



Administrator Robin Hucheson
Federal Motor Carrier Safety Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, D.C. 20590

March 20, 2023

Re: Docket Number FMCSA-2018-0037, “Safe Integration of Automated Driving Systems (ADS)-Equipped Commercial Motor Vehicles (CMVs)”

Dear Administrator Hucheson,

The Autonomous Vehicle Industry Association (“AVIA”) writes in response to the Federal Motor Carrier Safety Administration’s (“FMCSA”) Supplemental Advance Notice of Proposed Rulemaking (“SANPRM”) for the Safe Integration of Automated Driving Systems (ADS)-Equipped Commercial Motor Vehicles (CMVs). The SANPRM requests comments about factors the Agency should consider in amending the Federal Motor Carrier Safety Regulations (“FMCSRs”) to establish a regulatory framework for ADS-equipped CMV operations. AVIA supports FMCSA’s efforts to safely integrate ADS-equipped CMVs into interstate motor carriers’ operations and appreciates the opportunity to provide comment on this SANPRM.

AVIA is comprised of the world’s leading technology, trucking, ridesharing, automotive, and transportation companies. Our mission is to bring the tremendous safety and mobility benefits of autonomous vehicles (“AVs”)—otherwise known as SAE Levels 4- and 5-capable vehicles—to consumers and businesses in a safe, responsible, and expeditious manner.

By issuing a rulemaking governing ADS-equipped CMVs, FMCSA has an opportunity to provide clarity to the autonomous trucking industry and enhance the safety, economic, and efficiency benefits that the deployment of autonomous trucks will bring across the country. In recent years, the autonomous trucking industry’s ability to test and deploy has depended on U.S. Department of Transportation (“USDOT”) guidance—reiterated by FMCSA in its 2019 ANPRM—which interprets that “in the case of vehicles that do not require a human operator, none of the human-specific FMCSRs (i.e., drug testing, hours-of-service, commercial driver’s licenses (CDL)s, and physical qualification requirements) apply.”¹ This policy has been critical to the industry’s progress, and we strongly encourage FMCSA to codify this interpretation to

¹ Dep’t of Transp., Preparing for the Future of Transportation: Automated Vehicles 3.0 (AV 3.0) 9 (Oct. 2018), <https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf>; 84 Fed. Reg. 24449, 24453.



reduce potential for misinterpretation. We also recommend that FMCSA amend certain regulations to clarify provisions that do not apply to Level 4 or 5 ADS-equipped CMVs, including regulations establishing Hours of Service (“HOS”) limitations and minimum qualifications for human CMV drivers.

I. Notification by Motor Carriers Operating Level 4 or Level 5 ADS-equipped CMVs

FMCSA is requesting comment on whether to establish a requirement for motor carriers to notify FMCSA that they will operate Level 4 or 5 ADS-equipped CMVs in interstate commerce without a human driver behind the wheel.

1.1 Should FMCSA require motor carriers operating Level 4 or 5 ADS-equipped CMVs to notify FMCSA before operating those vehicles in interstate commerce without a human driver behind the wheel? If so, what potential methods or procedures should be established to notify FMCSA or those operations?

AVIA agrees that FMCSA’s awareness of motor carriers operating a Level 4 or 5 ADS-equipped CMV in interstate commerce is important. However, rather than requiring prior notification for AV operations, FMCSA should leverage existing filing requirements for motor carriers (including the MCS-150 form) rather than create a novel reporting regime for ADS-equipped CMVs. Leveraging existing filing requirements would minimize both duplicative activities for companies as well as duplicative administrative procedures for FMCSA.

1.2 Before operating in interstate commerce, should motor carriers be required to submit information, data, documentation, or other evidence that demonstrates to FMCSA that motor carriers seeking to operate Level 4 or 5 ADS-equipped CMVs have appropriate safety management controls in place to operate the vehicle in accordance with the manufacturer’s specifications and with Federal requirements? If so, please describe any recommended approaches including the information to be provided and appropriate techniques for reviewing that information. If available, provide cost estimates for proposed approaches.

