdensome way. For instance, entities with smaller-scale operations that involve imported vehicles in need of an FMVSS exemption may prefer to use AVEP rather than AV STEP. Similarly, a small entity that sought to increase transparency for its operations but did not want to undergo the level of commitment needed for AV STEP could voluntarily submit information about its ADS or operations under a VSSA or NHTSA's AV TEST initiative.

NHTSA's analysis of the burden that these AV STEP requirements would impose on applicants and participants includes cost ranges in several areas. This is because, while the requirements themselves are not differentiated by business size, this burden is expected to increase along with the scale and complexity of an operation. In general, NHTSA anticipates that small businesses that choose to apply and participate would incur costs closer to the lower end of these ranges. The costs to a small entity may even be below those estimated, because the agency's analysis of some requirements assumed an average cost across the program or the cost anticipated for greater scale or complexity of operations than might be relevant for a small business. Section IX.A (Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures) describes NHTSA's cost analysis in more detail.

The initial cost of applying to AV STEP is estimated to be, on average, \$506,732. NHTSA expects that the proposed application requirements—discussed in Section IV (Application and Review (Regulatory Text Subparts B and D))—would impose a lower burden for small businesses, since those requirements generally scale with the size and complexity of the requested participation. In general, smaller operations involve reduced exposure and a narrower set of considerations for safety oversight. As a result, certain subjects in an application may not be applicable to a small operation or may entail less

detailed information. Likewise, an independent assessment of a smaller operation could likely be completed more quickly and easily than an assessment of a larger, more complex operation.

The annual cost of participating in AV STEP is estimated to be, on average, \$212,138. Similar to the application requirements, NHTSA expects the participation requirements proposed in Section V.A (Reporting Requirements) to present a lower burden for small businesses. All participants would be required to provide standard information quarterly and additional information after certain incidents occur. Collecting and reporting the required quarterly information for smaller operations would entail less effort than would be necessary for larger operations. Likewise, given their lower exposure, smaller operations would be expected to have fewer incidents that would need to be separately reported. The customized nature of many reporting requirements (as described in Section IV.A.3 (Confirmation of Reporting During Participation)) could also help to reduce the burden for small businesses.

Duplication with other Federal rules:

This NPRM proposes to establish a voluntary review and oversight framework for ADS-equipped vehicles. No other existing Federal regulation provides such a program. While ADS-equipped vehicles may be eligible to request FMVSS exemptions under existing exemption processes, AV STEP would provide a process specifically tailored for ADS-equipped vehicles. Section II.B (How NHTSA's Authorities Shaped this NPRM) discusses how this proposal has been shaped to complement, rather than duplicate, NHTSA's existing exemption processes. NHTSA also shaped certain reporting requirements for AV STEP participation to avoid duplication with overlapping requirements. Examples of this design include the event-triggered reporting requirements for AV STEP, which are proposed to avoid duplication with any other NHTSA reporting requirement that covers the same information (see Section V.A.2 (Event-Triggered

Reporting)), and customized requirements that could be harmonized with requirements from other jurisdictions (see Section III.C (Terms and Conditions)).

Description of any significant alternatives to the proposed rule:

AV STEP is designed to enhance the transparency and oversight of ADS-equipped vehicles in a way that affords enough flexibility to account for the evolving nature of ADS technology. When developing this program, the agency sought to strike an effective balance between encouraging participation and ensuring that participation was meaningful. Ultimately, NHTSA found that a comprehensive but voluntary program would best support the goals of this proposal, which are described further in Section II (Program Context).

If NHTSA were to take no action, the agency would not be able to realize the advantages AV STEP would offer that are described throughout this NPRM. Critically, NHTSA would bypass the opportunity for AV STEP to help the agency proactively identify safety concerns with an ADS prior to the occurrence of negative safety outcomes. NHTSA developed AV STEP to meet the needs of this crucial transitional time in ADS development and to inform future NHTSA regulation and oversight. If the agency were to take no action, small businesses would not have the option to participate in such a national program for ADS-equipped vehicles or to request an exemption to take a previously compliant vehicle out of compliance with FMVSS when retrofitting it with an ADS.

NHTSA has also considered the potential impacts of altering the burden associated with the proposed application and participation requirements for AV STEP. Section IX.A (Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures) explains how NHTSA specifically considered changing program characteristics to alter this stringency, as well as the reasons that the agency did not feel such changes were effective options for AV STEP. While eliminating or reducing the

stringency of specific requirements across the program could reduce the costs they would incur, this would undermine the intended safety benefits of the program. Reducing the stringency only for small businesses could reduce the value of AV STEP participation for these entities, such as by reducing the program's potential to represent a meaningful safety commitment for these entities. A different level of stringency for small businesses would also increase the complexity of the program in a way that would make AV STEP more difficult for the public and eligible entities to understand.

In addition, the agency considered increasing the stringency of participation in AV STEP. Although more stringent requirements could potentially provide more insight into the development and operation of participating ADS-equipped vehicles, heightened stringency would increase the burden to apply for AV STEP and participate if admitted, which could more significantly impact small entities seeking to apply. As a result, fewer entities may consider applying, and the program's overall value could be comprised. NHTSA considers the proposed rule an appropriate balance of these considerations, as discussed throughout this NPRM and particularly in the introduction to Section III (Program Structure (Regulatory Text Subpart A)).

D. Paperwork Reduction Act

In this proposed rule, the Department proposes new collections of information that require approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (Pub. L. 104-13, 49 U.S.C. 3501 et seq.). Notwithstanding any other provisions of law, no person shall be subject to penalty for failing to comply with a collection of information if the collection of information does not display a currently valid OMB control number. An Information Collection Request (ICR) for the new information collection described in this subsection has been submitted to OMB for review and comment. The ICR describes the nature of the information collections and their expected burden.

While AV STEP would be voluntary, this proposed rule would establish new collection of information requirements for eligible entities that choose to apply to participate in AV STEP. The information collected would be intended to inform NHTSA's review of an application, adjudication of program admission, oversight of program participation, and, ultimately, the agency's future research, rulemaking, and other actions related to ADS. Since AV STEP participation would be voluntary, this information collection requirement would apply only if a vehicle manufacturer, ADS developer, fleet operator, or system integrator decided to apply to participate in the Program. Entities that choose not to apply to AV STEP would not be subject to these proposed information collection requirements.

Most of the information required for an application would be consistent across the program,²³⁴ but additional information would be required if the applicant sought one of two types of exemptions under AV STEP.²³⁵ In addition, this document proposes to establish ongoing information collection requirements for AV STEP participants, including both periodic and event-triggered reporting requirements.²³⁶ In general, the information collected under these AV STEP requirements would be expected to help NHTSA identify potential safety issues with requested or participating ADS operations, gain insight into the performance of the ADS technology in those operations, and enhance the transparency of those operations on public roads in the United States.

In compliance with the requirements of the PRA and OMB's implementing regulations, NHTSA has prepared the following analysis relating to the proposed rule to establish AV STEP. NHTSA requests public comments on this collection of information.

²³⁴ These requirements are described in Section IV (Application and Review (Regulatory Text Subparts B and D)).

²³⁵ See Section VII.B (Exemption Application Requirements).

²³⁶ These requirements are described in Section V.A (Reporting Requirements).

Title: 49 CFR part 597, ADS-equipped Vehicle Safety, Transparency, and Evaluation Program

Type of Request: New collection

Affected Public: Manufacturers of ADS-equipped vehicles, ADS developers, fleet operators, or system integrators of ADS-equipped vehicles who seek to participate in AV STEP.

Requested Expiration Date of Approval: Three years from the date of approval

Summary of the Collection of Information:

This proposed rule would establish a national program for ADS-equipped vehicles that operate on public roads in the United States. As proposed, four types of eligible entities could apply for AV STEP at one of two steps—Step 1 or Step 2. Entities admitted to the program would be subject to terms and conditions that would govern the subject vehicles during their participation.

NHTSA proposes AV STEP as a voluntary program and would not require eligible entities to participate. Those entities in need of an exemption could receive the exemption through AV STEP, but could also use NHTSA's existing exemption processes if they expect those processes to be better suited to their request. The information collection requirements proposed in this document would apply only to entities that chose to apply to AV STEP. As a result, all of the information collection requirements proposed in this document are voluntary in nature because entities may forego them by deciding not to apply to participate in AV STEP.

To administer AV STEP, NHTSA proposes to impose information collection requirements on applicants and participants. The application requirements would generally entail information collections about the ADS-equipped vehicles that are the subject of the request, the nature of the requested operations, and the safety processes used for ADS development and operations. This document also proposes to consider

applications for two types of exemptions through AV STEP—FMVSS exemptions for particular purposes enumerated in 49 U.S.C. 30114 and exemptions to the prohibition in 49 U.S.C. 30122 on making a safety device or element inoperative on a vehicle that is certified as compliant with all applicable FMVSS. AV STEP would entail additional information collection requirements for applicants requesting either of these exemptions. These requirements focus on information about the specific exemption requested, the manner in which an applicant would mitigate any safety risks stemming from the nonconformance that requires an exemption, and, for an FMVSS exemption, the purposes for which the exemption is requested.

This NPRM also includes three types of proposed reporting requirements for participants that are admitted to AV STEP. The first type of reporting proposed is periodic reporting, under which quarterly reports of information about subject vehicle operations and performance would be required. The second type of reporting proposed is event-triggered reporting, under which information about certain safety-relevant incidents, such as crashes, would be required within specified timeframes after their occurrence. The third type of proposed reporting focuses on information that would be required regarding updates to an operation, if a participant planned to pursue such updates during the course of participation. Overall, these reporting requirements would be more extensive for Step 2 participation compared to Step 1 participation.

Last, NHTSA proposes information collection requirements for requests from participants to amend the specific terms and conditions governing a participation. This information would focus on the nature of requested changes and the participants' reasons for seeking such changes.

Description of the Need for the Information and Use of the Information:

The information required for an application would inform NHTSA's review and adjudication of applications to participate in AV STEP, including (for any agency

decision to grant an application's request to participate) the terms and conditions that would govern a specific operation. The information required for reporting would facilitate NHTSA's oversight of participating operations. This oversight would include monitoring for potential safety issues and ensuring participants adhere to the terms and conditions that apply to subject vehicles. Collectively, the information received under these requirements would also inform future NHTSA ADS activities outside of AV STEP, such as the agency's consideration of potential safety standards for ADS. The information required for an amendment would enable NHTSA to review requests from participants to change the terms and conditions that govern the participation.

