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**DEPARTMENT OF TRANSPORTATION**

**National Highway Traffic Safety Administration**

**49 CFR Part 555, 571 and 591**

**[Docket No. NHTSA-2018-0092]**

**RIN 2127-AL99**

**Pilot Program for Collaborative Research  
on Motor Vehicles with High or Full Driving Automation**

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

**ACTION:** Advance notice of proposed rulemaking (ANPRM).

**SUMMARY:** NHTSA is seeking public comment on matters related to the near-term and long-term challenges of Automated Driving Systems (ADS) testing, development and eventual deployment. ADS testing and development are already underway in several areas of the United States. As technology evolves and in anticipation of requests to test and further develop high and full ADS, including those in vehicles without traditional controls necessary for a human driver, NHTSA is issuing this ANPRM to obtain public comments on the factors and structure that are appropriate for the Agency to consider in designing a national pilot program that will enable it to facilitate, monitor and learn from the testing and development of the emerging advanced vehicle safety technologies and to assure the safety of those activities.

The Agency seeks these comments from interested stakeholders, including State and local authorities, companies, researchers, safety advocates and other experts interested in, engaged in or planning to become engaged in the design, development, testing, and deployment of motor vehicles with high and full driving automation. The Agency also seeks comments from road users, including vehicle drivers and passengers, cyclists and pedestrians.

More specifically, NHTSA requests comments on the following topics related to ADS safety research. First, NHTSA seeks comments on potential factors that should be considered in designing a pilot program for the safe on-road testing and deployment of vehicles with high and full driving automation and associated equipment. Second, the Agency seeks comments on the use of existing statutory provisions and regulations to allow for the implementation of such a pilot program. Third, the Agency seeks comment on any additional elements of regulatory relief (e.g., exceptions, exemptions, or other potential measures) that might be needed to facilitate the efforts to participate in the pilot program and conduct on-road research and testing involving these vehicles, especially those that lack controls for human drivers and thus may not comply with all existing safety standards. Fourth, with respect to the granting of exemptions to enable companies to participate in such a program, the Agency seeks comments on the nature of the safety and any other analyses that it should perform in assessing the merits of individual exemption petitions and on the types of terms and conditions it should consider attaching to exemptions to protect public safety and facilitate the Agency's monitoring and learning from the testing and deployment, while preserving the freedom to innovate.

By developing a robust record of the answers to these important questions, NHTSA expects to learn more about the progress of ADS and the ways in which the Agency can facilitate

safe and efficient ADS testing and deployment for the benefit of individual consumers and the traveling public as a whole.

**DATES:** Comments on this notice are due no later than [INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Comments must be identified by Docket Number NHTSA-2018-0092 and may be submitted using any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the online instructions for submitting comments.
- *Mail:* Docket Management Facility, U.S. Department of Transportation, Room W12–140, 1200 New Jersey Avenue, S.E., Washington, DC 20590–0001.
- *Hand Delivery or Courier:* West Building, Ground Floor, Room W12–140, 1200 New Jersey Avenue, S.E., Washington, DC, between 9 a.m. and 5 p.m. E.T., Monday through Friday, except Federal holidays.
- Fax: 1–202–493–2251.

Regardless of how you submit your comments, you must include the docket number identified in the heading of this notice. Note that all comments received, including any personal information provided, will be posted without change to <http://www.regulations.gov>. Please see the “Privacy Act” heading below.

You may call the Docket Management Facility at 202-366-9826.

*Docket:* For access to the docket to read background documents or comments received, go to <http://www.regulations.gov> or the street address listed above. We will continue to file relevant information in the Docket as it becomes available.

*Privacy Act:* In accordance with [5 U.S.C. 553\(c\)](#), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, to [www.regulations.gov](http://www.regulations.gov), as described in the system of records notice, DOT/ALL-14 FDMS, accessible through [www.dot.gov/privacy](http://www.dot.gov/privacy). In order to facilitate comment tracking and response, we encourage commenters to provide their name, or the name of their organization; however, submission of names is completely optional. Whether or not commenters identify themselves, all timely comments will be fully considered. If you wish to provide comments containing proprietary or confidential information, please contact the agency for alternate submission instructions.

**FOR FURTHER INFORMATION CONTACT:**

For research and pilot program issues: Dee Williams, Office of Vehicle Safety Research, (202) 366-8537, [Dee.Williams@dot.gov](mailto:Dee.Williams@dot.gov), National Highway Traffic Safety Administration, 1200 New Jersey Avenue, S.E., Washington, DC 20590-0001.

For legal issues: Stephen Wood, Assistant Chief Counsel, Vehicle Rulemaking and Harmonization, Office of Chief Counsel, 202-366-2992, email [steve.wood@dot.gov](mailto:steve.wood@dot.gov), National Highway Traffic Safety Administration, 1200 New Jersey Avenue, S.E., Washington, DC 20590-0001.

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### **I. Background and Overview**

As the Federal agency charged with improving motor vehicle safety through reducing crashes, and preventing deaths and injuries from crashes, NHTSA is encouraged by the new ADS vehicle technologies being developed and implemented by automobile manufacturers and other innovators. NHTSA anticipates that automation can serve a vital safety role on our Nation's roads, particularly since human error and choice are currently the critical factors behind the occurrence of a large number of crashes. ADS vehicle technologies possess the potential to save thousands of lives, as well as reduce congestion, enhance mobility, and improve productivity.

To aid in determining how best to foster the safe development and implementation of ADS vehicle technologies on our Nation's roadways, NHTSA believes it is prudent to facilitate the conducting of research and gathering of data about these new and developing technologies in their various iterations and configurations. Thus, NHTSA is seeking comment on creating a national ADS vehicle pilot program for the testing of vehicles and associated equipment and to gather data from such testing, including data generated in real-world scenarios. NHTSA anticipates that this data will provide information needed to help realize the promises and meet the challenges of ADS vehicle development and deployment.

The purpose of this ANPRM is to obtain public views and suggestions for steps that NHTSA can take to facilitate, monitor and learn from on-road research through the safe testing

and eventual deployment of high and full automated vehicles, i.e., Level 4 and 5<sup>1</sup> ADS vehicles, primarily through a pilot program.

To explain these levels of automation and put them in context with the other levels defined by SAE (Society of Automotive Engineers) International in Table 1 of SAE J3016,<sup>2</sup> the Agency provides the following simplified description of the full array of levels:

<b>Level of Automation</b>	<b>What does the vehicle do, what does the human driver/occupant do, and when and where do they do it?</b>
Level 0	<u>No Automation of driving task</u> : While the vehicle may provide warnings (e.g., forward collision warning and blind-spot warning), the human driver must in all conditions and at all times perform all aspects of the driving task like monitoring the driving environment, steering, braking and accelerating.
Level 1	<u>Driver Assistance</u> : The vehicle may have some features that can automatically <i>assist</i> the human driver with either steering (e.g., lane keeping assist) or braking/accelerating (e.g., adaptive cruise control), but not with both simultaneously. The human driver performs all other aspects of the driving task like monitoring the driving environment, steering, braking and accelerating.
Level 2	<u>Partial Driving Automation</u> : The vehicle has combined automated functions, like speed control and steering simultaneously, but the driver must remain engaged with the driving task by controlling the other elements of driving, monitoring the driving

<sup>1</sup> See table below for explanations of these terms.