AVIA does not believe it is necessary for FMCSA to impose a distinct data submission requirement to ensure that a motor carrier has implemented appropriate controls to operate in accordance with the manufacturer’s specifications and applicable federal requirements. As explained further in response to question 1.3 below, ADS-equipped CMVs are already subject to federal and state data reporting requirements, and we believe there is an opportunity for FMCSA



to coordinate with other government entities to streamline the various submissions to different entities.

As FMCSA looks to ensure that an ADS-equipped CMV is operated only within its operational design domain (“ODD”) and specifications set by the ADS developer, it should collaborate with AV developers to identify voluntary consensus standards across ADS solutions. ADS developers are designing their solutions to operate in accordance with ODD constraints and safety management controls in a manner that ensures compliance by motor carrier customers. Existing safety assurance practices, like law enforcement interaction plans and voluntary safety self-assessments, are tools that FMCSA could leverage to identify consensus points and inform future regulatory requirements around national operating practices.

1.3 What data should FMCSA collect and maintain regarding Level 4 or 5 ADS-equipped CMVs engaged in interstate transportation? How would such information be used and how would it improve FMCSA’s ability to oversee the safe operation of Level 4 or 5 ADS-equipped CMVs?

AVIA trucking members are committed to safety. AVIA therefore understands FMCSA’s interest in collecting and maintaining data to oversee the safe operation of Level 4 and 5 ADS-equipped CMVs. In addition to existing FMCSA reporting requirements, ADS-equipped CMVs are currently subject to reporting requirements issued by the National Highway Traffic Safety Administration’s (“NHTSA”) Standing General Order 2021-01 on Incident Reporting for Automated Driving Systems (“ADS”) and Level 2 Advanced Driver Assistance Systems (“ADAS”). FMCSA should collaborate with NHTSA to reduce the number of data reporting structures which request similar information. AVIA members also provide extensive information to many state governments regarding active deployments of ADS-equipped vehicles in those states. This includes, among other things, Law Enforcement Interaction Plans (“LEIPs”) and information regarding AV operations. In addition, motor carriers are required to maintain inspection reports and records, and make them available to regulators upon request pursuant to 49 C.F.R. § 396.21(b). These record requirements would also apply to ADS-equipped CMVs.

1.4 What is the current size of the Level 4 or 5 ADS-equipped CMV population? What is the anticipated size of the population within 5 years? What might the size of the population be in 10 years?

AVIA would point FMCSA to existing data collection and monitoring tools, such as SAFER, to determine the current size of the Level 4 or 5 ADS-equipped CMV population. We



also emphasize that the deployment of ADS-equipped CMVs will be steady and gradual, with safety prioritized. There will not be an overnight influx of autonomous CMVs on the nation's roads.

1.5 On average, how many days are Level 4 or 5 ADS-equipped CMVs expected to be operational per year?

It is difficult to predict future ADS-equipped fleet sizes due to several factors, including technology adoption and variation in state laws governing AV operation. AVIA expects that, where deployed, other than down time for routine and regular maintenance, Level 4 or 5 ADS-equipped CMVs will be operational every day. Level 4 ADS-equipped CMVs are already operating around the country, and we expect continued growth of the industry. However, fleet size depends on the pace of adoption, the parameters of a given ODD, the commercial needs of specific motor carriers, and any additional considerations based on the route or state.

II. Oversight for Remote Assistance

2.1 To what extent should the Federal requirements otherwise applicable to CMV drivers (such as hours-of-service limitations, drug and alcohol testing, and physical qualifications), also apply to a remote assistant who is not expected to take control of the dynamic driving task of an ADS-equipped CMV operating at Level 4?

As FMCSA states in the SANPRM, remote assistants are not responsible for carrying out safety-critical portions of the driving task. For this reason, remote assistants should not be required to undergo the same type of certification as CMV drivers. AVIA believes that motor carriers and ADS manufacturers should design and implement certain best practices related to training regimens applicable to remote assistants. However, establishing industry-wide HOS or training requirements would be challenging due to the variation in ADS technologies and company-specific procedures. Indeed, many ADS manufacturers have already developed best practices in-house that are specific to the company's technology.

2.2 What, if any, aspects of the remote assistant job function may require FMCSA oversight including minimum standards and/or auditing, e.g., training, physical qualifications, and other job-performance measures? Please provide rationale and evidence for the recommended manner of oversight.