Description of the Likely Respondents (Including Estimated Number, and Proposed Frequency of Response to the Collection of Information):

Respondents would be limited to entities that meet the proposed eligibility requirements for AV STEP and who elect to apply to the program. As mentioned above, four types of entities would be eligible to apply and participate in the program: vehicle manufacturers, ADS developers, fleet operators, or system integrators of ADS-equipped vehicles. Section IX.A (Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures) of this NPRM explains the approach used by NHTSA to estimate the likely number of AV STEP applicants and participants that would be respondents to this collection of information. That section also discusses how NHTSA estimated the frequency of responses.

NHTSA estimates that over the first seven years of the program an average of 5 entities would apply for AV STEP each year and that an average of 17 entities would participate in AV STEP each year.²³⁷ For the proposed periodic reporting, each participant would be required to submit four quarterly reports each year. NHTSA further

²³⁷ As described in Section IX.A (Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures), NHTSA expects that both of these numbers of entities would initially be lower—during the time period immediately following the publication of a Final Rule—but would increase over time.

estimates that participation would entail, on average, reporting for 5 incidents, 1 update, and 0.5 amendment requests per participant each year, under the corresponding requirements proposed for AV STEP.

Estimated Total Annual Burden Hours:

As with the description of likely respondents above, the methodology used by NHTSA to estimate the total annual burden hours is explained in Section IX.A (Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures). NHTSA estimates that each application would require an average of 1,211 burden hours. Multiplying by 5, the estimated average number of annual applicants, this would yield 6,055 annual burden hours for applications. Assuming the frequency of reporting described above, NHTSA estimates that periodic reporting, event-triggered reporting, and amendment requests would require an average of 2,081 annual burden hours. Multiplying by 17, the estimated average number of annual participants, this would yield 35,377 annual burden hours for participations. Finally, NHTSA estimates that the agency's review of applications and oversight of participants would require 10,293 burden hours. Combining these 6,055 annual application burden hours, 35,377 annual participation burden hours, and 10,293 annual agency burden hours, NHTSA estimates a total of 51,725 annual burden hours for this ICR.

Estimate of the Total Annual Reporting and Recordkeeping Burden Resulting from the Collection of Information:

Section IX.A (Executive Orders 12866, 13563, 14094 and DOT Regulatory Policies and Procedures) also explains NHTSA's approach to estimating the annual burden from this collection. Using the estimated burden hours described above as well as the other costs described in Section IX.A, NHTSA estimates the following annual burdens: for applicants, \$2,533,660; for participants, \$3,606,346; and for agency

resources \$1,112,769. Summing these, NHTSA estimates that the total annual burden of this ICR would be \$6,252,775.

Public Comments Invited:

The public is asked to comment on any aspects of this information collection, including (a) whether the collection of information is necessary for the proper performance of the functions of the Department, including whether the information will have practical utility; (b) the accuracy of the Department's estimate of the burden of the information collection; (c) ways to enhance the quality, utility and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including the use of automated collection techniques or other forms of information technology.

Please submit any comments, identified by the docket number in the heading of this document, by the methods described in the ADDRESSES section of this document to NHTSA and OMB.

E. Executive Order 13132 (Federalism)

Executive Order 13132 requires NHTSA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.”²³⁸ “Policies that have federalism implications” is defined in the Executive order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.”²³⁹ Executive Order 13132 imposes additional consultation requirements on two types of regulations that have

²³⁸ Executive Order 13132, Federalism, sec. 1(a) (August 4, 1999).

²³⁹ *Id.* at sec. 1(a).

federalism implications: (1) A regulation that imposes substantial direct compliance costs on state and local governments, and that is not required by statute; and (2) a regulation that preempts state law.²⁴⁰

This proposed rule does not propose either type of regulation covered by Executive Order 13132's consultation requirements. NHTSA does not propose for AV STEP to preempt any state or local approaches to regulating ADS-equipped vehicles within their jurisdictions. To the contrary, this proposal recognizes that states and local governments are often best situated to understand the unique needs of their communities, including the value or concerns regarding ADS-equipped vehicle operations within their respective communities.

Under this proposal, NHTSA would require vehicles participating in AV STEP to comply with all applicable state and local requirements, including adherence to any licensure or permitting requirements and traffic laws. NHTSA proposes to require an applicant to explain the subject vehicle's law abidance protocols to ensure appropriate safeguards exist for identifying and adhering to applicable state and local requirements.

As such, although NHTSA believes that AV STEP could provide a valuable tool for states and local governments, this rulemaking does not propose to override any state or local approaches to ADS-equipped vehicles or otherwise alter any existing distribution of power and responsibilities among the various levels of Federal, state, and local governments. Finally, NHTSA notes that although this rulemaking does not implicate the consultation conditions under Executive Order 13132, the agency engaged with state and local authorities as part of the broader stakeholder engagement that led up to this rulemaking. More information on this engagement can be found in a memorandum available in the docket for this rulemaking.

²⁴⁰ *Id.* at sec. 6(b), (c).

F. Executive Order 12988 (Civil Justice Reform)

When promulgating a regulation, Executive Order 12988, “Civil Justice Reform” (61 FR 4729; February 7, 1996), specifically requires that the agency must make every reasonable effort to ensure that the regulation, as appropriate: (1) Specifies in clear language the preemptive effect; (2) specifies in clear language the effect on existing Federal law or regulation, including all provisions repealed, circumscribed, displaced, impaired, or modified; (3) provides a clear legal standard for affected conduct rather than a general standard, while promoting simplification and burden reduction; (4) specifies in clear language the retroactive effect; (5) specifies whether administrative proceedings are to be required before parties may file suit in court; (6) explicitly or implicitly defines key terms; and (7) addresses other important issues affecting clarity and general draftsmanship of regulations.

Pursuant to this Order, NHTSA notes as follows. The preemptive effect of this proposal is discussed above in connection with Executive Order 13132. NHTSA has also determined that this proposed rule would not have any retroactive effect. NHTSA notes further that there is no requirement that individuals submit a petition for reconsideration or pursue other administrative proceedings before they may file suit in court.

G. Executive Order 13609: Promoting International Regulatory Cooperation

Under Executive Order 13609 (77 FR 26413, May 4, 2012), agencies must consider whether the impacts associated with significant variations between domestic and international regulatory approaches are unnecessary or may impair the ability of American business to export and compete internationally. In meeting shared challenges involving health, safety, labor, security, environmental, and other issues, international regulatory cooperation can identify approaches that are at least as protective as those that are or would be adopted in the absence of such cooperation. International regulatory

cooperation can also reduce, eliminate, or prevent unnecessary differences in regulatory requirements. Sections 3 and 4 of Executive Order 13609 direct an agency to conduct a regulatory analysis and ensure that a proposed rule does not cause unnecessary obstacles to foreign trade. This requirement applies if a rule constitutes a significant regulatory action, or if a regulatory evaluation must be prepared for the rule.

NHTSA has analyzed this action under the policies and agency responsibilities of Executive Order 13609 and has determined that this action would have no effect on international regulatory cooperation. This rulemaking proposes a set of procedures to govern NHTSA's adjudication and administration of participation in a national program for ADS-equipped vehicles. This proposal does not impose any mandatory requirements on motor vehicles or regulated entities or otherwise alter the existing regulatory landscape that governs motor vehicles in the United States under the Safety Act. As such, this proposal does not affect any regulatory cooperation with respect to the harmonization of vehicle standards or establish any requirements for vehicles that may conflict with those in other countries. Likewise, this rule would also not impose any obstacles to foreign trade. The two exemption procedures proposed in this document may even provide regulatory flexibility for certain vehicles facing importation.

Moreover, as described in the ensuing subsection on the National Technology Transfer and Advancement Act, this proposal incorporates existing global industry standards as part of the independent assessment required in applications. To the extent applicants use international standards or approaches not expressly referenced in the proposed disclosure requirements of an application, this proposal includes options for an applicant to identify and explain those alternative approaches. Ultimately, NHTSA believes that this proposed framework would afford sufficient flexibility for entities to explain the safety methodologies used for their vehicles, including those that incorporate international standards. Moreover, the disclosure requirements in this proposal should

foster greater agency insight into the use of any such international standards, better equipping NHTSA to account for them in future agency actions regarding ADS.

NHTSA requests public comment on whether any regulatory approaches taken by foreign governments concerning the subject matter of this rulemaking have any implications for this rulemaking.

H. National Technology Transfer and Advancement Act

Under the National Technology Transfer and Advancement Act of 1995 (NTTAA) (Pub. L. 104–113), all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards to carry out policy objectives or activities determined by the agencies and departments, except when use of such a voluntary consensus standard would be inconsistent with the law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the International Organization for Standardization (ISO) and SAE International. The NTTAA directs NHTSA to provide Congress, through OMB, explanations when the agency decides not to use available and applicable voluntary consensus standards.

This document explains at length the proposed approach to incorporating industry standards, best practices, and guidance into AV STEP's requirements and procedures. NHTSA does not currently view any specific industry standards for ADS as mature enough to require conformance for AV STEP. Industry standards, best practices, and guidance regarding ADS remain in their infancy. Existing standards are, to a large extent, untested, continue to evolve, and are often used differently when applied to varied ADS technologies. As such, NHTSA believes that it is premature to require conformance with any particular industry standard for AV STEP.

Nevertheless, the agency recognizes the value in understanding, at an aggregate level, how an entity approaches relevant industry standards when developing its ADS-equipped vehicles. Considering how an entity accounts for or deviates from industry standards would help the agency understand the overall safety approaches built into an ADS. This perspective would also provide valuable context for the other technical material that NHTSA proposes to require as part of an AV STEP application. Accordingly, although NHTSA does not propose to require conformance with any particular industry standards in AV STEP, the agency proposes instead to require an independent assessment of conformance with relevant industry standards.

As proposed, these disclosure and assessment requirements would account for the relevant available industry standards for ADS as well as provide an applicant with enough flexibility to identify alternative approaches to those standards or otherwise justify why those standards were not appropriate or sufficient for the safety design of its ADS. Moreover, NHTSA intends for this approach to enhance the agency's understanding of industry standards applicable to ADS, to better assess whether any such standards would be appropriate to incorporate into future FMVSS for ADS in any capacity. This approach would ultimately further the NHTAA's goals of promoting the use of technical standards that are developed or adopted by voluntary consensus standards bodies.

Finally, by using existing standards to gain better insight into the ADS technologies under review, NHTSA aims to efficiently use agency resources by making use of the pertinent technical information and processes already incorporated into those standards. This effort to preserve resources is consistent with the NHTAA's goal of reducing, when possible, the agency's cost of developing its own standards.

I. Privacy Act

Please note that anyone is able to search the electronic form of all comments received into any of DOT's dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). For information on DOT's compliance with the Privacy Act, please visit <https://www.transportation.gov/privacy>.