<sup>2</sup> SAE [J3016\\_201806](#) Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles.

	environment at all times, and being ready to take over immediately if conditions exceed the capabilities of the vehicle's automated functions.
Level 3	<u>Conditional Driving Automation</u> : The vehicle can perform most aspects of the driving task, including monitoring the driving environment and making decisions, under some conditions (e.g., speeds under a set threshold). The presence of a human driver is still a necessity, but is not required to monitor the driving environment when the ADS is engaged and operating in those conditions. The driver must always be ready to intervene and take control of the vehicle when the ADS gives the driver notice to do so or the vehicle experiences a driving-task-related failure.
Level 4	<u>High Driving Automation</u> : The vehicle can perform most aspects of the driving task under certain conditions without the involvement of or oversight by a human driver. Outside of those conditions, the vehicle will enter a safe fallback mode if a human occupant does not resume control. The vehicle may or may not be designed to allow a human occupant to assume control.
Level 5	<u>Full Driving Automation</u> : The vehicle can perform all aspects of the driving task at all times and under all conditions. While the human occupants need to set the trip destination and start the ADS, they need never be involved in any aspects of the driving task. The vehicle may or may not be designed to allow a human occupant to assume control.

This ANPRM is the latest effort by DOT and NHTSA to address issues relating to the testing and deployment of vehicles with high and full driving automation. *Automated Driving Systems 2.0: A Vision for Safety* (“*A Vision for Safety*”), issued by DOT in September 2017, included guidance to manufacturers and other entities seeking to document for themselves how they are addressing safety. It further outlined a summary document that they could use to



disclose their voluntary safety self-assessments to the public in order to describe to the public, to stakeholders, and to Federal, State and local governments the manufacturers' approach to assuring safe testing and development.

In a separate notice published in January 2018,<sup>3</sup> the Agency took the next step by publishing a request for public comments to identify any regulatory barriers in the existing Federal motor vehicle safety standards (FMVSS) to the testing, compliance certification and compliance verification of automated motor vehicles. In that notice, NHTSA focused primarily, but not exclusively, on vehicles with certain unconventional interior designs, such as those that lack controls for a human driver; e.g., steering wheel, brake pedal or accelerator pedal. The absence of manual driving controls, and thus of a human driver, poses potential barriers to testing, compliance certification and compliance verification. Further, the compliance test procedures of some FMVSS depend on the presence of such things as a human test driver who can follow test instructions or a steering wheel that can be used by an automated steering mechanism. In addressing all of these issues, the Agency's focus will be on ensuring the maintenance of currently required levels of safety performance.

Today's ANPRM focuses on the related question of how the Agency can best encourage and facilitate the necessary research to allow for the development and establishment, as needed, of standards for ADS vehicles, including vehicles that have unconventional designs, can operate in "dual modes" (one of which may involve unconventional designs), and can comply with the existing FMVSS.

NHTSA believes that in order to anticipate, identify and address potential safety concerns and realize the full promise of ADS, it is vital that the developers of vehicles with high and full

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<sup>3</sup> 83 Fed. Reg. 2607, January 18, 2018.

driving automation have broad opportunities to gain practical, real world experience, in locations of their choosing, with different approaches to, and combinations of, hardware and software in order to learn which approaches and combinations offer the greatest levels of safety and reliability. Simulated testing, or testing in laboratory or other controlled settings is very beneficial, but NHTSA also recognizes the importance of preparing for a world in which ADS vehicles operate on a broad scale on our Nation's roads under a vast array of complex and changing road, traffic and weather conditions. ADS must be able to operate in and adapt to such conditions, just as human drivers must when driving their vehicles today. On-the-road testing and evaluation of ADS vehicles will be critical to the successful development and integration of these vehicles into the roads and highways throughout the country.

Based on the foregoing, NHTSA is considering the establishment of a national pilot research program. The Agency emphasizes that it has not made any decisions whether to establish a pilot program or how to structure one. For this reason, it cannot currently estimate the timing, cost or duration of a pilot program. After analyzing the public comments on this ANPRM and other available information, NHTSA will further assess the prospects for implementing a viable and effective program and identify the best approach to structuring one.

#### **I. NHTSA's Safety Mission, Authority, and Programmatic Needs with Respect to ADS**

NHTSA, an operating administration within DOT, was established, as a successor to the National Highway Safety Bureau, by the Highway Safety Act of 1970 to carry out safety programs under the National Traffic and Motor Vehicle Safety Act of 1966 ("the Act") and the Highway Safety Act of 1966. The Act directs the Department of Transportation "(1) to prescribe

motor vehicle safety standards for motor vehicles and motor vehicle equipment in interstate commerce; and (2) to carry out needed safety research and development.”<sup>4</sup>

Its vehicle safety mission is to save lives and prevent injuries due to road traffic crashes through a variety of means. More specifically, the Agency carries out its vehicle safety mission by:

- Collecting real world data on the safety of motor vehicles and items of motor vehicle equipment;
- Conducting safety research;
- Setting FMVSS for new motor vehicles and motor vehicle equipment (to which manufacturers must certify compliance before sale or introduction into interstate commerce).
- Enforcing compliance with the standards;
- Investigating and overseeing the recall and remedy of noncompliant products and products containing safety-related defects;
- Communicating with and educating the public about motor vehicle safety issues through comparative performance ratings and other means; and
- Issuing guidance for vehicle and equipment manufacturers to follow on important issues affecting safety.

In addition, NHTSA works with State highway safety agencies and other partners under the Highway Safety Act to encourage the safe behavior of drivers, occupants, cyclists, and pedestrians across the country.

#### **A. NHTSA has authority over all aspects of ADS design**

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<sup>4</sup> 49 U.S.C. § 30101.

NHTSA's authority over ADS is broad and clear. The Act obligates NHTSA to regulate the safety of motor vehicles and motor vehicle equipment.<sup>5</sup> "Motor vehicle equipment" is defined broadly enough to include both tangible components, e.g., hardware, and intangible components, e.g., software, of modern electronic motor vehicle systems.<sup>6</sup> Both types of components, working in combination, are indispensable to the functioning of modern vehicle electronic systems and critical to the future safety of the motor vehicle occupants, cyclists and pedestrians.<sup>7</sup> Indeed, without their software components, these electronic systems would not be systems; instead, they would be nonfunctional assemblages of hardware components. Hardware and software components are also at the heart of each building block technology for vehicle automation and are indispensable to the combining of the technologies in ADS vehicles.

As technology has evolved, NHTSA has responded to Congressional mandates to use its authority to specify how and when the hardware components of electronic systems such as air bags, anti-lock braking systems and electronic stability control systems must activate and perform. This approach gives manufacturers freedom to develop the software components needed to control the performance of each system's hardware components. NHTSA has also repeatedly exercised its authority under the Act when the software and/or hardware components

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<sup>5</sup> 49 U.S.C. § 30111 (a).

<sup>6</sup> 49 U.S.C. § 30102 (a)(6) and (7).