A singular training protocol or qualification is unlikely to be practical across the autonomous trucking industry due to the variety of operational models and technological systems used by companies operating Level 4 and 5 ADS-equipped CMVs. Companies are best suited to establish the necessary minimum standards for remote assistant training and job performance that are appropriate for and unique to how a particular ADS-equipped CMV will be operated by a motor carrier.

2.3 Are there any qualification requirements that FMCSA should consider for remote assistants, such as related experience, e.g., as a CDL holder?

As FMCSA notes in the SANPRM, remote assistants are not responsible for performing the dynamic driving task. As a result, AVIA reiterates that a CDL should not be required for employment as a remote assistant.

2.4 Are there any specific limitations that should be imposed on the working conditions of remote assistants, such as limitations on the number of ADS-equipped CMVs that a remote assistant is simultaneously responsible for or the number of hours that a remote assistant may work?

As stated in response to question 2.1, it is AVIA's position that prescribing remote assistant shift restrictions or training requirements is best left to the manufacturers in order to develop best practices in-house that are ADS-specific. Notably, given different operational models across AV developers, FMCSA should not impose specific limitations on the number of vehicles a remote assistant can monitor.

2.5 Are there any other considerations that FMCSA should be aware of relating to individuals who may function as remote assistants?

AVIA recommends FMCSA define the terms "remote driver" and "remote assistant" based on the designated functions of each individual. Specifically, we recommend aligning the terms with SAE J3016 definitions to ensure consistent understanding and application:



- A “remote driver” means a driver who is not seated in a position to manually exercise in-vehicle braking, accelerating, steering, and transmission gear selection input devices (if any), but is able to operate the vehicle.²
- “Remote assistance” means event-driven provision, by a remotely located human, of information or advice to an ADS-equipped vehicle in driverless operation in order to facilitate trip continuation when the ADS encounters a situation it cannot manage.³

III. Vehicle Safety and Maintenance

AVIA appreciates the opportunity to provide responses to questions on CMV safety and maintenance requirements. The Association notes that existing FMCSA regulations provide robust requirements for the maintenance and inspection of CMVs. These regulations were implemented to provide oversight for many types of CMV applications that pose risks to roadway safety, including multiple day travel with tandem drivers, logging and livestock trucks, and off-paved road operations. ADS-equipped CMVs are subject to these same regulations and there is no evidence that these vehicles pose greater risks to safety that require additional or specific maintenance or inspection regulations. In fact, the robust self-diagnostic capabilities of ADS-equipped CMVs will likely ensure that these vehicles are among the best-maintained and inspected vehicles on the road. The CVSA Enhanced Commercial Motor Vehicle Inspection Standard, as discussed below, represents a thoughtful approach that will enable the potential safety benefits of ADS-equipped vehicles to be realized by ensuring ADS-equipped CMVs are compliant with existing FMCSA regulations while allowing ADS-equipped vehicles to safely bypass traditional roadside inspections.

3.1 Should Level 4 or 5 ADS-equipped CMVs be subject to pre-trip inspection requirements for their mechanical and ADS components in addition to those specified in 49 CFR 392.7, including those which might necessitate new inspection equipment, before such CMVs are dispatched and after a specified period of operation? If so, what methods should be used to conduct these additional inspection items, what equipment components should be inspected, what documentation should be required, who should be responsible for conducting those inspections and what qualifications or specialized training should be required, and how frequently should the additional inspections be conducted?

² *Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles - J2016_202104*, SAE International [hereinafter *J3016*] 3.24

³ *J3016*, 3.23



There are a number of existing resources for pre-trip inspection procedures. As FMCSA recognized in the SANPRM, CVSA's Enhanced Commercial Motor Vehicle Inspection Program was developed through a multi-party working group to ensure the safety of ADS-equipped CMVs while allowing those vehicles to bypass traditional roadside inspections. Further consensus industry standards are currently being developed by CVSA, AVIA, and the American Trucking Associations' ("ATA") Technology and Maintenance Council ("TMC"). AVIA supports the continued development of consensus industry standards, like those put forth by CVSA and outlined in the TMC S.18 Position Paper on enhanced pre-trip inspections and in-motion inspection processes.⁴ (A new draft of the TMC S.18 Position Paper is in development.) The full TMC S.18 Position Paper attempts to create a seamless approach to integrating ADS-equipped CMVs onto U.S. roadways. AVIA encourages FMCSA to empower CVSA to continue serving as the appropriate venue for developing, implementing, and maintaining such consensus standards.

