



April 1, 2021

Dr. Steve Cliff  
Acting Administrator  
National Highway Traffic Safety Administration  
U.S. Department of Transportation  
1200 New Jersey Avenue SE  
Washington, DC 20590

**Re: National Highway Traffic Safety Administration Advanced Notice of Proposed Rulemaking Framework for Automated Driving System (ADS) Safety (Docket No. NHTSA-2020-0106)**

Volvo Group North America (“Volvo”) respectfully submits its comments on the U.S. Department of Transportation’s (“USDOT’s”) public notice on National Highway Traffic Safety Administration (“NHTSA”) Advanced Notice of Proposed Rulemaking (“ANPRM”) Framework for Automated Driving System (“ADS”) Safety (Docket No. NHTSA-2020-0106), dated December 3, 2020.

**About Volvo Group**

The Volvo Group is one of the world’s leading manufacturers of trucks, buses, construction equipment and marine and industrial engines. The Volvo Group develops, manufactures, and sells heavy-duty trucks, buses, construction equipment, and motor coaches and their powertrains in the U.S. under the brand names of Volvo Trucks, Mack Trucks, Volvo Construction Equipment, Nova Bus, Volvo Bus, and Prevost. The Volvo Group has been manufacturing in the U.S. since 1900 and directly employs about 13,000 Americans. We have manufacturing locations in seven states and operations in 34 states. Along with environmental care and quality, safety is a core value of the Group, and we have a track record of developing and providing safety features to our customers in advance of regulations.

**A summary of the Volvo Group comments follows on page 2 with more detailed comments on page 3.**



## **Volvo Group on Automation**

- Automation will create real-life benefits for both our customers and the society in terms of productivity, safety, energy and fuel efficiency.
- The ideal automation level is determined by the application and the added value for customers and society. Therefore, Volvo Group will introduce automated applications gradually over time working with its customers and all stakeholders.
- Volvo will work with all relevant stakeholders to develop and deploy solutions based on autonomous commercial vehicles and machines that will safely handle fully autonomous driving for on- and off-road use cases

## **Summary of Volvo Group comments**

- Volvo agrees with NHTSA’s assessment of the potential of automated vehicles (“AV”) to address societal challenges regarding safety, mobility and energy efficiency, and supports NHTSA’s regulatory approach for the safe introduction of AV in real-world applications.
- While Volvo appreciates current federal efforts to clarify federal, state, and local regulatory roles on ADS, appropriate federal design standards will eventually be needed to avoid a state-by-state patchwork that could undermine safety considerations in the deployment of ADS. Volvo is supportive of setting a high threshold for safety and is supportive of federal efforts to ensure that all ADS deployments follow best practices for testing and deployment of ADS. Volvo also supports USDOT’s promotion of model state laws for ADS regarding licensing, liability, and rules-of-the-road.
- Volvo supports the use of Voluntary Self Safety Assessments (“VSSA”) with appropriate ADS information (design, safety, and operating parameters) for addressing stakeholder and public concerns. This will provide regulatory certainty for new product development, maintain the current national safety assurance paradigm, and preclude the risk of a patchwork of state regulations that will serve only to delay implementation of this critical safety technology by increasing product costs with potentially conflicting requirements.



- Volvo commends the USDOT for their leadership on the topic of AV technologies, and supports the systematic, science-based, and collaborative approach laid out in AV 4.0 and Automated Vehicles Comprehensive Plan.

### **Detailed comments**

- **Volvo agrees that it is too soon to promulgate specific, performance-based FMVSS requirements.** NHTSA states (in the Executive Summary of the ANPRM) that the premature establishment of FMVSS requirements without appropriate knowledge base could result in unintended consequences. NHTSA also states (in Section IV.D of the ANPRM) that it is too soon to issue performance standards because of the lack of technological maturity needed to support the development of such standards. Volvo agrees that the technology is still new and evolving, and there are very few SAE level 4/5 ADS vehicles deployed commercially in the market. Given NHTSA’s statutory mandates for rulemaking under the Safety Act and its normal approach to rulemaking, there is not enough experience with specific level 4/5 applications in the market to warrant rulemaking. Premature promulgation of FMVSS could result in standards that prescribe obsolete technology, and overly emphasize certain performance factors over others, for example being able to “sense” the environment versus deciding on an optimally risk-averse path.
- **Obstacle course-based scenarios will not meet the need for motor vehicle safety.** An ADS will be programmed to perform in a suitably risk-averse manner for a myriad of scenarios that it may encounter within its ODD. Enacting an obstacle course-based FMVSS based on one or even several real-world scenarios will not assure a safe ADS deployment. If the number of test scenarios considered were increased to make such a standard complete, the number of tests required would render the requirement to be impracticable, and thus would violate the relevant rulemaking prescription in the Motor Vehicle Safety Act.
- **When it is time to regulate, the approach should consider the ADS holistically, and not piecemeal with respect to the individual ADS functions as described by NHTSA** (i.e. sensing, perception, planning and control). As an example, focusing FMVSS development