J. Unfunded Mandates Reform Act of 1995

The Unfunded Mandates Reform Act of 1995, Public Law 104-4, requires agencies to prepare a written assessment of the cost, benefits and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by state, local, or tribal governments, in the aggregate, or by the private sector, of more than \$100 million annually (adjusted annually for inflation with base year of 1995). The 2024 inflationary adjustment for this threshold is \$200 million. Because this rulemaking is not expected to include a Federal mandate or exceed an impact over this amount, no unfunded mandate assessment will be prepared.

K. Regulation Identifier Number

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document (RIN 2127-AM60) to find this action in the Unified Agenda.

L. Plain Language

Executive Order 12866 requires each agency to write all rules in plain language. Application of the principles of plain language includes consideration of the following questions:

- Have we organized the material to suit the public's needs?

- Are the requirements in the rule clearly stated?
- Does the rule contain technical language or jargon that isn't clear?
- Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand?

- Would more (but shorter) sections be better?
- Could we improve clarity by adding tables, lists, or diagrams?
- What else could we do?

If you have any responses to these questions, please write to us with your views.

M. Rule Summary

This notice proposes a framework for the review and assessment of Automated Driving System (ADS)-equipped vehicles, to evaluate operations or requests for exemptions involving such technologies while also informing the agency's approach to future rulemaking and oversight.

As required by 5 U.S.C. 553(b)(4), a summary of this rule can be found in the rulemaking docket at www.regulations.gov and in the entry for RIN 2127-AM60 in the Department's portion of the Unified Agenda of Regulatory And Deregulatory Affairs, available at <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202404&RIN=2127-AM60>.

List of Subjects

49 CFR Part 595

Exemptions, labeling, motor vehicles, motor vehicle safety, reporting and recordkeeping requirements

49 CFR Part 597

Exemptions, imports, labeling, motor vehicles, motor vehicle equipment, motor vehicle safety, reporting and recordkeeping requirements

In consideration of the foregoing, NHTSA proposes to add 49 CFR part 597 and amend 49 CFR part 595 as follows:

Part 595—Make Inoperative Exemptions

1. The authority citation for part 595 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, 30122 and 30166; delegation of authority at 49 CFR 1.95.

2. Amend § 595.2 to read as follows:

§ 595.2 Purpose

The purpose of this part is to provide exemptions from the “make inoperative” provision of 49 U.S.C. 30122 for specific situations set forth in each exemption.

3. Amend § 595.3 to read as follows:

§ 595.3 Applicability

The exemptions in this part apply, collectively, to manufacturers, distributors, dealers, motor vehicle repair businesses, and rental companies. Each exemption set forth in this part specifies the entities eligible for the exemption.

4. Add subpart E to read as follows:

Subpart E—Vehicle Modifications for Automated Driving Systems

§ 595.10 Vehicle Modifications for Automated Driving Systems

An applicant to the ADS-Equipped Vehicle Safety, Transparency, and Evaluation Program in part 597 of this chapter may request an exemption from the “make inoperative” provision in 49 U.S.C. 30122(a) for modifications to ADS-equipped vehicles. Part 597 sets forth the conditions governing such exemptions.

5. Add part 597 to read as follows.

Part 597--Requirements and Procedures for ADS-Equipped Vehicle Safety,

Transparency, and Evaluation Program

Sec.

Subpart A—General

597.100 Scope.

597.101 Purpose.

597.102 Definitions.

597.103 Eligibility for participation.

597.104 Program step eligibility.

597.105 Terms and conditions of participation.

597.106 Engagement with entities other than an applicant or participant.

Subpart B—Application requirements

597.200 General application requirements.

597.201 Operational baseline information.

597.202 Vehicle exemption information.

597.203 Location sheet information.

597.204 Protocols for ADS operations.

597.205 Independent Assessment.

597.206 Customized terms.

597.207 Data governance plan.

597.208 Confirmation of reporting during participation.

Subpart C—AV STEP exemptions

597.300 In general.

597.301 AV STEP FMVSS exemption.

597.302 AV STEP Make Inoperative exemption.

597.303 Restrictions on exemptions.

Subpart D—Application review process

597.400 In general

597.401 Review Phase 1: Initial Review.

597.402 Review Phase 2: Follow-up Review.

597.403 Review Phase 3: Preliminary Determination.

597.404 Final determination.

Subpart E—Reporting by participants

597.500 General reporting requirements.

597.501 Event-triggered reporting requirements.

597.502 Changes to an operation.

Subpart F—Procedures during participation

597.600 Concern resolution process.

597.601 Amendment process.

Subpart G—Public reporting requirements

597.700 In general.

597.701 Information for publication.

Authority: 49 U.S.C. 322, 30111, 30112, 30114, 30122, 30166, and 30182; delegation of

authority at 49 CFR 1.95.

Subpart A—General

§ 597.100 Scope.

This part specifies requirements and procedures for eligibility and participation in the ADS-equipped Vehicle Safety, Transparency, and Evaluation Program (AV STEP), including the conditions under which:

(a) Certain ADS-equipped motor vehicles may receive special exemptions under 49 U.S.C. 30114 from compliance with one or more Federal motor vehicle safety standards (FMVSS) issued under part 571 of this chapter and bumper standards issued under part 581 of this chapter;

(b) Persons may receive exemptions under 49 U.S.C. 30122 from the prohibition on making inoperative any part of a device or element of design installed on an ADS-equipped vehicle in compliance with an applicable FMVSS; and

(c) Persons may participate in AV STEP with an ADS-equipped vehicle that separately complies with all applicable requirements of 49 CFR chapter V without an exemption under AV STEP.

§ 597.101 Purpose.

This part specifies eligibility requirements for entities to participate in AV STEP, identifies the information that must be submitted in an application, describes how NHTSA will review and respond to applications, sets forth the requirements for participating in AV STEP, and specifies the processes associated with the revocation or amendment of Program admission.

§ 597.102 Definitions.

ADS Developer means the entity principally responsible for the manufacture of the *ADS* at the system level, including but not limited to its design, development, and testing.

Applicant means an entity seeking NHTSA approval for an *ADS*-equipped vehicle to participate in *AV STEP*.

Automated Driving System (ADS) means the hardware and software that are collectively capable of performing the entire *Dynamic Driving Task* on a sustained basis, regardless of whether the system is limited to a specific *operational design domain*.

AV STEP or *Program* means the *ADS*-equipped Vehicle Safety, Transparency, and Evaluation Program.

AV STEP Exemption means an *AV STEP FMVSS Exemption* or an *AV STEP Make Inoperative Exemption*.

AV STEP FMVSS Exemption means an exemption, requested through *AV STEP* under 49 U.S.C. 30114(a), to one or more of the FMVSS issued under part 571 of this chapter or the bumper standards issued under part 581 of this chapter.

AV STEP Make Inoperative Exemption means an exemption, requested through *AV STEP*, to 49 U.S.C. 30122(b).

Contact event means any event in which a subject vehicle comes into physical contact with another vehicle, road user, individual, animal, or physical object. For the purposes of this part, a contact event does not include benign intentional contact, such as upon a vehicle passenger entering or exiting a stationary vehicle, or intentional tire contact with a curb below a speed of 5 miles per hour.

Customized term means a term or condition related to the operation, performance, and safety of a subject vehicle, including metric(s) and threshold(s), proposed by an applicant informed by the Independent Assessment, and set by the agency in the terms and conditions of an approval.

Dynamic Driving Task (DDT) means 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, and including, without limitation, the following subtasks:

- (1) Lateral vehicle motion control, e.g., via steering.

- (2) Longitudinal vehicle motion control via acceleration and deceleration.
- (3) Monitoring the driving environment via object and event detection, recognition, classification, and response preparation.
- (4) Object and event response execution.
- (5) Maneuver planning.
- (6) Enhancing conspicuity, such as via lighting, sounding the horn, signaling, and gesturing.

Dynamic Driving Task Fallback (DDT Fallback) means the response by an individual to either perform the *DDT* or achieve a *minimal risk condition* after occurrence of a *DDT* performance-relevant system failure(s) or upon *operational design domain* exit, or the response by an *ADS* to achieve a *minimal risk condition*, given the same circumstances.

Dynamic Driving Task Takeover (DDT Takeover) means an individual's planned or unplanned overriding of the operation of the *ADS* to manually perform the *DDT*, including to achieve a *minimal risk condition*. A *DDT Takeover* may occur as part of a *DDT Fallback* or in anticipation of possible future *ADS* behavior unwanted by the user.

Essential system-level stakeholder means an entity with a significant role in the safety of an operation requested in an application to participate in *AV STEP*, including but not limited to, a *manufacturer* of the subject vehicle, an *ADS developer* for the subject vehicle, a *fleet operator* of the subject vehicle, and a *system integrator*.

Fallback personnel means an individual specially trained and skilled in supervising the performance of prototype *ADS*-operated vehicles in on-road traffic, who continuously supervises the performance of an *ADS*-operated vehicle in real time and intervenes whenever necessary to prevent a hazardous event by exercising any means of vehicle control. This intervention may occur as part of a *DDT Fallback* or in anticipation of possible future *ADS* behavior that is unsafe or otherwise unwanted by the user.

Fallback personnel may be physically present in the vehicle or remote. The fallback personnel role does not include *Vehicle Assistance*, as defined in this section.

Fleet operator means the individual or entity that exercises all or part of the *operational control* over the *ADS* installed in a subject vehicle or group of subject vehicles.

Manufacturer has the meaning given in 49 U.S.C. 30102(a)(6).

Minimal risk condition means a stable, stopped condition to which a user, such as fallback personnel, or an *ADS* may bring a vehicle after performing the *DDT Fallback*, including after a *DDT Takeover*, to reduce the risk of a crash when a given trip cannot or should not be continued.

Minimal risk maneuver means a driving maneuver intended to achieve a *minimal risk condition*.

Operational control means control over functions of *ADS*-equipped vehicles that include, without limitation, ensuring operational readiness; authorizing each trip; dispatching *ADS*-equipped vehicles; providing fleet asset management services to vehicles while in-use; serving as the responsible agent vis-à-vis law enforcement, emergency responders and other authorities for vehicles while in use; disengaging the *ADS* at the end of service; and performing vehicle repair and maintenance as needed.

Operational Design Domain (ODD) means the operating conditions under which the *ADS* or feature thereof is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of defined traffic or roadway characteristics.

Participant means an entity that has received NHTSA approval for an *ADS*-equipped vehicle to participate in *AV STEP*, provided such approval has not expired. A participant may be involved in multiple *Participations* at a time.

Participation means the entire operation or group of operations that is governed by a Final Determination Letter issued under § 597.404, including any Amended Final Determination Letter under § 597.601.