<sup>7</sup> Transportation Research Board Special Report 308, *The Safety Promise and Challenge of Automotive Electronics: Insights from Unintended Acceleration*, 2012. The Board is part of the National Research Council which is, in turn, part of the National Academies. This report describes the challenges presented by electronic systems and what the report terms their "hardware components" and "software components." (P. 87). It is available on a number of online sites, including <http://onlinepubs.trb.org/onlinepubs/sr/sr308.pdf> and <https://www.nap.edu/catalog/13342/trb-special-report-308-the-safety-challenge-and-promise-of-automotive-electronics> and <http://www.omg.org/hot-topics/documents/Safety-Promise-and-Challenge-of-Automotive-Electronics-TRB-2012.pdf>.

of computerized electronics have been the subject of safety defect recall and remedy campaigns. Software updates have been the remedy for software found to contain a safety defect.<sup>8</sup>

NHTSA is also authorized to regulate certain other software, specifically, software that has functionality similar to that of the software in either a vehicle manufacturer's key fob/smart key or even some of the systems integrated into some current vehicles.<sup>9</sup> Some of this software, e.g., that for remotely starting a vehicle's engine, affects motor vehicle systems only when the vehicles are parked, i.e., in circumstances called "nonoperational" safety. Other software, e.g., forward crash warning and remote automated parking systems, affects motor vehicles when they are moving, i.e., "operational" safety. The Act's definition of "motor vehicle safety" encompasses both aspects of safety.<sup>10</sup>

#### **B. NHTSA's flexibility to develop and implement non-traditional standards for ADS**

NHTSA's primary exercise of its regulatory authority involves the development and establishment of the FMVSS.<sup>11</sup> Under the Act, NHTSA's FMVSS must meet a variety of requirements.<sup>12</sup> They must be performance-oriented. They must be practicable, both technologically and economically. They must be objective, meaning that they must be capable of producing identical results when tests are conducted in identical conditions and compliance

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<sup>8</sup> To find vehicle safety recalls involving software, search for "software" in the monthly NHTSA recalls reports on the following webpage, Monthly Reports: Recalls and Investigations, available at <https://www-odi.nhtsa.dot.gov/recalls/monthlyreports.cfm>. See also May 2016 report by J.D. Power that it had conducted an analysis of recalls under the Act showing that "(t)o date, 189 separate software recalls have been issued in the past 5 years, affecting more than 13 million vehicles. According to manufacturer analyses, 141 presented a risk of crashing; 44 could have resulted in injury." The results of this analysis may be found at <http://www.jdpower.com/cars/articles/safety-and-mpg/record-numbers-software-complaints-and-recalls-threaten-trust>.

<sup>9</sup> 49 U.S.C. § 30102(a)(8).

<sup>10</sup> 49 U.S.C. § 30102(a)(9).

<sup>11</sup> It is important to note that, even in the absence of standards, ADS-equipped vehicles must still be free from unreasonable risks to safety; if such risks do exist, the vehicle, component, or accessory would be subject to NHTSA's defect authority. See NHTSA Enforcement Guidance Bulletin 2016-02: Safety-Related Defects and Automated Safety Technologies, 81 Fed. Reg. 65705, September 23, 2016.

<sup>12</sup> 49 U.S.C. §§ 30102(a)(10), 30111(a).

must be based on scientific measurements, not subjective opinion. Finally, they must meet the need for safety.

The FMVSS can address all aspects and phases of ensuring that new motor vehicles are designed and perform safely. NHTSA can establish crash avoidance standards to reduce the chance that a vehicle will become involved in a crash or cause another vehicle to become involved in crash or reduce the severity of crashes that cannot be avoided. Likewise, NHTSA can issue crashworthiness standards requiring that a vehicle be designed so that its occupants are less likely to be seriously injured in a crash and so that it is less likely to cause injury to the occupants of other vehicles or other roadway users such as pedestrians and cyclists. In addition, NHTSA can issue standards for post-crash safety, such as minimizing the risk of electrical fires.

NHTSA believes that the FMVSS structure has the necessary flexibility to regulate the design and performance of ADS appropriately. Although the existing FMVSS rely on physical tests and measurements to evaluate safety performance, there is no requirement in the Act that they rely exclusively or even at all on such tests and measurements so long as they are objective and meet the other statutory requirements. In the future, other approaches such as simulation and requirements expressed in terms of mathematical functions might be considered.<sup>13</sup>

In addition, because the software environment is likely to evolve and change at a rapid rate, NHTSA recognizes that it will need a new approach to the development and drafting of FMVSS, especially any FMVSS that might be established for ADS. The accelerating pace of technological change is incompatible with lengthy rulemaking proceedings that last at least 6-8 years from initiating rulemaking to conducting research to translating the research results into regulatory text to conducting and completing a notice and comment rulemaking. Further, the

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<sup>13</sup> NHTSA notes that its Corporate Average Fuel Economy Standards are required to be stated in terms of a mathematical function. 49 U.S.C. § 32902(b)(3)(A).

FMVSS of the future will need to be reconceptualized, developed and drafted so that they are nimbler, more performance-oriented and thus more accommodating of anticipated and continued rapid technological change than has generally been the case for the FMVSS to date.

Similarly, although existing FMVSS generally address specific predictable events (e.g., stopping and turning safely on low friction surfaces, specific types of crashes), it may be desirable, even necessary, to meet the need for safety, for future FMVSS focused on ADS technologies to also address the common, yet unpredictable, events that occur in real-world driving, e.g., the one person among crowds of people standing on two or more corners of an intersection who suddenly decides to cross the street, the approaching vehicle that suddenly turns left, the parked vehicle that suddenly leaves its parking place, and the vehicle that suddenly emerges from a blind alley or other obscured location. Test procedures could replicate those events, including their unpredictability. A degree of unpredictability might be accomplished by varying the location of standardized surrogate vehicles, cyclists and pedestrians on a test course and the sequence in which they are encountered during testing. A sufficient degree of randomization could help avoid the risks that using a completely predictable test procedure might create, i.e., that a test vehicle could be programmed to anticipate the predictable encounters with surrogate objects and avoid a collision with them by being pre-programmed to do so, not by relying on its sensors and decision-making algorithms.

Further, future FMVSS could test the ability of ADS vehicles to monitor not only simple scenarios involving a single surrogate pedestrian or vehicle, but also more complex and realistic scenarios involving multiple surrogate pedestrians and vehicles and their ability to identify and respond appropriately to all surrogate pedestrians and vehicles without the ADS vehicles' knowing in advance precisely which pedestrian or vehicle would move and when into their path.

Finally, future FMVSS could be drafted in more technology-neutral performance terms than many of the existing technology-specific FMVSS. This approach may allow for the development and deployment of cutting-edge technology, as long as FMVSS performance mandates are satisfied. This approach could allow for testing and deployment of critical safety equipment without requiring time-consuming regulatory amendments to respond to changes in technology.

### **C. Research is needed to generate data on ADS**

In order to establish standards that ensure safety without jeopardizing innovation, NHTSA must conduct significant research, as well as leverage research conducted by outside entities, including industry and universities. When the Act was enacted, Congress recognized the importance of research, development, testing, and evaluation, and provided “broad authority to initiate and conduct” those activities.<sup>14</sup> Additionally, Congress recognized that safety standards “cannot be set in a vacuum. They must be based on reliable information and research.”<sup>15</sup>

In the Moving Ahead for Progress in the 21<sup>st</sup> Century Act,<sup>16</sup> Congress reiterated and strengthened NHTSA’s role in conducting research, particularly in areas of innovative technology, and directed that “[t]he Secretary of Transportation shall conduct research, development, and testing on any area or aspect of motor vehicle safety necessary to carry out this chapter.”<sup>17</sup> In carrying out this directive, 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

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<sup>14</sup> S. Rep. No. 89-1301, at 9 (June 23, 1966).

