

August 27, 2019

Docket Management Facility  
U.S. Department of Transportation  
1200 New Jersey Avenue, S.E.  
West Building Ground Floor, Room W12-140  
Washington DC 20590-0001

Re: United States Department of Transportation Federal Motor Carrier Safety  
Administration Response to Advance Notice of Proposed Rulemaking Docket No.  
FMCSA-2018-0037: Safe Integration of Automated Driving Systems-Equipped  
Commercial Motor Vehicles.

Dear Docket Clerk:

The Maryland Department of Transportation (MDOT) is pleased to provide comments on the United States Department of Transportation (U.S. DOT) Federal Motor Carrier Safety Administration (FMCSA) Advance Notice of Proposed Rulemaking (ANPRM) on the Safe Integration of Automated Driving Systems-Equipped Commercial Motor Vehicles (Docket No FMCSA-2018-0037) in support of the U.S. DOT's advancement of a safe, efficient, and equitable transportation future. Maryland is open for business and eager to support the advancement of automated driving systems to realize the potential life-saving and economic benefits, while ensuring safety for all.

The MDOT is a multimodal agency with responsibility for and expertise in roadway and bridge design and operation, motor vehicle safety, transit, bicycle / pedestrian issues, aviation, and ports. For more than three years the MDOT has led a public-private working group to address Connected and Automated Vehicle (CAV) issues in Maryland and to position the state to encourage the test and deployment of CAV technologies. Our vision is to uphold and enhance a safe, efficient, and equitable transportation future by delivering collaborative and leading-edge CAV solutions.

The subject ANPRM proposes answers to previous public request for comments on Advanced Driving Systems (ADS) and requests additional feedback on how FMCSA should approach the resolution of technical and theoretical conditions relating to the new ADS vehicular ecosystem. The MDOT believes the questions, and proposed FMCSA responses, reflect the current concerns and potential future conditions that ADS deployments may encounter; however, the MDOT notes that the FMCSA will not be able to fully apply current standards, or develop future standards without industry partnership and technical cooperation to facilitate needed regulatory oversight that does not inhibit technical development and the implementation of this technology for use on over the road vehicles.



It is MDOT's recommendation that both National Highway Traffic Safety Administration (NHTSA) and FMCSA continue to promote forums by which industry can encounter, demonstrate, and support rulemaking that maintains a safe, efficient, and equitable transportation future. The continued ability to discuss and reiterate the technical ADS ecosystem will more adequately prepare the nation, states, and localities to deploy ADS safely, rather than assuming one-time rulemaking will be sufficient to develop a technology which will be of great benefit to our society. Specific answers to questions posed through the ANPRM narrative are discussed in the following paragraphs.

**I. Do the Federal Motor Carrier Safety Regulations (FMCSRs) require a human driver?**

Defining a rule that prohibits ADS-equipped Commercial Motor Vehicle (CMV) from operating outside the Operational Design Domain (ODD) would require cooperation between those defining and interpreting the ODD space. Absent the creation of specific and standard criteria and wording to define ODD spaces, a rule prohibiting ADS CMV operation outside of its ODD would be difficult to enforce. The MDOT recommends that rule making should require an ADS to be equipped with acceptable fail-safe action plans upon approaching an ODD boundary.

Future plans for the manner and the timeframe for the implementation of Level 4 and 5 ADS-equipped CMVs must continue to rely upon the development and testing of the technologies along with a continual cooperation by the manufacturers with NHTSA, FMCSA, state, and local jurisdictions. This will enable the development of the technology while allowing government entities to properly prepare to respond to the public safety needs of the various jurisdictions involved.

The MDOT believes that FMCSA's proposal to consider defining a new term such as "ADS pilot" has a lower potential for misinterpretation of the requirements under federal and state regulations, than with an adapted definition of the existing terms "driver" and "operator" or a new term that utilizes the existing terms as a component, e.g. "ADS driver".

**II. Commercial Driver's License (CDL) Endorsements**

The MDOT concurs with the FMCSA assessment that it is premature for the FMCSA to consider proposing (new) knowledge and/or skills test for an ADS CDL endorsement. The MDOT suggests that FMCSA should consider whether or not the existing human driver regulations will or should apply in total or in modified form to humans acting as a "fail safe control", "tele-operator" or "remote operator" of an ADS CMV whether the human is physically present in the vehicle or not.

A dedicated or stand by remote operator may not need to be subject to existing driver qualifications as the driving task today requires physical characteristics to perform the driving task, such as holding the steering wheel or depressing a brake pedal. However, to maintain public safety on the public roadway system a human "remote operator" monitoring multiple vehicles would need to maintain a level of alertness and speed of response to address unexpected situations for multiple vehicles. Given a remote driving task, one could envision the physical requirements of the driving task for a human "remote operator" to be simplified, allowing for increased ability to perform a task that may have once been constrained by a physical limitation, but accounting for the potential need for increased mental alertness and responsiveness.