Public ridership means transporting as a passenger any member of the public other than an employee or agent of an *Essential system-level stakeholder* or a public official acting in an official capacity, such as law enforcement or government personnel.

Remote driving means the real-time performance of part or all of the *DDT* by an individual physically located outside of the vehicle.

Safety case means a structured argument, consisting of claims supported by a body of evidence, that provides a complete, comprehensible, and valid case that a system is acceptably safe for a given use in a specified environment.

Subject vehicle means a motor vehicle operating, or that an *applicant* intends to operate, under *AV STEP*.

System integrator means an entity responsible for integration of an *ADS* at the vehicle level.

Vehicle assistance means an individual providing information or instruction about a situation to an *ADS*-equipped vehicle in driverless operation (instead of exercising direct control of the vehicle) to help the *ADS* continue a trip when encountering a situation that the *ADS* cannot manage. *Vehicle assistance* may be provided remotely, by an individual not physically present in the vehicle, or by an individual on board (physically present in) the vehicle. Unlike *fallback personnel*, as defined in this section, vehicle assistance personnel provide information or instruction to an *ADS*-equipped vehicle rather than directly exercising vehicle control authority.

Vehicle recovery event means any instance in which a vehicle needs to be recovered during roadway operations by personnel other than those already on board the

subject vehicle, including, but not limited to, recovery after a *minimal risk condition* has been achieved.

Vulnerable road user means any person who is not an occupant of a motor vehicle with more than three wheels, heavy equipment, or a railway vehicle. This definition includes, but is not limited to, pedestrians, persons traveling in wheelchairs, bicyclists, motorcyclists, and riders or occupants of other transport vehicles that are not motor vehicles, such as all-terrain vehicles and lawnmowers.

§ 597.103 Eligibility for participation.

(a) *In general.* An entity may apply for one or more ADS-equipped vehicles to participate in AV STEP only upon meeting the eligibility requirements of this subpart.

(b) *Vehicle eligibility.* Subject vehicles must be equipped with an ADS that:

(1) Is being used or developed for operation without an expectation of an attentive human driver (whether in-vehicle or remote) while engaged; and

(2) Performs the entirety of the dynamic driving task for all or part of the operations for which participation is requested.

(c) *Applicant eligibility.* (1) An application may be submitted by a single applicant or multiple co-applicants, all of whom must meet the eligibility requirements in this section.

(2) Every applicant must qualify as at least one of the following:

(i) The manufacturer of the subject vehicle(s);

(ii) The ADS developer for the subject vehicle(s);

(iii) The fleet operator for the subject vehicle(s); or

(iv) The system integrator.

(3) In addition to the requirements in paragraph (c)(1) of this section, every applicant (or at least one co-applicant in applications that have multiple co-applicants) requesting an AV STEP FMVSS Exemption must:

(i) Be the manufacturer of all subject vehicles in an application that are not subject to importation; or

(ii) Be the importer of record of all subject vehicles in an application that are subject to importation into the United States.

(d) *Operational eligibility.* The operation of a subject vehicle during AV STEP participation must:

(1) Take place, in part or entirely, on public streets, roads, and highways in the United States; and

(2) Take place in a manner in which all operational control is exercised, at all times, by one or more of the following:

(i) The manufacturer of the subject vehicle;

(ii) The ADS developer for the subject vehicle;

(iii) The fleet operator of the subject vehicle; or

(iv) The system integrator for the subject vehicle.

§ 597.104 Program step eligibility.

(a) *In general.* Participation in AV STEP must occur at one of the two program steps defined in paragraph (b) of this section.

(b) *Eligibility criteria.* The minimum eligibility requirements for the program steps are as follows:

(1) *Step 1: ADS operations with fallback personnel.* An entity is eligible to apply for Step 1 participation for subject vehicle(s) that would operate only with continuous supervision from fallback personnel during all participating operations on public roads.

(2) *Step 2: ADS operations without fallback personnel.* An entity is eligible to apply for Step 2 participation for subject vehicle(s) that would operate without fallback personnel during participating operations on public roads.

§ 597.105 Terms and conditions of participation.

(a) NHTSA may place terms and conditions as appropriate on participation in AV STEP. In addition to the terms and conditions specified in this section, NHTSA may prescribe other terms and conditions governing an operation in a Final Determination Letter issued under § 597.404.

(b) At a minimum, the terms and conditions in a Final Determination Letter granting AV STEP participation will govern the following subjects:

- (1) The program step in which participation is permitted;
- (2) The maximum number of vehicles approved for participation;
- (3) The vehicles approved for participation;
- (4) The permitted use(s) of participating vehicles;
- (5) The permitted duration of participation;
- (6) The permitted location(s) for participation; and
- (7) The Essential System-Level Stakeholders for the participation.

(c) A subject vehicle may not operate with public ridership during operations involving fallback personnel.

(d) All participants must report the information specified in subpart E of this part, and NHTSA may establish additional reporting requirements as a term or condition of participation.

(e) All subject vehicles, including their operations, must comply with all Federal, state and local laws and requirements during participation.

(f) All subject vehicles participating through an AV STEP Exemption must display vehicle labels advising that the vehicles may not conform with all applicable Federal motor vehicle safety standards. These labels must be formatted in a manner that can be easily read and consist of:

- (1) At least one label on the exterior of the vehicle that is readily visible to persons external to the vehicle; and

(2) One or more labels on the interior of the vehicle such that at least one label is readily visible to vehicle occupants in all seating positions.

(g) Unless NHTSA provides otherwise in a term or condition of a Final Determination Letter, a participant with an AV STEP Exemption must maintain ownership and possession of each subject vehicle.

(h) A participant with an AV STEP exemption may not license the subject vehicle for use or operate it except as provided in a term or condition of a Final Determination Letter.

(i) Unless otherwise provided by NHTSA in a term or condition of a Final Determination Letter, remote driving of a subject vehicle is prohibited during participation in AV STEP except as temporarily needed to briefly move a vehicle after the ADS initiates a minimal risk maneuver.

§ 597.106 Engagement with entities other than an applicant or participant.

(a) An applicant or participant is required to furnish sufficient information to NHTSA, directly or through other stakeholders, to enable NHTSA to assess the system-level performance of the subject vehicle in the requested operations.

(b) NHTSA's ability to fully communicate with any entity performing an independent assessment under § 597.205 regarding any aspect of an application or participation is a condition of this Program.

Subpart B—Application Requirements

§ 597.200 General application requirements.

To be considered for participation in AV STEP, an applicant must:

(a) Write the application in the English language;

(b) Submit the application electronically using the NHTSA Product Information Catalog and Vehicle Listing (vPIC) platform (<https://vpic.nhtsa.dot.gov>) or send to:

Director, Office of Automation Safety, NRM-400, 1200 New Jersey Avenue SE,
Washington, DC 20590;

(c) Include the information described in this subpart;

(d) During the pendency of an application, promptly notify NHTSA upon becoming aware of information in an application that is inaccurate or that has changed since the application was submitted.

§ 597.201 Operational baseline information.

An applicant seeking participation must, as part of the application:

(a) Identify the program step under which participation is requested;

(b) Identify each applicant;

(c) Provide primary and secondary contact information for each applicant;

(d) Identify each Essential System-Level Stakeholder;

(e) Identify the vehicle platform for which participation is requested, including the

following for the subject vehicle:

(1) Make;

(2) Model;

(3) Model year;

(4) Unloaded vehicle weight;

(5) Gross Vehicle Weight Rating;

(6) Claimed vehicle class; and

(7) FMVSS certifying entity, if applicable.

(f) For the ADS on a subject vehicle, identify:

(1) The following information regarding each sensor contributing to the

perception capabilities of the ADS:

(i) The type of sensor;

(ii) The make and model of the sensor;

(iii) The use of the sensor in ADS operations; and

(iv) The location of the sensor on the subject vehicle;

(2) The crash detection capabilities of the subject vehicle's ADS and, if applicable, any units towed by the subject vehicle, including any limitations or thresholds for detecting physical contact relating to a crash;

(3) Any modifications to safety features installed as original equipment on the subject vehicle, other than modifications identified pursuant to § 597.202; and

(4) The designed data logging functionality of the subject vehicle, including:

(i) Continuously recorded data;

(ii) Event-triggered data; and

(iii) For each type of data identified in response to paragraphs (f)(4)(i) and (f)(4)(ii) of this section:

(A) The onboard or offboard storage protocols; and

(B) The duration of retention.

(g) Identify the seating position(s) of any onboard fallback personnel that may be present during a subject vehicle's participating operation.

(h) Identify whether any remote driving of the subject vehicle may occur during participating operations and, if so:

(1) Whether any participating operations will rely on fallback personnel who possess remote driving control authority;

(2) Any restrictions in place for the use of remote driving; and

(3) Provide a public summary of the limitations in place on the use of remote driving for reporting purposes under § 597.701(a)(2)(ix).

(i) Identify whether any other remote or onboard vehicle assistance may occur during participating operations.

(j) Identify whether any Federal, State, or local permits are required for the operations described in the application. If so, provide a copy of each such permit if it has been issued, and describe, for each required permit:

- (1) The regulatory entity requiring the permit;
- (2) The status of the permit;
- (3) The effective dates of any existing permits; and
- (4) Any conditions imposed by the permit.

(k) Identify whether an AV STEP Exemption is sought for any subject vehicle in the application.

(l) Identify whether the subject vehicle(s) contain any features or design modifications that are intended to promote the safe accommodation of passengers with disabilities and, if so, provide a public summary of the features or design modifications for reporting purposes under § 597.701(a)(2)(xii).

§ 597.202 Vehicle exemption information

(a) Any application seeking an AV STEP Exemption must identify the following information concerning each subject vehicle for which an exemption is requested.

(1) Whether an AV STEP FMVSS Exemption or an AV STEP Make Inoperative Exemption is requested for the subject vehicle;

(2) The total anticipated number of vehicles for which each AV STEP Exemption will be sought during the course of participation;

(3) Each subject vehicle for which an exemption is requested, including:

(i) The vehicle make;

(ii) The vehicle model;

(iii) The vehicle model year or date of manufacture; and

(iv) The vehicle identification number or unique identifier for the subject vehicle.

(4) Whether sufficient insurance coverage for each subject vehicle for which an exemption is requested will be maintained at all times for the operations described in the application;

(5) All labels proposed for the requirements of § 597.105(g);

(6) Whether the subject vehicle requires importation into the United States;

(7) How the safety performance of the subject vehicle compares to the safety performance required by the FMVSS standard(s) at issue in the requested FMVSS Exemption or Make Inoperative Exemption, including:

(i) A comparison of the following:

(A) Crash protection for vehicle occupants;

(B) The safety of vulnerable road users; and

(C) The overall safety of the subject vehicle during its expected operation.