<sup>15</sup> H.R. Rep. No. 89-1776, at 11 (July 28, 1966); see also S. Rep. No. 89-1301, at 9.

<sup>16</sup> Pub. L No. 112-141.

<sup>17</sup> 49 U.S.C. § 30181.



that impact or may impact motor vehicle safety” and to “[c]ollect and analyze *all types of motor vehicle and highway safety data*” relating to motor vehicle performance and crashes.<sup>18</sup> Further, the Secretary was given broad authority to “enter into cooperative agreements, collaborative research, or contracts with Federal agencies, interstate authorities, State and local governments, other public entities, private organizations and persons,” and other appropriate institutions.<sup>19</sup>

To aid in determining how best to foster the safe introduction of vehicles with high and full driving automation onto our Nation’s roadways, NHTSA seeks to facilitate research and data gathering involving these new and developing technologies in their various iterations and configurations. The Agency wants the entities involved in this research to gain practical, real world experience to determine the best approaches to enhancing safety. This research is expected to generate the data needed to assist in developing methods of validating the safety performance of vehicles with high and full driving automation. NHTSA recognizes both the safety potential of ADS and the need to ensure that all testing and operation of vehicles with high and full driving automation are conducted in a manner that ensures the appropriate levels of safety for everyone involved – and most importantly, all roadway users.

**D. Regulatory relief may be needed to facilitate research involving vehicles with high and full driving automation**

In the separate notice on barriers mentioned above, NHTSA stated that it believes that vehicles with traditional interior designs, e.g., ones including steering wheels and foot pedals, that meet the existing FMVSS would still comply with the FMVSS even if those vehicles were

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<sup>18</sup> 49 U.S.C. § 30182(a) (emphasis added).

<sup>19</sup> Id. at § 30182(b)(5).

designed to be operated as vehicles with high and full driving automation. However, vehicles with high and full driving automation that do not have traditional designs might not meet the existing FMVSS and would, therefore, require an exemption. NHTSA's statutes provide two separate avenues under sections 30113 and 30114<sup>20</sup> for an exemption of vehicles that do not comply with the standards and another process designed for vehicles that would initially comply with the standard, but also may need exemptions if they operate in "dual modes," one of which could run afoul of NHTSA's "make inoperative" prohibition.<sup>21</sup> Under both types of exemptions, NHTSA may set terms by which the exempted entity must abide.

In this notice, NHTSA announces that it is contemplating creating an ADS vehicle pilot research program for the testing of vehicles and associated equipment and gathering of data from such testing, including in real-world scenarios, which the Agency would consider as setting the terms of the exemptions. NHTSA anticipates that these data will provide needed information that will better enable the public and private sectors to realize the promises and overcome the challenges of vehicles with high and full driving automation.

#### **E. A pilot program can provide relief and promote research on ADS**

To summarize, NHTSA's authority covers all relevant aspects of ADS design, including vehicles with high and full driving automation. NHTSA, therefore, has an affirmative duty to establish the measures necessary to ensure the safe design and operation of these types of

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<sup>20</sup> 49 U.S.C. §§ 30113 and 30114. These two sections, including relevant statutory text, are discussed below in parts III.B.1 and III.B.2 of this ANPRM.

<sup>21</sup> Certain ADS vehicles that do not comply with existing standards are currently allowed to be introduced into interstate commerce if they meet the requirements in section 30112(b)(10). The section excepts motor vehicles from the prohibition in section 30112(a)(1) against introducing a noncompliant motor vehicle into commerce, but, among other constraints, only if the vehicle is introduced by a manufacturer solely for the purpose of its being tested and evaluated on public roads, only for vehicle manufacturers that manufactured and distributed compliant vehicles in the United States before December 4, 2015, and only if those vehicles are not sold after the conclusion of testing. Importantly, then, this exception is limited in both which manufacturers can take advantage of it and what can be done while using it.

vehicles. However, to do so in a way that actually achieves those safety goals and does not unnecessarily impede innovation requires significant research on these cutting-edge issues. Due to the complexity of real-world driving, this research cannot simply be done in laboratories or other highly controlled testing environments and, instead, part of it must be done on public roads with real driving conditions. To help ensure that this testing is being done safely and with an eye towards developing the data necessary to support such future standards as may be needed, NHTSA is considering establishing a pilot program for vehicles with high and full driving automation for entities wishing to engage in the testing or, in some cases, deployment of vehicles with high and full driving automation that would require some type of an exemption from NHTSA's existing standards. The Agency believes that such a program could aid developers of vehicles with high and full driving automation in testing and deploying their vehicles across the country in a wide variety of scenarios, e.g., different climates, weather patterns, topographical features, road systems, population and traffic densities, etc.

### **III. Pilot Program for the Safe Testing and Deployment of Vehicles with High and Full Driving Automation**

Technological innovations in automotive transportation are diverse and evolving quickly in the United States and abroad. The potential safety benefits that could result from deploying vehicles with high and full driving automation justify a considered approach at the Federal, State and local levels to the design and implementation of pilot programs for the safe testing, learning and eventual deploying of these vehicles, including on public roadways.

Safety is a primary concern and is the primary mission of NHTSA. The issuance of this ANPRM on pilot program design is intended to stimulate public discussion of both safety aspects of new technology testing and development, as well as approaches to learning from pilot

programs for technological improvement and eventual deployment. NHTSA acknowledges that there are also mobility, efficiency and accessibility opportunities associated with ADS and that infrastructure could play a key role in the broader operational availability of these technologies. Numerous companies, researchers, safety advocates, State and local governments, and other stakeholders are engaged in, planning to become engaged in or otherwise interested in the design, development, testing, and deployment of vehicles with high and full driving automation. NHTSA recognizes that it is restricted in its ability to apply requirements to certain manufacturers testing vehicles on public highways if the manufacturers agree not to offer for sale or sell those vehicles.<sup>22</sup> Discussion of pilot program design and implementation does not assume that such regulatory and statutory limits are either appropriate or necessary, but rather that pilot programs might require NHTSA to address certain barriers.

Further, pilot programs should anticipate the need to coordinate Federal, State and local governments' responsibilities and efforts and should recognize other Federal agencies, and State and local governments are effective sources of information needed for risk management as ADS technology approaches deployment. State and local governments have traditionally played important roles in motor vehicle and road safety, through enforcement, traffic management and planning, research, and much more. It is critical to NHTSA to partner effectively with State and local governments to permit them to continue these important functions while the Agency works collaboratively to facilitate the safe and efficient deployment of ADS technology.

Finally, at this stage, NHTSA is only considering a pilot program for light-duty vehicles; to the extent the Agency will consider establishing future pilot projects for other motor vehicles,

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<sup>22</sup> 49 U.S.C. §30112(b)(10).

such as truck tractors or buses, it will do so in coordination with the other relevant operating administrations within the Department.