3.2 If additional inspections, inspection equipment, or additional qualifications for inspectors are proposed, provide an estimate of the costs associated with such additional requirements including the approximate time to complete the additional inspection requirements, costs of any proposed training if additional inspector requirements are proposed, and the paperwork burden associated with such training.

AVIA supports the CVSA-approved Enhanced Inspection program but recognizes that there may be costs or challenges associated with implementing a new and innovative process. AVIA supports using CVSA's Enforcement and Industry Modernization Committee as the avenue through which industry and law enforcement can work together to identify any such challenges and the requisite solutions, as well as improvements or modifications to be made to the program moving forward.

3.3 What technical barriers exist to conducting conventional roadside inspections (which require interactions with the human driver) of Level 4 or 5 ADS-equipped CMVs and what approaches currently exist or might be developed to remove those barriers?

An October 2019 Final Report of the CVSA Automated Commercial Motor Vehicle Working Group, which was funded through an FMCSA grant, identified many of the technical barriers that exist to conducting conventional roadside inspection. The most significant of these

⁴ Am. Trucking Assoc., Tech. & Maintenance Council, Study Group Position Paper: 2021-1: Recommendations Regarding Inspection and Enforcement for Automated Commercial Vehicles (2021), https://tmc.trucking.org/sites/default/files/S18_PP_2021-1_ACMV_INSPECTION_AND_ENFORCEMENT.pdf [hereinafter TMC S.18 Position Paper].



barriers is conducting a traditional roadside inspection without a driver in the cab, since current inspection practices require in-person interactions between a driver and a law enforcement official. Law enforcement may find it challenging to establish the communications channels needed to navigate ADS-equipped CMVs through the complex driving environments at inspection facilities. This places unnecessary burdens on the ADS-developer and on law enforcement.

Due to the challenges specified above and in the CVSA Final Report, CVSA developed its Enhanced Inspection program, in partnership with industry, to allow ADS-equipped CMVs to bypass fixed inspection sites if they participate in the program, which allows inspection information and operational status to be communicated to the inspector remotely from the vehicle. AVIA supports this Enhanced Inspection program for ADS-equipped CMVs.

3.4 What, if any, pre-trip inspection requirements, documentation, and communications capability (for making the results of such inspections available to law enforcement personnel), should be imposed on motor carriers operating Level 4 and 5 ADS-equipped CMVs as a condition for by-passing conventional roadside inspection stations?

AVIA supports the pre-trip Enhanced Inspection program outlined above from CVSA and detailed further in the TMC S.18 Position Paper.⁵ ADS-equipped CMVs should be able to communicate identification and inspection information through an in-motion process, therefore bypassing conventional roadside inspection states, which will include the ability to transmit, at a minimum, the data elements included in the Safety Data Message Set listed in the TMC S.18 Position Paper.⁶

3.5 If Level 4 or 5 ADS-equipped CMVs are not required by the States to undergo roadside inspections during operation, what information should be communicated by the motor carrier and CMV to the State inspectors (e.g., the results of potential alternative pre-trip inspections, and/or the real-time operational status and condition of safety critical systems such as brakes, tires, lighting systems, steering, and ADS components)? Are there other data and performance information that would need to be made available to ensure adequate vehicle maintenance and safe operations?

⁵ See TMC S.18 Position Paper, *supra* note 4.

⁶ *Id.* at 4.



AVIA agrees with CVSA that roadside inspections can be replaced by in-motion inspection reports transmitted from CMVs to law enforcement officials. The most critical element of the in-motion report is that the vehicle will transmit that the tractor and trailer have passed the *CVSA Enhanced CMV Inspection*. The full in-motion inspection report proposal is detailed in the TMC S.18 Position Paper.⁷

The aforementioned TMC S.18 Position Paper envisions that an in-motion inspection confirmation will be transmitted to roadside inspection locations, and may involve the use of existing weigh station bypass technologies, not external indicators. As new wireless inspection technologies become available, the ATA TMC Task Force proposes revisiting how, when, and where in-motion inspection confirmations can occur.