on sensing may result in a good test for LIDAR but certainly does not assure that a safe ADS is being developed and deployed. Any ADS FMVSS should be able to qualify the system's ability to operate in an acceptably safe manner; it is equally important that the ADS be able to "sense" the environment and decide on an optimally risk-averse path. Volvo also agrees with NHTSA that promulgating specific component-level FMVSS has the potential for the unintended consequence of having FMVSS's being obsoleted by technology change (in Section IV.B.5.c of the ANPRM). The requirement that an FMVSS must meet the need for motor vehicle safety is an established and beneficial element of the Safety Act. A piecemeal approach may result in safety standards that do not meet the need for safety or assure safe motor vehicles.

- **It is too soon to judge if process related regulatory requirements will be needed**, or how they would be best overseen. Oversight of ADS development processes will likely require mechanisms beyond NHTSA's established self-certification paradigm and would likely involve burdensome and time-consuming methods (e.g. auditing, government/third party certification ...). The automotive industry is currently using and developing numerous best practice standards (e.g., ISO26262 - Functional Safety, ISO21448 - Safety of The Intended Functionality (SOTIF), ISO5083 - Application of Functional Safety and SOTIF for ADS Driving, UL4600, SAEJ3016, etc.) related to assuring safety via the development processes. Given the rapid development in ADS technology, these standards are constantly being updated. Because of the state of rapid change, it is too soon to mandate these best practices as regulatory requirements. Rather, it would be best if NHTSA continues to include these in guidance documents as recommended practices. In addition, the recall and defect investigation provisions in the Safety Act empower NHTSA with ample authority to assess and address ADS developers who are not employing a sound development process.
- **NHTSA should continue to use approach of developing and publishing best practices and guidance documents and should continue to foster safe ADS adoption using the AV Test Initiative.** NHTSA's AV Guidance documents have provided industry with excellent resources on a framework for safety ADS. NHTSA's AV Test Initiative has the promise to be an excellent resource for industry to share information with society on progress on ADS



development, and the level of seriousness employed for the safe development and deployment of ADS vehicles. The AV Test Initiative also helps to assure that a certain amount of public and government oversight is happening, which engenders the further development and use of best practices for both ADS design and ADS development process.

- **Volvo supports NHTSA’s current authority and paradigm for regulations and rulemaking.** The Motor Vehicle Safety Act directs that any motor vehicle safety standard should be performance-oriented, practicable, objective and meet that need for safety. These criteria are as valid today as they were in 1966 and help to ensure regulatory requirements that are relevant to assuring motor vehicle safety. What the criteria do not assure is that requirements, once established, will continue to stay relevant and not obsoleted by changes in technology. Volvo agrees with NHTSA’s assessment that establishing FMVSS prior to technology readiness can lead to adverse safety and other unintended consequences (in the Executive Summary and Section IV.B.2 of the ANPRM). Volvo agrees with NHTSA’s approach to allow for technology readiness prior to enacting FMVSS.
- **NHTSA has adequate oversight authority under the current Safety Act.** The Motor Vehicle Safety Act gives NHTSA broad authority to investigate and take action in cases of purported automotive safety defects. This authority includes the provision to review ADS development process documentation as part of a defect investigation and to protect the public from unsafe ADS vehicle deployment via its authority to mandate a recall. This current legal framework also provides a means to assure confidentiality of intellectual property and trade secrets.
- **Volvo suggests the following areas for future study** to support the safe roll out of ADS in real-world applications and garner broader stakeholder support –
  1. Safety impacts of interaction with non-ADS equipped vehicles.
  2. Safety impacts and best practices for human machine interface for SAE Level 3 and Level 4 ADS, particularly for transfer of control from ADS.
  3. More specificity for safety data from USDOT than what is currently available.  
Additional details are essential to aid understanding and recreating incident scenarios.
  4. Needs and best practices for interaction with emergency vehicles and first responders.



### **Concluding remarks**

Volvo appreciates the opportunity to submit these comments on this significant rulemaking activity and recognizes the effort NHTSA is putting forth to understand and eliminate barriers to the adoption of ADS vehicles. Volvo looks forward to working with the NHTSA, USDOT and other government agencies, as well as industry partners and other stakeholders, in the development of safe and reliable practices associated with connected and automated vehicles.

Please do not hesitate to contact us if additional information is needed.