**Questions.**

In furtherance of the goals of this ANPRM, NHTSA requests interested persons to answer a variety of questions about the structure of a national pilot program and about the types of regulatory relief that may be needed to make such a program successful. The views and information provided in response to those that will aid the Agency in deciding whether to create a national program and, if so, how to do so.

**Guidance on answering questions.**

In responding to each question, please provide data, analyses, research reports or other justification to support your response. In addition, please respond to the questions and requests in the same sequence in which they appear below and include the number of each question and request.

Question 1. What potential factors should be considered in designing the structure of a pilot program that would enable the Agency to facilitate, monitor and learn from on-road research through the safe testing and eventual deployment of vehicles with high and full driving automation and associated equipment?

Question 2. If NHTSA were to create a pilot program, how long would there be a need for such a program? What number of vehicles should be involved? Should NHTSA encourage the conducting of research projects in multiple locations with different weather conditions, topographical features, traffic densities, etc.?

Question 3. What specific difficulties should be addressed in designing a national vehicle pilot program for vehicles with high and full driving automation either through the exemption

request process relevant for FMVSS or more broadly related to other areas of NHTSA and/or other authorities.

Question 4. How can existing statutory provisions and regulations be more effectively used in implementing such a pilot program?

Question 5. Are there any additional elements of regulatory relief (e.g., exceptions, exemptions, or other potential measures) that might be needed to facilitate the efforts to participate in the pilot program and conduct on-road research and testing involving these vehicles, especially those that lack controls for human drivers and thus may not comply with all existing FMVSS?

#### **A. Considerations in designing the pilot program**

NHTSA believes that a safe and effective pilot program for vehicles with high and full driving automation would necessarily address each of the following critical areas: (1) vehicle design for safe operation; (2) vehicle design for risk mitigation in the event of an unplanned event; (3) vehicle design for intended operating conditions; and (4) data reporting and information sharing to identify and mitigate risks identified during the pilot program.

##### **1. Vehicle design for safe operation**

As described above, NHTSA has long assessed vehicle attributes for safe operation under reasonably anticipated conditions. Such an assessment has historically included detailed elements of structural integrity and design, as well as hardware, software and telecommunications elements that contribute to either operational or nonoperational vehicle safety.

NHTSA believes that vehicles with high and full driving automation participating in pilot programs for testing and evaluation and eventual deployment should continue to meet most

FMVSS for the protection of vehicle occupants, pedestrians, and other vulnerable road users. However, in the case of certain elements, safety might be enhanced through approaches different than those contained in the current FMVSS, given that they were developed for vehicles designed only for human operation.

As noted above, NHTSA has issued a Request for Comment regarding those provisions in the FMVSS that may pose barriers for the design, testing and deployment of some safe vehicles with high and full driving automation.

Question 6. What vehicle design elements might replace existing required safety equipment and/or otherwise enhance vehicle safety under reasonably anticipated operating conditions?

## **2. Vehicle design for risk mitigation**

As described in section I (overview) above, the primary difference between lower level driving automation systems and high and full driving automation systems is the reliance in the latter systems on the vehicle to perform all driving functions in at least certain circumstances. It is anticipated that vehicles with high and full driving automation will accomplish this through the combination of highly sophisticated detection systems, systems for digital interpretation of detected objects, data retention and processing, communication protocols, and highly sophisticated decision-making software. Together, this combination of functions is intended to replace and improve upon the ability of human drivers to detect, interpret, communicate and react to vehicle operational needs and conditions.

Some vehicles with high driving automation will require an additional design consideration to address human-machine interface when operating outside of their Operational

Design Domain.<sup>23</sup> Specifically, given the reliance of those vehicles on vehicle, and not human, systems, the design of those vehicles should account for both the vehicle and human elements of any transition from one type of driver (human or vehicle) to another type of driver (vehicle or human).

In *A Vision for Safety*, the Department of Transportation described a voluntary safety self-disclosure approach recommended to innovators seeking to test and deploy vehicles with high and full driving automation on public roadways.

NHTSA's existing authorities under the Act, e.g., provisions concerning research, standard setting and consumer information, are adequate for NHTSA to evaluate and recommend protocols to ensure the safety of vehicle design for risk mitigation. In fact, NHTSA has already developed and adopted protocols for a wide variety of technologies for use in either the FMVSS or the New Car Assessment Program. Examples include anti-lock braking systems, electronic stability control, automatic emergency braking, and lane departure warning.

Furthermore, NHTSA's authorities supporting the current FMVSS program are adequate and appropriate for developing very broadly drafted safety performance standards that might be necessary for the eventual safe widespread deployment on public roadways of vehicles with high and full driving automation. Such performance standards should allow for unencumbered innovation where such innovation provides equivalent or improved safety for future transportation designs when compared to the safety of human drivers. For example, future performance-based standards might include standards and testing for safe lane change

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<sup>23</sup> The Operational Design Domain describes the specific conditions under which a given ADS or feature is intended to function. More specifically, it defines where (such as what roadway types and speeds) and when (under what conditions, such as day/night, weather limits, etc.) an ADS is designed to operate.



performance on highways, hazard detection and avoidance in urban environments, or collision avoidance on rural highways.

Question 7. What types of performance measures should be considered to ensure safety while allowing for innovation of emerging technology in vehicles with high and full driving automation participating in a pilot program?

### **3. Vehicle design safety elements**

*A Vision for Safety* seeks to help designers of ADS to analyze, identify, and resolve safety considerations prior to deployment by using their own, industry, and other best practices. It outlines 12 safety elements, which the Agency believes represent the consensus across the industry, that are generally considered to be the most salient design aspects to consider and address when developing, testing, and deploying ADS on public roadways. Within each safety design element, entities are encouraged to consider and document for themselves their use of industry standards, best practices, company policies, or other methods they have employed to provide for increased system safety in real-world conditions.

For example, vehicles with high and full driving automation are currently tested and deployed in carefully risk-managed phases to allow for safe operation during development of increasingly complex systems. As described in *A Vision for Safety*, the circumstances in which the automated operation of a vehicle is enabled are set forth in the vehicle's Operational Design Domain.

NHTSA believes that any pilot program for the testing of vehicles with high and full driving automation should include defined Operational Design Domains as a component of safe automated vehicle operation. Examples of an Operational Design Domain include, but are not limited to, geographic, environmental or other conditions in which the vehicle is designed to

operate, detect and respond safely to a variety of normal and unexpected objects and events, and to fall back to a minimal risk condition in the event that the ADS fails or that the ADS encounters conditions outside the Operational Design Domain.

NHTSA has historically regulated the enabling conditions for safety systems, such as air bags, anti-lock brakes and electronic stability control, that are designed to intervene when certain conditions, and only those conditions, exist. NHTSA believes that the critical relationship between the safety of a vehicle's design and the vehicle's decision-making system similarly makes it necessary to evaluate the safety of automated vehicle performance in light of appropriate and well-defined Operational Design Domains. For example, if a vehicle is capable of safely operating automatically only at speeds below 30 mph, NHTSA might consider whether it would be appropriate to require that the vehicle be designed so that it cannot operate automatically at speeds of 30 mph or more unless and until it acquires the capability (e.g., through software updates) of safely operating automatically above that speed. Similarly, if a vehicle would become incapable of operating safely if one or more of its sensors became non-functional, NHTSA might consider whether it would be appropriate to require that the vehicle be designed so that it cannot operate automatically in those circumstances.