(ii) The process and evidence used to assess each element of § 597.202(a)(7)(i);

(8) All mitigations of safety risks resulting from:

(i) Each noncompliance identified in paragraph (b)(1) of this section; and

(ii) Each modification identified in paragraph (c) of this section.

(9) A public summary of the mitigations of safety risks for reporting purposes under § 597.701(a)(1).

(b) For each subject vehicle for which an AV STEP FMVSS Exemption is requested, the applicant must:

(1) Identify each applicable standard and subsection with which the vehicle may not comply and provide a description of each noncompliance;

(2) List each purpose under § 597.202(b) applicable to a requested exemption, and for each identified purpose:

(i) Describe how the purpose is fulfilled; and

(ii) Explain the timeframe for which the purpose applies.

(3) Describe whether operations of the subject vehicle(s) will involve any commercialization. If so, the applicant must describe:

(i) The type of commercialization;

(ii) The extent of the commercialization; and

(iii) Any public interest furthered through a purpose claimed under paragraph (b)(2) of this section.

(c) For each subject vehicle for which an AV STEP Make Inoperative Exemption is requested, the applicant must identify each modification for which an exemption is requested and, for each modification:

(1) The device(s) or element(s) rendered inoperative by the modification;

(2) The FMVSS and subsection affected by the modification;

(3) The extent of the applicant's consultation with the original manufacturer of the subject vehicle or affected device regarding the modification, including:

(i) Any information provided to the original manufacturer about the modification;

(ii) Any safety effects of the modification identified by the original manufacturer;

(iii) Any recommendations by the original manufacturer regarding mitigations of such potential safety effects; and

(iv) Any mitigations undertaken by the applicant to address such potential safety effects.

§ 597.203 Location sheet information

An application must include the following information concerning each geographical location in which participation is requested:

(a) *Location Name*. Provide a unique reference name for the location;

(b) *Location Limitation*. Define the geographical boundaries for the operation of the subject vehicle;

(c) *Maximum Number of Vehicles Proposed for Participation.* Identify the maximum number of vehicles for which AV STEP participation is requested for the location;

(d) *Legal Speed Limits.* Provide the following information regarding the speed limits for roadways on which operation is planned for the subject vehicle for the location:

(1) *Highest Speed.* Identify the highest legal speed limit for the operation and the segment(s) of road in which this speed limit occurs; and

(2) *Maximum Speed Differential.* For the road segment with the largest differential between the legal speed limit and the maximum allowed speed of the subject vehicle with the ADS engaged while operating on the road segment, identify:

(i) The segment(s) of road in which the differential exists;

(ii) The legal speed limit; and

(iii) The maximum allowable speed of the ADS on the segment of the road.

(e) *Vehicle Speeds.* Identify:

(1) The highest speed currently allowed for the ADS while operating in the location; and

(2) The highest speed for which participation is requested for the ADS while operating in the location.

(f) *Public Ridership.* Identify whether the operation will involve any public ridership.

(g) *Intended Use.* Describe the planned use case(s) for the subject vehicle(s) during operation.

(h) *Operational Design Domain.* Describe the operational design domain for the subject vehicles, including the following:

(1) A complete specification of all aspects of the operational design domain, which must identify operational design domain differences between Location Sheets, where applicable; and

(2) A summary of the operational design domain for public reporting purposes under § 597.701(a)(3)(viii).

(i) *Vehicle Equipment*. Identify the following equipment and characteristics for each subject vehicle operating under a Location Sheet as compared to the base model of the subject vehicle, when applicable, and if multiple Location Sheets are requested, any differences between Location Sheets:

- (1) Any trim level characteristics that affect safety;
- (2) Any optional technologies that affect safety; and
- (3) Any other distinguishing safety characteristics.

§ 597.204 Protocols for ADS Operations

An application must include the following information concerning any applicable protocols for the development and operation of the subject vehicles and ADS:

(a) An explanation of the subject vehicle's adherence with Federal, State, and local laws, including:

- (1) A summary of how applicable traffic safety laws are identified;
- (2) A description of how an ADS' compliance with traffic safety laws is monitored;
- (3) A description of any conditions under which the design of the ADS may allow the subject vehicle to not follow traffic laws; and
- (4) A summary of recognition, interaction, and response strategies for:
 - (i) Emergency and law enforcement vehicles, personnel, and equipment;
 - (ii) Construction vehicles, personnel, and equipment; and
 - (iii) Crossing guards or other traffic control personnel.

(b) A description of any system fallback or failure mitigation strategies, including:

(1) A description of any minimal risk conditions the ADS may achieve, which must include:

(i) A description of each minimal risk condition and the engineering rationale for its use;

(ii) The circumstances under which each minimal risk condition is triggered;

(iii) A description of how the minimal risk maneuver is initiated and executed;

and

(iv) Any protocols for the ADS following the achievement of each minimal risk condition.

(2) An overview of any protocols not identified under paragraph (b)(1) of this section that are associated with averting or achieving a minimal risk condition, which:

(i) Includes any protocols for the following:

(A) Providing input to the ADS or disengaging the ADS prior to or during a minimal risk maneuver;

(B) Resuming ADS driving following the achievement of a minimal risk condition; and

(C) Vehicle recovery events.

(ii) Identifies the role and number of persons responsible for each protocol described in paragraph (b)(2)(i) of this section and describes each such person's:

(A) Responsibilities under the protocol;

(B) Physical location when performing an identified responsibility;

(C) Expected response time in performing an identified responsibility;

(D) Potential control authority over the subject vehicle;

(E) Means of exercising any control authority over the subject vehicle; and

(F) Operational restrictions on the use of any control authority.

(3) A description of any protocols for vehicle immobilizations that occur without the achievement of a minimal risk condition.

(c) An overview of any design and process measures that are in place to facilitate safe and predictable interactions with members of the public, including:

(1) Any communication strategies to convey information to individuals outside of a subject ADS-equipped vehicle;

(2) Any measures to promote the predictability of the ADS' behavior for other road users in the vicinity of the subject vehicle;

(3) Any communication strategies for non-operator occupants of the subject ADS-equipped vehicle; and

(4) Any features or design modifications that are intended to promote the safe accommodation of passengers with disabilities.

§ 597.205 Independent assessment

(a) *In general.* An application requires an independent assessment that conforms to the requirements of this section. Information regarding this assessment must be conveyed to NHTSA through a summary report, as provided under subsection (d), prepared by an assessor that meets the independence and qualification requirements of this section.

(b) *Scope of Independent Assessment.* An independent assessment must consider the full extent of operations requested for the subject vehicle(s) in an application.

(c) *Subjects of Independent Assessment.* An independent assessment must include a review of the following:

(1) The conformance of the subject vehicle's ADS and its operations with relevant industry standards, best practices, and guidance. This conformity assessment must:

(i) Determine non-, partial, or full conformance with each such industry standard, best practice, or guidance;

(ii) Assess the justification and safety implications of any non- or partial compliance determined under paragraph (c)(1)(i) of this section;

(iii) Assess whether, collectively, the degree of conformance with relevant industry standards, best practices, and guidance represents a responsible approach to developing and operating the subject vehicle; and

(iv) Contain recommendations regarding:

(A) The list of industry standards, best practices, and guidance with which conformance should, in full or in part, be achieved or maintained during operations; and

(B) How to address any safety gaps in the design and operation of the subject vehicle that would not be covered by the conformance recommended under paragraph (c)(1)(iv)(A) of this section.

(2) A safety case that details how the safety of the subject vehicle, including the safety of the subject vehicle's occupants and surrounding road users, is assured for the operations requested in an application. The assessment of the safety case by the assessor:

(i) May incorporate the assessment under paragraph (c)(1) of this section;

(ii) Must include a review of the validity and soundness of the safety case, including whether:

(A) The safety case arguments and claims support the operations of the subject vehicle;

(B) The safety case claims are supported with sufficient evidence; and

(C) Appropriate processes exist for maintaining the safety case throughout the operations.

(iii) Must include a detailed analysis of the following aspects of the safety case:

(A) *Safety Risk Assessment*. Whether the safety case comprehensively identifies and assesses safety risks, including potential vehicle and operational hazards and faults;

(B) *Safety Risk Management*. Whether the safety case contains appropriate risk

management, including mitigations, for the risks identified;

(C) *System Evolution*. Whether the safety case contains appropriate processes for maintaining or improving safety over time;

(D) *Safety Performance Indicators*. Whether the safety case relies on appropriate safety performance indicators and thresholds;

(E) *Conformance with Traffic Safety Law*. Whether appropriate processes exist for identifying applicable traffic safety laws in an area of operation and overseeing their conformance during operations;

(F) *Vehicle Fallback and Assistance*. Whether the safety case contains appropriate processes for ensuring the effectiveness of any expected fallback or vehicle assistance;

(G) *Human Factors*. Whether the safety case appropriately accounts for human factors considerations that may affect safety, including, where applicable, those related to fallback personnel, vehicle assistance, vehicle occupants, or surrounding road users;

(H) *Crash Avoidance*. Whether the safety case appropriately identifies and considers the variety of crash-imminent situations that could occur within the operations; and

(I) *Tool Qualification*. Whether software tools used to evaluate expected ADS performance are representative and accurate.

(iv) Must include a review of the safety management systems in place to oversee the safety of the subject vehicle for the operations requested in an application. This review must include an assessment of the following for the organizations responsible for the safety of the operations involving the subject vehicle:

(A) Whether the leadership fosters a positive safety culture and demonstrates a safety commitment throughout the organization;

(B) Whether those responsible for the implementation of the safety management systems possess appropriate resources, authorities, and accountability;

(C) Whether there are appropriate policies and processes for encouraging reporting and timely investigation of safety-related concerns from internal staff and members of the public;

(D) Whether appropriate capabilities and policies exist for monitoring the location and state of each participating vehicle;

(E) Whether appropriate processes exist to monitor safety performance indicators;

(F) Whether sufficient capabilities and policies exist for timely responding to a vehicle incident or immobilization and, if necessary, to clear a disabled vehicle from the roadway. This review must estimate a range of time for an expected response;

(G) Whether an appropriate plan exists for reaching timely decisions regarding future operations if an emergency arises; and

(H) Whether there are appropriate processes in place for how Essential System-Level Stakeholders will engage with each other regarding ongoing operations, including for carrying out:

(1) Software updates;

(2) Operational updates;

(3) Vehicle maintenance; and

(4) The collection and reporting of safety data.