3.6 What communication systems currently exist that would allow roadside inspection officers to receive information regarding Level 4 or 5 ADS-equipped CMVs, and what information could be transmitted via these systems regarding the mechanical condition of the CMV and other operational documentation, (e.g., shipping documents and origin/destination), while in route?

There are communications systems that currently exist today that could be used or modified to enable roadside inspection officers to receive information regarding Level 4 or 5 ADS-equipped CMVs, in accordance with the ATA TMC S.18 Position Paper and consistent with the CVSA EI Program. One such example includes a test module developed by Drivewyze, which allows a Safety Data Set from an ADS-equipped CMV to be communicated to roadside officers. Members of AVIA and others in industry are working with the Texas Department of Public Safety to pilot these new capabilities. Projects like this, once implemented, will provide roadside officers access to Enhanced Inspection results and notify officers of non-compliance.

3.7 Under what safety situations should State inspectors and/or FMCSA receive immediate notification of an unsafe maintenance or operational issue, if any? What data and information would need to be provided in instances such as tow-away crashes or those that disable key operational features of a CMV? Under such safety situations, what return to service process would ensure any maintenance and operation issues have been addressed?

As stated in a response to question 1.3, ADS-equipped CMVs are already subject to significant oversight and data reporting requirements under both FMCSA regulations and

⁷ *Id.*



NHTSA's Standing General Order. These existing regulatory instruments provide FMCSA and NHTSA with sufficient authority consistent with the agencies' statutory mandate to evaluate safety and investigate potential safety defects with ADS-equipped CMVs. There is no need for a unique return-to-service process that does not apply to traditional carriers—the self-diagnostic capabilities of CMVs and the rigors of the CVSA Enhanced Inspection program will ensure that ADS-equipped CMVs pose less of a risk in a post-crash situation than non-autonomous CMVs.

Additionally, LEIPs, which must be provided to state governments under numerous state AV laws, provide law enforcement officers with detailed information on how to engage with ADS-equipped CMVs on public roads when necessary.

3.8 If Level 4 or 5 ADS-equipped CMVs are not subject to State roadside inspections, how would law enforcement agencies and motor carriers ensure that such CMVs are not used to engage in unlawful activity, e.g., human trafficking, cargo theft?

Once implemented, the CVSA Enhance Inspection Program will help ensure ADS-equipped CMVs are not engaged in unlawful activity due in part to the constant monitoring to which ADS-equipped CMVs will be subject. Industry operating models provide manufacturers visibility into the location of ADS-equipped CMVs at all times, ensuring that these vehicles do not make any detours along their planned routes. Remote assistance also allows for rapid intervention in the unlikely case there is any cause for such concern.

3.9 Should Level 4 or 5 ADS-equipped CMVs be subject to additional post-trip inspection requirements for the mechanical or ADS components of the CMV?

AVIA believes that the requirements outlined in the ATA Inspection and Enforcement White Paper,⁸ along with the post-trip inspection obligations required of all CMVs established in 49 C.F.R. 396.11, are appropriate for ADS-equipped CMVs, and that an additional post-trip inspection unique to ADS-equipped CMVs is not necessary.

IV. Conclusion

AVIA is grateful for the opportunity to continue to work with FMCSA to develop a safe and thoughtful approach to the safe integration of Level 4 and 5 ADS-equipped CMVs into interstate operation. We stand ready to engage with FMCSA to further discuss the issues above

⁸ See TMC S.18 Position Paper, *supra* note 4.



and to help develop appropriate regulatory solutions that will allow the public to reap the benefits of autonomous trucking in the safest and swiftest manner possible. If there is anything further we can do to assist you or your staff on these or related matters, please do not hesitate to reach out.

Sincerely,

A handwritten signature in blue ink, which appears to read 'Ariel S. Wolf', is positioned above the printed name.

Ariel S. Wolf

General Counsel
Autonomous Vehicle Industry Association