State and local authorities also have a role to play. Through establishing and enforcing their rules of the road, these authorities have traditionally controlled such operational matters as the speed at which vehicles may be driven and the condition of certain types of safety equipment such as head and tail lights. In the future, it is reasonable to expect that these authorities may establish new rules of the road to address ADS vehicles specifically. While NHTSA might require the manufacturers of these vehicles to design them so that their vehicles know the State

and locality in which they are operating and what the rules of the road are for that location and so that they observe those rules, the States and localities would enforce those rules if broken.

Question 8. How should the Operational Design Domains of individual vehicle models be defined and reinforced and how should Federal, State and local authorities work together to ensure that they are observed?

#### **4. Data and reporting**

The purpose of a pilot program is to allow for safe on-road testing and on-road learning in order to provide feedback for further safe development. An important element of any pilot program is the creation, sharing and appropriate use of performance data to allow constant improvement to the test technology and improved risk management.

NHTSA believes that the novel challenge of assessing the safety of the emerging technologies in vehicles with high and full driving automation requires a commitment to timely and accurate data reporting and analysis.

Question 9. What type and amount of data should participants be expected to share with NHTSA and/or with the public for the safe testing of vehicles with high and full driving automation and how frequently should the sharing occur?

Question 10. In the design of a pilot program, how should NHTSA address the following issues--

- a. confidential business information?
- b. privacy?
- c. data storage and transmission?
- d. data retention and reporting?
- e. other elements necessary for testing and deployment?

## 5. Additional considerations in pilot program design

NHTSA seeks comments on whether there are additional critical areas to consider in the design of a safe pilot program for the testing and deployment of vehicles with high and full driving automation.

Question 11. In the design of a pilot program, what role should be played by--

- a. The 12 safety elements listed in A Vision for Safety?
- b. The elements listed below,
  - i. Failure risk analysis and reduction during design process (functional safety)?
  - ii. Objective performance criteria, testable scenarios and test procedures for evaluating crash avoidance performance of vehicles with high and full driving automation?
  - iii. Third party evaluation?
    - A. Failure risk reduction?
    - B. Crash avoidance performance of vehicles with high and full driving automation?
  - iv. Occupant/non-occupant protection from injury in the event of a crash (crashworthiness)?
  - v. Assuring safety of software updates?
  - vi. Consumer education?
  - vii. Post deployment Agency monitoring?
  - viii. Post-deployment ADS updating, maintenance and recalibration?
- c. Are there any other elements that should be considered?

Question 12. Are there any additional critical areas to consider in the design of a safe pilot program for the testing and deployment of vehicles with high and full driving automation?

### **6. Issues relating to establishing a pilot program**

In addition to the general issues identified above, NHTSA requests comment on the following questions related to the development of the potential pilot program.

#### **i. Applications for participation and potential terms of participation**

Question 13. Which of the following matters should NHTSA consider requiring parties that wish to participate in the pilot program to address in their applications?

- a. “Safety case” for vehicles to be used in the pilot program (e.g., system safety analysis (including functional safety analysis), demonstration of safety capability based on objective performance criteria, testable scenarios and test procedures, adherence to NHTSA’s existing voluntary guidance, including the submission of a voluntary safety self-assessment, and third party review of those materials).
  - i. What methodology should the Agency use in assessing whether an exempted ADS vehicle would offer a level of safety equivalent to that of a nonexempted vehicle? For example, what methodology should the Agency use in assessing whether an ADS vehicle steers and brakes at least as effectively, appropriately and timely as an average human driver?
- b. Description of research goals, methods, objectives, and expected results.
- c. Test design (e.g., route complexity, weather and related road surface conditions, illumination and institutional review board assessment).
- d. Considerations for other road users (e.g., impacts on vulnerable road users and proximity of such persons to the vehicle).

- e. Reporting of data, e.g., reporting of crashes/incidents to NHTSA within 24 hours of their occurrence.
- f. Recognition that participation does not negate the Agency's investigative or enforcement authority, e.g., independent of any exemptions that the Agency might issue to program participants and independent of any terms that the Agency might establish on those exemptions, the Agency could conduct defect investigations and order recalls of any defective vehicles involved in the pilot program. Further, the Agency could investigate the causes of crashes of vehicles involved in the program.
- g. Adherence to recognized practices for standardizing the gathering and reporting of certain types of data in order to make possible the combining of data from different sources and the making of statistically stronger findings.
- h. For which types of data would standardization be necessary in order to make such findings and why?
- i. To what extent would standardization be necessary for those types?
- j. Occupant/non-occupant protection from injury in the event of a crash (crashworthiness)
- k. Assuring safety of software updates
- l. Consumer education
- m. Post-deployment monitoring
- n. Post-deployment maintenance and calibration considerations

Question 14. What types of terms and conditions should NHTSA consider attaching to exemptions to enhance public safety and facilitate the Agency's monitoring and learning from

the testing and deployment, while preserving the freedom to innovate, including terms and conditions for each of the subjects listed in question 13? What other subjects should be considered, and why?

**ii. Potential categories of data to be provided by program participants**

Question 15. What value would there be in NHTSA's obtaining one or more of the following potential categories of data from the participants in the pilot program? Are there other categories of data that should be considered? How should these categories of data be defined?

- a. Statistics on use (e.g., for each functional class of roads, the number of miles, speed, hours of operation, climate/weather and related road surface conditions).
- b. Statistics and other information on outcome (e.g., type, number and cause of crashes or near misses, injuries, fatalities, disengagements, and transitions to fallback mechanisms, if appropriate).
- c. Vehicle/scene/injury/roadway/traffic data and description for each crash or near miss (e.g., system status, pre-crash information, injury outcomes).
- d. Sensor data from each crash or near miss (e.g., raw sensor data, perception system output, and control action).
- e. Mobility performance impacts of vehicles with high and full driving automation, including string stability of multiple consecutive ADS vehicles and the effects of ADS on vehicle spacing, which could ultimately impact flow safety, and public acceptance.
- f. Difficult scenarios (e.g., scenarios in which the system gave control back to an operator or transitioned to its safe state by, for example, disabling itself to a slow speed or stopped position).

- g. Software updates (e.g., reasons for updates, extent to which updates are made to each vehicle for which the updates are intended, effects of updates).
- h. Metrics that the manufacturer is tracking to identify and respond to progress (e.g., miles without a crash and software updates that increase the operating domain).
- i. Information related to community, driver and pedestrian awareness, behavior, concerns and acceptance related to vehicles with high and full driving automation operation. For example, if vehicles with high and full driving automation operated only in limited defined geographic areas, might that affect the routing choices of vehicles without high and full driving automation? For another example, if vehicles with high and full driving automation are programmed to cede right of way to avoid collision with other vehicles and with pedestrians and cyclists, might some drivers of vehicles without such automation, pedestrians and cyclists take advantage of this fact and force vehicles with high and full driving automation to yield to them?
- j. Metrics or information concerning the durability of the ADS equipment and calibration, and need for maintenance of the ADS.
- k. Data from “control groups” that could serve as a useful baseline against which to compare the outcomes of the vehicle participating in the pilot program.
- l. If there are other categories of data that should be considered, please identify them and the purposes for which they would be useful to the Agency in carrying out its responsibilities under the Act.
- m. Given estimates that vehicles with high and full driving automation would generate terabytes of data per vehicle per day, how should the need for data be



appropriately balanced with the burden on manufacturers of providing it and the ability of the Agency to absorb and use it effectively?

n. How would submission of a safety assurance letter help to promote public safety and build public confidence and acceptance?

o. For all of the above categories of information, how should the Agency handle any concerns about confidential business information and privacy?