It may be important to note that a "remote operator" would require a control center with a communications link to the ADS CMV to function and these necessary components are not currently regulated as a part of FMCSAs driver knowledge and skills testing or NHTSAs vehicle component and operations safety standards.

**III. Drivers' Hours of Service (HOS) Rules**

The MDOT supports FMCSAs preliminary approach to continue applying the HOS rules. The on-board versus remote driving task will occur in different environments. It is recommended that testing be performed, possibly in a simulator environment, to demonstrate how well humans can remotely operate a vehicle after performing the "mundane" task of monitoring one or multiple ADS for various periods of time.

**IV. Medical Qualifications for Human Operators**

The applicability of existing physical qualification standards focused on an individual's ability to apply force or move objects could be reduced or eliminated by remote operator systems that utilize electronic or other interfaces to implement physical actions and re-actions. Modifying the physical qualification standards could open the industry to a wider pool of individuals capable of performing the "remote" driving task.

**V. Distracted Driving and Monitoring**

In the absence of new information, FMCSA's inclination to require human operators to comply with existing regulations governing distractions while operating ADS-equipped CMVs is reasonable. However, the MDOT believes that testing of on-board and remote operator performance may require modification of the existing regulations. Today, a driver focused on the driving task makes continuous mechanical adjustments. A vehicle operating under ADS control may require an on board or remote operator to monitor the system, but it does not require constant mechanical input.

**VI. Safe Driving and Drug and Alcohol Testing**

The MDOT supports FMCSAs preliminary assessment that specific to safe driving, until the driver or operator, whether physically present in the vehicle or remotely operating the vehicle, no longer has the potential to become the de facto driver of the vehicle, the rules established to ensure safe driving should remain in force.

**VII. Inspection, Repair, and Maintenance**

Technology could be implemented as a component of an ADS to ensure periodic and/or predictive maintenance of the vehicle occurs. This may require expanding trend analysis from NHTSA or other U.S. DOT partners to predict when sensors or other ADS components may begin to fail. The FMCSA should consider partnering more closely with private industry to establish a mutually beneficial model to ensure safe ADS maintenance regulations.

Routine pre-trip and cargo securement inspection activities that are currently the responsibility of the human driver of a CMV could not or may not be easily accomplished by an ADS CMV or its remote operator. The MDOT supports FMCSAs consideration of adopting new requirements to govern motor carrier personnel responsibility for ADS-related inspection, repair and maintenance tasks.

**VIII. Roadside Inspections**

The MDOT supports FMCSA efforts to ensure that Level 4 and 5 ADS equipped vehicles are clearly marked as such, that the ADS equipped vehicles contain ADS malfunction indicators that include alerts on whether or not the ADS is fully operational or in need of repair that requires a human to maintain full-control of the vehicle as if there were no ADS, and establish enforcement tolerances to identify the level of non-compliance that would warrant placing an ADS CMV out of service. We agree that appropriate training should be offered to enforcement and inspection personnel. These actions will support the federal government efforts to ensure "that automated vehicles can be safely and effectively integrated into the existing transportation system."

The MDOT believes that all ADS vehicles should be equipped to ensure that the vehicle can pull over in response to official directions and move out of the way of emergency responders. The University of Maryland, in partnership with the Maryland Transportation Authority and others, applied to the U.S. DOT ADS grant program for the ADS-HERO project to foster solutions on this issue.

**IX. Cybersecurity**

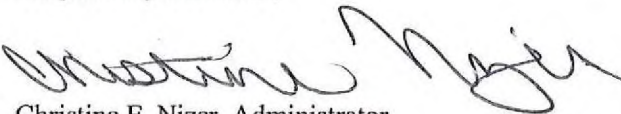
Significant cybersecurity concerns arise with the introduction of ADS. Each vehicle becomes an entry point into a wider system that could affect the public directly, from water pumping stations to national security. The FMCSA should consider stronger coordination with the Department of Homeland Security (DHS), which has already been advancing new strategies to maintain a safer digital ecosystem. DHS is also already involved in the ADS space, including opening discussions with ITS America and other groups to determine how they can best ensure a safe cyber infrastructure.

**X. Confidentiality of Shared Information**

Privacy is a priority for Maryland. All data pulled from the ADS should permit only the evaluation of the vehicle's condition which may, for example, allow emergency responders to more effectively deploy lifesaving resources.

Thank you for providing us an opportunity to comment on the Advance Notice of Proposed Rulemaking for the deployment of a safe, efficient, and equitable transportation future.

Respectfully submitted,



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MDOT Motor Vehicle Administration



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