(3) The following policies and capabilities:

(i) *Community Engagement*. Whether the policies for engaging with State and local authorities, local communities, and other entities affected by the subject vehicle's operation are sufficiently robust to identify the relevant stakeholders, provide them with appropriate information regarding operations, engage with them about concerns, and meaningfully address those concerns as needed;

(ii) *Training and Qualifications of Personnel.* Whether the personnel who are responsible for developing and maintaining the safety case or executing safety critical processes possess appropriate qualifications and training; and

(iii) *Data Capture.* Whether the data capture capabilities for the subject vehicle suffice to meet the data reporting requirements in subpart E of this part.

(d) *Independent Assessment Summary Report.* An application must include a report prepared by the independent assessor that summarizes the independent assessment. This summary report must be submitted in an application in its original form, and must include the following:

(1) An overview of any assessor processes in place to manage the assessment;

(2) Any access restrictions that limited the assessment;

(3) For the assessment requirements detailed in paragraph (c) of this section, an overview of:

(i) The assessor's findings and the basis for each finding;

(ii) Materials reviewed during the assessment;

(iii) The processes and format of reviews;

(iv) The methods used to identify potential inconsistencies, gaps, logical fallacies, or other concerns with the information provided for a review;

(v) Concerns identified during an assessment, including all recommendations made to the applicant(s) regarding identified concerns; and

(vi) The parameters under which the assessment and its conclusions are valid.

This overview should account for potential future changes to operations, system design, or processes for which the assessment would remain valid.

(e) *Context for the Assessment.* An application must include the following information regarding an assessment conducted for an application:

(1) *Applicant Response to Assessor Recommendations*. A summary report from an applicant that explains any measures taken in response to each assessor recommendation; and

(2) *Prior Assessments*. A description of any other independent assessment initiated for the topics covered in paragraph (c) of this section, which includes:

- (i) The identity of the entity conducting the assessment;
- (ii) The purpose of the assessment;
- (iii) If the assessment was completed, the conclusions of the assessment; and
- (iv) If the assessment was not completed, the reasons for its termination.

(f) *Assessor Independence*. (1) An assessment conducted under this section must not be performed by an entity with any of the following conflicts of interest:

(i) The assessor, including any personnel and contractors used by the assessor for review, is owned, operated, or controlled, directly or indirectly, by a party with a financial interest in a particular disposition of the AV STEP application;

(ii) The assessor, including any of its personnel and contractors used for a review, has any ownership or financial interest in an interested party to the AV STEP application; or

(iii) The fee structure for the assessment is dependent in any way on the outcome of the assessment or the outcome of the AV STEP application.

(2) An application must contain the following information regarding the independence of the assessor:

(i) A disclosure of the existence of any of any other circumstance that may affect the objectivity of an assessor, including:

(A) Whether the assessor, including any personnel and contractors used by the assessor for review, participated in the design, manufacture, or distribution of a product within the scope of the assessment; and

(B) Whether the assessor, including any personnel and contractors used by the assessor for review, were separately engaged in the development of a project or operation within the scope of an application.

(ii) For any circumstances disclosed pursuant to paragraph (f)(2)(i) of this section, a description of any measures put in place to uphold the independence of an assessment; and

(iii) A certification from the assessor that:

(A) The assessment represents the independent judgment of the assessor; and

(B) No conflict of interest in paragraph (f)(1) of this section exists or existed at any time during the assessment.

(g) *Assessor Qualifications and Resources.* (1) An assessment conducted under this section must be conducted by an entity with the following qualifications and capabilities:

(i) The assessor and its personnel have suitable education, technical expertise, experience, and appropriate accreditations to be qualified to carry out the assessment;

(ii) The assessor maintains appropriate policies and practices for conducting and organizing assessments; and

(iii) The assessor maintains facilities and resources appropriate for the types of assessments conducted.

(2) An application must contain supporting information regarding the assessor's qualifications, policies, and protocols for personnel involved in the assessment, including:

(i) Curriculum Vitae (CV) of key personnel that demonstrate their relevant education, training, and experience;

(ii) Any relevant accreditations of the assessor or key personnel conducting the assessment; and

(iii) A description of all policies or protocols that governed the conduct of assessor personnel during the assessment or the scope of the assessment.

§ 597.206 Customized terms

(a) An applicant must propose customized terms for consideration by the agency in setting the terms and conditions of participation.

(b) Each such proposed customized term shall include:

(1) Proposed metric(s) and threshold(s) to assist in the agency's evaluation of operation, performance, and safety of the subject vehicles, including an explanation and any context necessary to interpret the metric(s) and threshold(s); and

(2) A justification of the value and relevance of the proposed metric(s) and threshold(s).

§ 597.207 Data governance plan

(a) *In general.* An application must contain a data governance plan that outlines the processes for the integrity, security, and management of data generated by the subject vehicle that are relevant to AV STEP. The plan must include:

(1) A top-level accountability and management process for the data governance plan, including a description of the applicable positions and roles;

(2) Access control mechanisms to maintain data security and privacy;

(3) Processes for maintaining data quality and integrity;

(4) Monitoring and enforcement mechanisms for adherence to the plan;

(5) Procedures for identifying and responding to incidents that compromise data security or integrity;

(6) Risk management strategies for mitigating internal and external data-related risks, including cybersecurity; and

(7) A list of any published industry standards, guidance, or best practices with which the plan conforms.

(b) [Reserved]

§ 597.208 Confirmation of Reporting During Participation

(a) As part of an application, the applicant must confirm that if a request for participation is granted by NHTSA, the applicant is capable of carrying out all of the AV STEP reporting requirements set forth in this part for the program step at which the application requests participation.

(b) An application must contain the information detailed in § 597.206(b) for each reporting requirement in this part that is labeled as customized.

Subpart C—AV STEP Exemptions

§ 597.300 In general

(a) An applicant may request the following types of exemptions through AV STEP:

- (1) An AV STEP FMVSS Exemption; and
- (2) An AV STEP Make Inoperative Exemption.

(b) A subject vehicle's participation in AV STEP is a requirement for an AV STEP exemption of the subject vehicle to remain in effect.

§ 597.301 AV STEP FMVSS exemption

(a) An applicant for AV STEP participation may request an exemption for a subject vehicle from one or more Federal motor vehicle safety standards issued under part 571 of this chapter or bumper standards issued under part 581 of this chapter.

(b) An exemption issued under this section must be for:

- (i) Research;
- (ii) Investigations;
- (iii) Demonstrations;
- (iv) Training;
- (v) Competitive racing events; or

(vi) Show or Display.

§ 597.302 AV STEP Make inoperative exemption

An applicant may request an exemption from the “make inoperative” provision in 49 U.S.C. 30122(a).

§ 597.303 Restrictions on exemptions

(a) NHTSA may place such terms and conditions as it deems appropriate on AV STEP exemptions issued under this part. NHTSA will review the appropriateness of terms and conditions based on the information and review processes set forth in this part and issue a written Final Determination Letter under § 597.404 at the conclusion of the review.

(b) When an AV STEP exemption is granted under this part, a Final Determination Letter issued under § 597.404 will include the following terms regarding the number of subject vehicles receiving an exemption:

(1) A list of each vehicle receiving an exemption at the time a Final Determination Letter is issued. This list will designate each vehicle by its vehicle identification number or other unique identifier; and

(2) A maximum number of unique vehicles that may be exempted during the participation.

(c) The number of vehicles receiving an AV STEP exemption under paragraph (b)(1) of this section may not exceed the maximum number of unique vehicles that may be exempted under paragraph (b)(2) of this section.

(d) If the number of vehicles receiving an AV STEP exemption under paragraph (b)(1) of this section has not reached the maximum number of unique vehicles that may be exempted under paragraph (b)(2) of this section, the recipient of the AV STEP exemption may provide notice to NHTSA of an intent to apply the exemption to additional vehicles. Such notice shall:

(1) Identify each new vehicle by its vehicle identification number or other unique identifier;

(2) Specify the applicable Location Sheet(s) for the new vehicle(s);

(3) Include a statement from the applicant that:

(i) Compared to already exempted vehicles, the new vehicles are the same make and model, and all equipment is substantially similar; and

(ii) Acknowledges that the new vehicles would be subject to all applicable terms and conditions as the already exempted vehicles participating under the same Location Sheet(s).

(4) Unless NHTSA provides otherwise, vehicles properly identified in a notice that contains all of the required disclosures and statements in this subsection will automatically receive the applicable AV STEP exemption 30 calendar days after the submission of the notice. In such case, all terms and conditions applicable to already exempted vehicles participating under the same Location Sheet(s) will apply to vehicles that receive an exemption through a notice under this subsection.

(e) Any violation of a term or condition on an exemption imposed under this part shall be considered a violation of 49 U.S.C. 30112(a) or 49 U.S.C. 30122(b), as applicable, for which a civil penalty may be imposed. Such a violation may also act to void the authorization for the exemption under the AV STEP Concern Resolution process in § 597.600.

(f) The expiration of a vehicle's AV STEP exemption terminates any exemption to the restrictions in chapter 301 of title 49 of the United States Code, including the general prohibitions in 49 U.S.C. 30112(a), except to the extent that a vehicle:

(1) Is the subject of other exemptions under 49 CFR chapter V , which remain in place;

(2) Receives subsequent exemptions under 49 CFR chapter V ; or

(3) Was imported into the United States after receiving the AV STEP exemption, in which case all original restrictions on the vehicle in chapter 301 of title 49 of the United States Code continue to apply, except that, unless NHTSA provides otherwise, the vehicle may remain in the United States as long as it does not operate on public streets, roads, and highways and is not otherwise introduced in interstate commerce.

Subpart D—Application Review Process

§ 597.400 In general

(a) NHTSA will conduct a case-by-case review of each application under the procedures in this subpart and based on the totality of the information available to NHTSA.

(b) Notwithstanding any other procedure described in this subpart, NHTSA may request additional information from an applicant at any time during a review of an application.

(c) An applicant may amend or withdraw an application at any time before a Final Determination is issued under § 597.404. The effect of an amendment on the phase of review will depend on the nature and extent of the amended material.

§ 597.401 Review Phase 1: Initial Review

Phase 1 commences upon NHTSA's receipt of an application. During Phase 1, NHTSA will issue each applicant a notice of receipt, which confirms receipt of the application and identifies a NHTSA point of contact for the review, and will undertake an initial review of all application materials. As part of this review, NHTSA will review the proposed customized terms.

§ 597.402 Review Phase 2: Follow-up Review

Phase 2 commences upon NHTSA's issuance of a Follow Up Index to each applicant, which identifies items for which NHTSA requests additional information. NHTSA may subsequently request additional information as needed.

§ 597.403 Review Phase 3: Preliminary Determination

(a) Phase 3 commences upon NHTSA's issuance of a Preliminary Determination to each applicant, which contains NHTSA's proposed decision on an application, including, if applicable, the full set of terms and conditions proposed to govern AV STEP participation.