**B. Use of exemptions to provide regulatory relief for pilot program participants**

As discussed above, NHTSA has several means to provide regulatory relief for vehicles with high and full driving automation whose innovative designs make compliance with existing regulations impracticable or impossible. In this notice, the Agency has outlined and requested comment on a potential pilot program for these vehicles, to encourage and facilitate the necessary research and data to ensure their safe deployment and allow NHTSA to determine how to appropriately evaluate and regulate these vehicles.

As part of this pilot program, NHTSA is considering what effect participation in the pilot program could have on the exemption process and vice versa.

Question 16. How should the Agency analyze safety in deciding whether to grant such exemptions under each of the separate bases for exemptions in section 30113? Can the exemption process be used to facilitate safe and effective ADS development in an appropriate manner?

Question 17. Could a single pilot program make use of multiple statutory sources of exemptions or would different pilot programs be needed, one program for each source of exemption?

Question 18. To what extent would NHTSA need to implement the program via new regulation or changes to existing regulation? Conversely, could NHTSA implement the program through a non-regulatory process? Would the answer to that question change based upon which statutory exemption provision the agency based the program on?

**1. Exemptions from prohibitions concerning noncompliant vehicles under section 30113**

Section 30112, except as otherwise provided, e.g., under sections 30113 and 30114, prohibits any person from manufacturing for sale, selling, offering for sale, introducing or delivering for introduction in interstate commerce, or importing into the United States, any motor vehicle or motor vehicle equipment manufactured on or after the date an applicable FMVSS takes effect unless the vehicle or equipment complies with the standard and is covered by a certification issued under section 30115 of the Act.<sup>24</sup> Under section 30113, upon application by a vehicle manufacturer, NHTSA may exempt, on a temporary basis, motor vehicles from a FMVSS, on terms the Agency considers appropriate, if it finds that –

- (a) an exemption is consistent with the public interest and this chapter or chapter 325 of this title (as applicable); and either
- (b)
  - (i) compliance with the standard would cause substantial economic hardship to a manufacturer that has tried to comply with the standard in good faith;
  - (ii) the exemption would make easier the development or field evaluation of a new motor vehicle safety feature providing a safety level at least equal to the safety level of the standard;
  - (iii) the exemption would make the development or field evaluation of a low-emission motor vehicle easier and would not unreasonably lower the safety level of that vehicle; or
  - (iv) compliance with the standard would prevent the manufacturer from selling a motor vehicle with an overall safety level at least equal to the overall safety level of nonexempt vehicles.<sup>25</sup>

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<sup>24</sup> 49 U.S.C. § 30112(a)(1).

<sup>25</sup> 49 U.S.C. § 30113.

A manufacturer is eligible for an economic hardship exemption only if the manufacturer's total motor vehicle production in the most recent year of production is not more than 10,000. An economic hardship exemption can be granted for not more than 3 years, although it can be renewed. Any manufacturer, regardless of its total production, is eligible for an exemption on the other three bases listed in the paragraph immediately above, but only if the exemption is for not more than 2,500 vehicles to be sold in the United States in any 12-month period. Exemptions on these three bases may be granted for not more than 2 years and can be renewed.

Over the years, NHTSA has granted numerous exemptions under the “substantial economic hardship” criteria, but relatively few under the other three bases. This proportion may change in the future. The use of the other three bases for granting petitions for the exemption of vehicles with high and full driving automation may become increasingly important prior to the development of ADS-specific standards.

Since the Act does not contain any prohibitions regarding the use of a motor vehicle, whether compliant or noncompliant, once a manufacturer receives an exemption from the prohibitions of section 30112(a)(1), the use of those vehicles is controlled only to the extent that NHTSA sets terms on the exemption. Its authority to set terms is broad. Since the terms would be the primary means of ensuring the safe operation of those vehicles, the Agency would consider carefully what types of terms to establish. The manufacturer would need to agree to abide by the terms set for that exemption in order to begin and continue producing vehicles pursuant to that exemption. Thus, if NHTSA were to establish the collaborative pilot research program for such vehicles discussed in this notice, it could establish, for example, reporting terms to ensure a continuing flow of information to the Agency during and after the period of exemption to meet the Agency's, as well as the manufacturer's, research needs. Since only a

very small portion of the total mileage that the exempted vehicles could be expected to travel during their useful life would have been driven by the end of the exemption period, it might be desirable for the data to be reported over a longer period of time to enable the Agency to make sufficiently reliable judgements. Such judgments might include a retrospective review of the judgments that the Agency made, at the time of granting the petition, about the anticipated safety effects of the exemption. Regardless of the period specified for reporting, NHTSA could also establish terms to specify what the consequences would be if the flow of information were to cease or become inadequate during or after the exemption period. NHTSA's regulations in 49 CFR part 555 provide that the Agency can revoke an exemption if a manufacturer fails to satisfy the terms of the exemption.

Question 19. How could the exemption process in section 30113 be used to facilitate a pilot program? For vehicles with high and full driving automation that lack means of manual control, how should NHTSA consider their participation, including their continued participation, in the pilot program in determining whether a vehicle would meet the statutory criteria for an exemption under section 30113? More specifically:

- a. Would participation assist a manufacturer in showing that an exemption from a FMVSS would facilitate the development or field evaluation of a new motor vehicle safety feature providing a safety level at least equal to the safety level of the FMVSS, as required to obtain an exemption under section 30113(b)(ii)? If so, please explain how.
- b. Would participation assist a manufacturer in showing that compliance with the FMVSS would prevent the manufacturer from selling a motor vehicle with an overall safety level at least equal to the overall safety level of nonexempt vehicles, as required to obtain an exemption under section 30113(b)(iv)? If so, please explain how.

c. The Agency requests comment on what role a pilot program could play in determining when to grant an exemption from the “make inoperative” prohibition under section 30122 for certain “dual mode” vehicles. Relatedly, what tools does NHTSA have to incentivize vehicles with high and full driving automation that have means of manual control and thus do not need an exemption to participate in the pilot program?

## **2. Exemptions from prohibitions concerning noncompliant vehicles under section 30114**

Next, under section 30114, the “Secretary of Transportation may exempt a motor vehicle or item of motor vehicle equipment from section 30112(a) of this title, on terms the Secretary decides are necessary, for research, investigations, demonstrations, training, competitive racing events, show, or display.”<sup>26</sup> NHTSA has historically focused these types of exemptions on the noncompliant vehicles made outside the U.S. However, NHTSA is examining whether the language of section 30114 gives NHTSA the discretion to create a level playing field by expanding the coverage of exemption under that section to any vehicle, regardless of whether it is domestic or foreign, that meets the criteria of that section, particularly vehicles with high and full driving automation that do not meet existing standards and whose manufacturers are or seek to become engaged in research and demonstrations involving those vehicles. If so, NHTSA would be able to establish the terms with which a participant would need to comply in order to receive and continue to enjoy the benefits of an exemption. Such terms could include a wide variety of matters, including participation in a pilot program.

Question 20. What role could exemptions under section 30114 play in the pilot program? Could participation in the pilot program assist a manufacturer in qualifying for an exemption

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<sup>26</sup> 49 U.S.C. § 30114.

under section 30114? Could participation be considered part of the terms the Secretary determines are necessary to be granted an exemption under section 30114 for vehicles that are engaged in “research, investigations, demonstrations, training, competitive racing events, show, or display”?

### **3. Exemption from rendering inoperative prohibition**

Finally, NHTSA has related exemption authority with regard to the “make inoperative” provision in its statute. Manufacturers, distributors, dealers, and motor vehicle repair businesses are prohibited from knowingly making 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 FMVSS unless they reasonably believe the vehicle or equipment will not be used (except for testing or a similar purpose *during* maintenance or repair) when the device or element is inoperative.<sup>27</sup>

However, NHTSA may prescribe regulations to exempt a person or a class of persons from this prohibition if the Agency decides the exemption is consistent with motor vehicle safety and the purposes of the Act. For example, pursuant to that authority, NHTSA has exempted from the “make inoperative” prohibition<sup>28</sup>, as a class, all motor vehicle repair businesses that modify a motor vehicle to enable a person with a disability to operate, or ride as a passenger in, the motor vehicle to the extent that those modifications affect the motor vehicle's compliance with the FMVSS or portions thereof specified in paragraph (c) of 49 CFR part 595. Such an exemption may be warranted for certain “dual-mode” vehicles, i.e., those that may be operated with or without a human driver and are designed to have mandated and/or regulated components, such as brake pedals, retract under specified conditions. Comments are invited on this issue.

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<sup>27</sup> 49 U.S.C. § 30122(b).

<sup>28</sup> 49 U.S.C. § 30122.

Question 21. 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? Relatedly, what tools does NHTSA have to incentivize vehicles with high and full driving automation that have means of manual control and thus do not need an exemption to participate in the pilot program?

#### **4. Other potential obstacles**

The Agency also wishes to better understand any other potential obstacles either to the development of the pilot program or vehicles with high and full driving automation more generally.

Question 22. If there are any obstacles other than the FMVSS to the testing and development of vehicles with high and full driving automation, please explain what those are and what could be done to relieve or lessen their burdens. To the extent any tension exists between a Federal pilot program and State or local law, how can NHTSA better partner with State and local authorities to advance our common interests in the safe and effective testing and deployment of ADS technology?

#### **IV. Confidentiality of Information Provided by Program Participants**

NHTSA recognizes that companies may be reluctant to share certain data or information with the Agency in connection with an exception, an exemption, or a pilot program because the data or information is proprietary. The Agency notes that 49 CFR part 512 sets forth the procedures and standards by which it will consider claims that information submitted to the Agency is entitled to confidential treatment under 5 U.S.C. 552(b), most often because the information constitutes confidential business information as described in 5 U.S.C. 552(b)(4). Part 512 also addresses the treatment of information determined to be entitled to confidential

treatment. Commercial or financial information is considered confidential if it is voluntarily submitted to the Agency and is the type of information that is customarily not released to the general public. The Agency is seeking information from interested parties on how it might further protect non-public information that the Agency might need in connection with an exemption or pilot program.

## **V. Next Steps**

The Agency wishes to re-emphasize that it has not made any decisions whether to establish a pilot program or how to structure such a program. After analyzing the public comments on this ANPRM and other available information, NHTSA will further assess the prospects for implementing a viable and effective program and identify the best approach to structuring one. Once it has done so, it will issue a notice, either an NPRM, if regulatory changes are determined to be necessary or a request for comment, if no regulatory changes are required, describing that approach and any promising alternative approaches and again seek public comment. After considering that second round of comments, the Agency will make a final decision about such a program in a final rule, if needed, or through another notice.

## **VI. Regulatory Notices**

This action has been determined to be significant under Executive Order 12866, as amended by Executive Order 13563, and the Department of Transportation's Regulatory Policies and Procedures. It has been reviewed by the Office of Management and Budget under that Order. Executive Orders 12866 (Regulatory Planning and Review) and 13563 (Improving Regulation and Regulatory Review) require agencies to regulate in the “most cost-effective manner,” to make a “reasoned determination that the benefits of the intended regulation justify its costs,” and to develop regulations that “impose the least burden on society.” Additionally, Executive Orders



12866 and 13563 require agencies to provide a meaningful opportunity for public participation. Accordingly, we have asked commenters to answer a variety of questions to elicit practical information about alternative approaches and relevant technical data. These comments will help the Department evaluate whether a proposed rulemaking is needed and appropriate. This action is not subject to the requirements of E.O. 13771 (82 FR 9339, February 3, 2017) because it is an advance notice of proposed rulemaking.

## **VII. Public Comment**

### *How do I prepare and submit comments?*

Your comments must be written and in English. To ensure that your comments are filed in the correct docket, please include the docket number of this document in your comments.

Your comments must not be more than 15 pages long (49 CFR 553.21). NHTSA established this limit to encourage you to write your primary arguments in a concise fashion so that the Agency and the public can more readily identify the more significant aspects of your comments. However, you may provide additional supporting arguments and relevant data by attaching necessary additional documents to your comments. There is no limit on the number or length of the attachments.

Please submit one copy (two copies if submitting by mail or hand delivery) of your comments, including the attachments, to the docket following the instructions given above under **ADDRESSES**. Please note, if you are submitting comments electronically as a PDF (Adobe) file, we ask that the documents submitted be scanned using an Optical Character Recognition (OCR) process, thus allowing NHTSA to search and copy certain portions of your submissions.

### *How do I submit confidential business information?*

If you wish to submit any information under a claim of confidentiality, you must submit three copies of your complete submission, including the information you claim to be confidential business information, to the Office of the Chief Counsel, NHTSA, at the address given above under **FOR FURTHER INFORMATION CONTACT**.

In addition, you may submit a copy (two copies if submitting by mail or hand delivery) from which you have deleted the claimed confidential business information, to the docket by one of the methods given above under **ADDRESSES**. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in NHTSA's confidential business information regulation (49 CFR Part 512).

*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 possible, NHTSA will also consider comments received after that date.

*How can I read the comments submitted by other people?*

You may read the comments received at the address given above under Comments. The hours of the docket are indicated above in the same location. You may also read the comments on the Internet, identified by the docket number at the heading of this notice, at <http://www.regulations.gov>.

Please note that, even after the comment closing date, NHTSA will continue to file relevant information in the docket as it becomes available. Further, some people may submit late comments. Accordingly, NHTSA recommends that you periodically check the docket for new material.

Authority: 49 U.S.C. 30101 et seq., 49 U.S.C. 30182.

Issued in Washington, DC, on October 3, 2018, under authority delegated in 49 CFR part 1.95.

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Heidi Renate King,

Deputy Administrator

BILLING CODE 4910-59-P