(b) NHTSA will determine terms and conditions, including those associated with proposed customized terms. In determining terms and conditions, NHTSA will:

(1) With respect to proposed customized terms, evaluate the extent to which they fulfill the applicable requirement and their anticipated value for overseeing the subject vehicles; and

(2) With respect to all terms and conditions, evaluate the extent to which any required reports may further NHTSA's understanding of the subject vehicle's performance, operations, or ADS; the feasibility of analyzing any reported information; and the extent to which the terms and conditions are consistent with motor vehicle safety and further the purposes of 49 U.S.C. 30101.

(c) A Preliminary Determination is not a final decision on an application and does not confer approval to participate under its proposed terms.

(d) On the tenth business day after issuing a Preliminary Determination, NHTSA will issue a Final Determination under § 597.404, which contains the same decision as proposed in the Preliminary Determination, including any terms and conditions, unless before a Final Determination is issued:

(1) NHTSA revokes the Preliminary Determination;

(2) An applicant requests, in writing, additional time or changes to the Preliminary Determination, pursuant to paragraphs (d) or (e) of this section;

(3) All applicants confirm, in writing, acceptability of the Preliminary Determination, in which case NHTSA may issue a Final Determination as soon as practicable; or

(4) The application is withdrawn or amended.

(e) Any applicant may request, in writing, additional time before a Preliminary Determination becomes final, stating the reasons for the request. NHTSA shall promptly respond in writing, granting or denying the request, and provide the reason for its decision.

(f) Any applicant may request, in writing, changes to the Preliminary Determination. Such a request must be submitted before a Preliminary Determination becomes final, identify each term or condition of the Preliminary Determination for which a change is requested, describe the nature of the requested change; and briefly explain the basis for each requested change.

(g) If, under paragraphs (c)(1) or (c)(2) of this section, a Preliminary Determination does not become final, NHTSA will reissue a Preliminary Determination once any remaining issues are addressed. The procedures in this section apply to both an initial Preliminary Determination and any reissued Preliminary Determination.

§ 597.404 Final Determination

(a) NHTSA may issue a Final Determination Letter at any point more than 60 days after issuance of a Preliminary Determination on the same application, unless an extension for longer than 60 days has been granted under § 597.403(d).

(b) A written Final Determination Letter will convey NHTSA's final decision to all applicants. The Final Determination Letter grants or denies a request to participate in AV STEP, including any request for an AV STEP Exemption.

(c) A Final Determination Letter granting a request to participate contains the full set of terms and conditions governing participation, including any metrics or reporting

thresholds associated with customized terms. These terms and conditions may impose additional participation requirements or limitations beyond those set forth in this part.

Subpart E—Reporting by participants

§ 597.500 General reporting requirements

(a) *In general.* Participants must comply with the reporting requirements of this subpart and any reporting requirement in a term or condition of a Final Determination Letter issued under § 597.404. Unless otherwise provided, a report under this subpart does not satisfy any other reporting requirement and compliance with a reporting requirement outside of this subpart does not satisfy a reporting requirement of this subpart.

(b) *Timing.* All reports submitted under this section must be submitted on a quarterly basis, for the duration of participation. Each quarterly report is due on the final business day of the first month that follows the reporting period.

(c) *Reporting requirements for all participants.* All AV STEP participants must report the following information for operations on public roads during each reporting period, segmented by Location Sheet and covering all subject vehicles participating under the Location Sheet during the reporting period:

(1) The total number of subject vehicles that operated under the Location Sheet during the reporting period;

(2) The vehicle identification number or other unique vehicle identifier of each vehicle reported under paragraph (c)(1) of this section;

(3) Each zip code in which a subject vehicle reported under paragraph (c)(1) of this section operated with the ADS engaged on a public road;

(4) Aggregate vehicle miles traveled with the ADS engaged, segmented by:

(i) Each zip code reported under paragraph (c)(3) of this section;

(ii) The hour of the day during which the vehicle miles were traveled; and

(iii) The presence of onboard fallback personnel.

(5) What percentage the participation numbers in paragraph (c)(4)(i) of this section comprise of each of the three categories of operations in paragraph (c)(4)(ii) of this section.

(i) *Participation numbers.* (A) The number of subject vehicles participating under the Location Sheet, reported under paragraph (c)(1) of this section; and

(B) The total number of vehicle miles traveled with the ADS engaged on public roads under the Location Sheet.

(ii) *Categories of Operations.* Each of the following ADS operations, regardless of AV STEP participation status, if they involve the same combination of vehicle manufacturer, ADS developer, and fleet operator:

(A) Operations on public roads in the United States;

(B) Operations on public roads in an overlapping geographical area of the Location Sheet; and

(C) Operations on public roads in the United States that involve the same vehicle model as the subject vehicle.

(6) A description of each vehicle recovery event that occurred for a vehicle reported under paragraph (c)(1) of this section. This description must include:

(i) The location of the event;

(ii) The duration of the vehicle's immobilization prior to its recovery;

(iii) The reason a vehicle recovery was required; and

(iv) A cross-reference to any other report under this section associated with the reported recovery.

(7) A description of any contact event involving a subject vehicle that does not meet the reporting criteria under § 597.501(b);

(8) The total number of instances of rate of change in vehicle acceleration (including deceleration) exceeding a threshold associated with a customized term;

(9) The total number of instances of vehicle acceleration or deceleration exceeding a threshold associated with a customized term; and

(10) The total number of each of the following types of interruptions to the ADS, if unplanned:

(i) Initiation of a maneuver to put the subject vehicle in a minimal risk condition by:

(A) The ADS;

(B) An occupant of the subject vehicle; or

(C) Remote personnel.

(ii) DDT takeovers, other than those reported under paragraph (c)(10)(i) of this section;

(iii) Instances in which any direct control authority of the vehicle is exercised remotely, other than those reported under paragraphs (c)(10)(i) or (c)(10)(ii) of this section;

(iv) Instances in which onboard vehicle assistance alters the ADS' operation;

(v) Instances in which remote vehicle assistance alters the ADS' operation; and

(vi) Any other occurrence that significantly alters the intended operation of the ADS.

(d) *Step 1 reporting requirements.* In addition to the requirements in paragraph (c) of this section, participants at Step 1 must report for each reporting period, segmented by Location Sheet and covering all subject vehicles participating under the Location Sheet during the reporting period, safety metric(s) for customized terms, to gauge the performance of fallback personnel.

(e) *Step 2 reporting requirements.* In addition to the requirements in paragraph (c) of this section, participants at Step 2 must report the following information for each reporting period, segmented by Location Sheet and covering all subject vehicles participating under the Location Sheet during the reporting period:

(1) The duration, location, and cause of each minimal risk condition achieved on a public road, and the VIN of the vehicle involved;

(2) Performance metrics for customized terms for the following:

(i) The safety performance of the ADS, including:

(A) Adherence to expected driving behavior; and

(B) For scenarios in which there is an increased likelihood of a crash.

(ii) The extent to which the system-level performance of the ADS adheres to design assumptions or expectations; and

(iii) Adherence to internal safety processes during the subject vehicle's development or operations.

§ 597.501 Event-triggered reporting requirements

(a) *In general.* All AV STEP participants must report events to NHTSA pursuant to the requirements in this section. These reports must be submitted on a rolling basis, as determined based on the time of the event's occurrence.

(b) *Crash reporting.* Report each crash that occurs involving a subject vehicle. For this requirement, a crash is any physical impact between a subject vehicle and another road user (such as a vehicle, pedestrian, or cyclist) or property that results or allegedly results in any property damage, injury, or fatality. A subject vehicle is involved in a crash if it physically impacts another road user or if it contributes or is alleged to contribute (by steering, braking, acceleration, or other operational performance) to another vehicle's physical impact with another road user or property involved in that crash. Each report must:

(1) Contain the information for a crash report specified in a term of a Final Determination Letter;

(2) Identify whether:

(i) the ADS was active at any time during the 30 seconds immediately prior to the commencement of the crash through the conclusion of the crash event; or

(ii) An attempt was made to engage the ADS or to transfer partial or full control to the ADS, even if the attempt is rejected, aborted, or underway during the 30 seconds immediately prior to the commencement of the crash through the conclusion of the crash event.

(3) Be submitted to NHTSA within the following timeframes after any Essential System-Level Stakeholder receives notice of the crash:

(i) One calendar day, if the crash results in a fatality or any individual being transported to a hospital for medical treatment, or involves a vulnerable road user;

(ii) Five calendar days, if the crash results in a vehicle tow-away or an air bag deployment but does not result in a fatality or any individual being transported to a hospital for medical treatment and does not involve a vulnerable road user; or

(iii) For each crash that is not reportable under subsections (b)(3)(i) or (b)(3)(ii) of this section, by the fifteenth calendar day of the month following the calendar month in which notice of the crash was received.

(c) *Crash video reporting.* For any crash requiring a report within one calendar day under paragraph (b)(3)(i) of this section, an AV STEP participant must also submit all video footage in the possession of any Essential System-Level Stakeholder that depicts any aspect of the crash during the 30 seconds immediately prior to the commencement of the crash through the conclusion of the crash event. Video footage must be submitted within two business days of the date the Essential System-Level Stakeholder obtains possession of the video.

(d) *Crash report updates.* A participant must submit updates to a crash report within the following timeframes:

(1) For any report required under paragraph (b)(3)(i) of this section, on the tenth calendar day following the initial report;

(2) For any report required under paragraph (b) of this section, on the fifteenth calendar day of the month following any calendar month in which an Essential System-Level Stakeholder receives notice of any material new or materially different information about the crash; and

(3) As otherwise requested by NHTSA.

(e) *Citable offense reporting.* Report known citable offenses involving a subject vehicle. For this requirement, a citable offense includes any ticketed traffic safety violation and non-ticketed traffic safety violations. Each report must be submitted to NHTSA within 5 business days after any Essential System-Level Stakeholder's notice of the incident and identify:

(1) The date and location of the offense, and whether the offense was ticketed or non-ticketed;

(2) The traffic safety violation in question;

(3) The applicable Location Sheet;

(4) Whether:

(i) The ADS was active at any time during the 30 seconds immediately prior to the commencement of the maneuver that resulted in the citable offense; or

(ii) An attempt was made to engage the ADS or to transfer partial or full control to the ADS, even the attempt is rejected, aborted, or underway during the 30 seconds immediately prior to the commencement of the maneuver that resulted in the citable offense.

(5) In the case of a Step 2 participant, whether the operation of the subject vehicle involved fallback personnel at the time of the offense.

(f) *Avoiding duplicative reporting.* A participant required to report an incident pursuant to any other NHTSA requirement outside of this part will be deemed to comply with the reporting requirement for the same incident under this section, provided:

(1) The participant timely satisfies the other reporting requirement, including any requirements to update an initial report;

(2) The other report covers all of the information required by this section; and

(3) Within the timeframe in which an AV STEP crash report would otherwise be required, the participant submits to NHTSA through AV STEP a notice of the other report that:

(i) Identifies the report number for the other report; and

(ii) Identifies the AV STEP Location Sheet with which the incident is associated.

(g) *Reporting use of fallback personnel (Step 2).* A Step 2 participant must report changes in the extent to which fallback personnel are used in its operations. This report must:

(1) Identify the Location Sheet(s) to which the report applies;

(2) Identify the updated percentage of subject vehicles using fallback personnel under the Location Sheet; and

(3) Be submitted to NHTSA in writing by the time the change occurs.

§ 597.502 Changes to an operation

(a) A participant must report to NHTSA any prospective change to its operations that exceeds existing thresholds for customized terms. In proposing new thresholds for such customized terms, an applicant must address the extent to which a prospective change may alter information submitted in an application or reviewed by an independent assessor under § 597.205.

(b) A participant's report of a prospective change must:

(1) Identify the Location Sheet(s) to which the prospective change would apply;

(2) Describe the prospective change;

(3) Identify the date on which the change is proposed to occur; and

(4) Contain an independent assessor's position regarding whether the prospective change would materially affect a prior independent assessment of the safety case conducted under § 597.205(c)(2).

(c) Any proposed change considered material under paragraph (b)(4) of this section may occur only upon written approval from NHTSA. Before determining whether to approve the change, NHTSA may require an updated independent assessment of any aspect of the safety case reviewed in § 597.205(c)(2) that would be materially affected by the proposed change.

(d) Prospective changes considered immaterial under paragraph (b)(4) of this section must be reported to NHTSA at least seven calendar days before the change takes effect.

(e) In addition to the requirements of this section, a participant must request and receive an amendment under § 597.601 for any change that modifies a term or a condition of a Final Determination Letter.

Subpart F—Procedures During Participation

§ 597.600 Concern resolution process

(a) The procedures in this subpart govern the review of how concerns of potential issues, as defined in paragraphs (b)(3) and (b)(4) of this section, may affect a party's participation in AV STEP. Nothing in this part is intended to limit or otherwise affect NHTSA's authority under chapter 301 of title 49 of the United States Code, including but not limited to the authority to inspect, investigate, or otherwise take enforcement action, as appropriate. In addition, nothing in this subpart is intended to limit or otherwise affect

a party's obligations under chapter 301 of title 49 of the United States Code, including but not limited to the requirements for notification and remedy of defects related to motor vehicle safety and noncompliance set forth in subchapter II of chapter 301 of title 49 of the United States Code.

(b) NHTSA may modify any term or condition of participation, including suspending or revoking permission to participate in AV STEP, in accordance with the following procedures:

(1) NHTSA will undertake a preliminary review of concerns that arise during participation. NHTSA may engage with the participant during this review.

(2) If a concern persists following a preliminary review, NHTSA will provide each applicant with a written notice of the concern that:

(i) Identifies whether the concern is an Apparent Issue or a Severe Apparent Issue, as described in paragraphs (b)(3) and (b)(4) of this section;

(ii) Describes the concern with reasonable particularity; and

(iii) Identifies the date on which a change in terms or conditions, including a suspension or revocation, is scheduled to take effect.

(3) An Apparent Issue consists of any circumstance that calls into question the safety of an operation, compliance with an AV STEP responsibility, or the reliability of information provided by a participant under AV STEP. The change in terms and conditions will take effect 10 business days after issuance of notice of an Apparent Issue.

(4) A Severe Apparent Issue consists of an Apparent Issue where the facts and circumstances signify an elevated concern that undermines confidence in the safety of continued operations or the participant's ability to otherwise comply with AV STEP requirements. NHTSA will determine the appropriate timing for a change in terms or conditions due to a Severe Apparent Issue on a case-by-case basis, including the imposition of a suspension or revocation. If NHTSA deems it appropriate, a change in

terms or conditions due to a Severe Apparent Issue may take effect as early as the time of issuance.

(5) NHTSA may change terms and conditions imposed under paragraphs (b)(3) or (b)(4) of this section, as appropriate.

(6) After a term or condition has been modified under this section, NHTSA will engage with each affected participant to determine the possibility and conditions of a reinstatement. Reinstatements will be considered on a case-by-case basis depending on the nature of the concern and the appropriateness and effectiveness of any mitigation of the concern.

§ 597.601 Amendment process

(a) *In general.* Terms and condition in a Final Determination Letter may be changed only by issuance of an Amended Final Determination Letter.

(b) *Amendment of Final Determination Letter by NHTSA.* NHTSA may modify any term or condition of a Final Determination Letter at any time upon the agreement of all participants or pursuant to the amendment or concern resolution processes set forth in this part.

(c) *Participant request to amend a Final Determination Letter.* A participant may submit a written request to NHTSA to amend a Final Determination Letter, which must include:

(1) A description of each requested amendment;

(2) A description of each prospective change to system design, processes, or operations that relates to the requested amendment;

(3) An updated response to each application requirement in subpart B of this part that would be affected by the prospective change(s), apart from § 597.205; and

(d) NHTSA will review each request from a participant to amend a Final Determination Letter on a case-by-case basis.

(e) *Changes requiring a new application.* The following changes require a new application to participate in AV STEP, rather than an amendment request to an existing approval to participate:

(1) Any change to program step;

(2) The removal, replacement, or addition of an Essential System-Level Stakeholder; or

(3) For participants with an AV STEP Exemption, a change to any of the following Vehicle Exemption Information required under § 597.202:

(i) The type of exemption requested under § 597.202(a)(1);

(ii) The subject vehicle for which an exemption is requested, other than as provided under § 597.303(d);

(iii) For an AV STEP FMVSS Exemption, each requirement of an FMVSS or bumper standard for which an exemption is requested under § 597.202(b)(1);

(iv) For an AV STEP Make Inoperative Exemption, the device or element requested to be rendered inoperative under § 597.202(c)(1); or

(v) For an AV STEP Make Inoperative Exemption, each requirement of an FMVSS affected by the requested modification under § 597.202(c)(2).

(f) *Changes not requiring an amendment.* No amendment is needed for the following changes:

(1) Changes to the primary and secondary contact information field of the Operational Baseline Definition required under § 597.201. A participant may change this information at any time by providing written notice to NHTSA;

(2) Changes to an existing Location Sheet required under § 597.203, as long as the changes:

(i) Are submitted to NHTSA through an updated Location Sheet before the change takes effect; and

(ii) Are limited to the Location Limitation of § 597.203(b).

(3) The addition of a new Location Sheet required under § 597.203, as long as:

(i) The new Location Sheet is submitted to NHTSA before operations under the new Location Sheet commence;

(ii) The new Location Sheet does not require a report under § 597.502; and

(iii) All of the following fields under § 597.203 for the new Location Sheet are the same as those in an existing Location Sheet for the participation:

(A) Maximum number of vehicles requested;

(B) Public ridership;

(C) Intended use;

(D) Operational design domain elements other than location; and

(E) Vehicle equipment.

Subpart G—Public reporting requirements

§ 597.700 In general

(a) The public availability of the information described in this subpart is a condition of participation in AV STEP. NHTSA will publish the information described in this subpart for each application and participation and update it on an ongoing basis.

(b) The information published pursuant to this subpart reflects the information as reported to NHTSA by an applicant or participant.

§ 597.701 Information for Publication

(a) *Application Information.* NHTSA will publish:

(1) The following information regarding each application:

(i) The date an application was received;

(ii) The status of the application, including the phase and history of the Application Review Process as described in subpart D of this part;

(iii) Whether the application requests an AV STEP exemption and, if so:

(A) The type of exemption requested;

(B) Each requirement of an FMVSS or bumper standard affected by the exemption;

(C) A summary of risk mitigations, as required under § 597.202(a)(9); and

(D) For an FMVSS Exemption, the purpose requested for the exemption.

(iv) After review of an application concludes, the Final Determination Letter.

(2) The following information from the Operational Baseline section of an application, as required by § 597.201:

(i) The name of each applicant;

(ii) The name of each Essential System-Level Stakeholder;

(iii) The subject vehicle make, model, and model year;

(iv) Unloaded vehicle weight;

(v) Gross Vehicle Weight Rating;

(vi) Claimed vehicle class;

(vii) FMVSS certifying entity, if applicable;

(viii) Whether an application includes the use of onboard fallback personnel and the number of such personnel per subject vehicle;

(ix) Whether an application includes the use of remote driving and, if so, a summary of limitations in place on the use of remote driving, as required under § 597.201(h)(3);

(x) Whether an application includes the use of any remote fallback personnel who will not utilize remote driving; and

(xi) Whether an application includes use of any remote or onboard vehicle assistance.

(xii) Whether the subject vehicle(s) contain any features or design modifications that are intended to promote the safe accommodation of passengers with disabilities and, if so, a summary of the features or design modifications.

(3) The application's response to each of the following fields in each Location Sheet section of an application, as required by § 597.203:

- (i) Location Name;
- (ii) Location Limitation;
- (iii) Maximum Number of Vehicles Requested;
- (iv) Legal Speed Limits;
- (v) Vehicle Speeds;
- (vi) Public Ridership;
- (vii) Intended Use; and
- (viii) A summary of the operational design domain requested in an application.

(4) A list of each standard, best practice, or guidance with which an independent assessment has determined full conformance in response to the requirements in § 597.205.

(b) *Participation Information*. NHTSA will publish:

(1) The following information regarding the status of each participation:

- (i) The date participation commenced;
- (ii) The current status of each Location Sheet in the participation, indicating

whether subject vehicle operations are:

(A) *Active*. This status applies if any vehicle miles traveled were reported during the preceding reporting period under § 597.500(c)(5) of this part;

(B) *Inactive*. This status applies if no vehicle miles traveled were reported during the preceding reporting period under § 597.500(c)(5) of this part or if a participant has otherwise notified NHTSA of a temporary stoppage of operations;

(C) *Suspended*. This status applies if any subject vehicles are subject to a suspension under § 597.600 of this part; or

(D) *Concluded*. This status applies if the term limit for participation has expired or if all participants have otherwise notified NHTSA of the conclusion of the operations.

(iii) The date participation is scheduled to conclude or concluded, as applicable; and

(iv) Any Amended Final Determination Letter, if applicable.

(2) The following information from responses to the reporting requirements in § 597.500:

(i) The number of subject vehicles operated on public roads during the reporting period for each Location Sheet;

(ii) A list of zip codes in which subject vehicles operated on public roads during the reporting period; and

(iii) The number and location of vehicle recovery events reported during the reporting period.

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