



March 7, 2018

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

**RE: Removing Unnecessary Regulatory Barriers to Automatic Safety Technologies [Docket ID: NHTSA-2018-0009]**

The American Association of Motor Vehicle Administrators (AAMVA) appreciates the opportunity to comment on the National Highway Traffic Safety Administration's (NHTSA) efforts to remove unnecessary regulatory barriers for vehicles with Automated Driving Systems (ADS). AAMVA emphasizes that the retention of regulations regarding the operational performance of any vehicle are essential, and encourages NHTSA to use discretion in the consideration of the removal or modification of a Federal Motor Vehicle Safety Standard (FMVSS) that may have secondary or tertiary impacts on the crashworthiness, operational safety, or performance standards of the vehicle when considered in its entirety.

AAMVA recognizes the essential role that ADS technologies will serve in saving lives and applauds its integration into vehicle fleets. As these technologies are deployed to vehicles, it is essential for each ADS contribution towards vehicle performance to be readily available on an exemption-specific level. AAMVA notes that the purpose of FMVSS is to standardize the performance aspects of the vehicle. Removal of standardized performance will contribute to the effective deployment of potentially life-saving technologies, but that same exemption may be universally applied to all vehicles (ADS equipped or not) if removed entirely from the corresponding FMVSS. While AAMVA understands that no responsible manufacturer would use regulatory removal as a platform for testing vehicle performance technologies, the advent of autonomous features will attract a much larger swath of technology from developers that may or may not be acclimated to the standard protocol for compliance with FMVSSs. It is the uniform application of a federal standardized model that the states rely on for making determinations regarding vehicle safety.

There is no doubt that the current working model of FMVSS relies heavily on traditional *mechanical* performance of a vehicle. AAMVA is fully cognizant of a necessary shift in how the FMVSS are constructed and applied to a more theoretical model based on decision-

making and integrated ADS performance. However, there are aspects of the vehicle that will continue to rely on both the ADS system performance and its effective use of the underlying mechanical aspects of the vehicle. This intersection will define a vehicle's true overall performance. With that in mind, AAMVA encourages the separate consideration of the more latent (non-engaged) aspects of mechanical vehicle performance from those that contribute directly to the in-use, or operational performance, aspects of the vehicle systems.

### **Intersection with State Law**

While it may seem logical to remove some FMVSS with respect to Highly Automated Vehicles (HAVs), careful consideration must be given to how the removal or modification of FMVSS will affect underlying state law. Given that some state vehicle code is directly related to the ability of a vehicle to meet applicable FMVSS, the potential to disrupt state law is significant and widespread. AAMVA recommends that NHTSA consider the continued inclusion of state governments in the FMVSS modification process, so that avoidance of unnecessary legal complications can be avoided.

### **Differentiation by Level of Automation**

Identification of FMVSS that may be obsolete or ripe for modification will likely vary by the expected level of automation assigned to a vehicle. For instance, the potential for human interaction in a level 3 vehicle would require greater retention of traditional FMVSS than a level 4 or 5 vehicle due to necessary human operation of segments of the driving task. NHTSA will have to carefully consider how to differentiate applicability of the FMVSS by level of automation as even within the "highly-automated" context, differing factors will require different reliance on ADS.

With this said, current application of some FMVSS are reliant on the situation of a "driver." Obviously the integration of ADS may change how the positional relationship of a driver affects the placement of other respective elements of a vehicle. AAMVA contends that for the appropriate levels of automation, the term "driver" be revisited in context of how it affects the safety features of a vehicle. Again, the differentiation of the FMVSS for vehicles that are human-dependent from those that are not will determine which aspects of the FMVSS can be revisited.

### **Testing Methods and Aftermarket Modification of Vehicle Performance**

NHTSA requests information regarding testing procedures in question 8 of the docket, specifically stating, "There are FMVSS test procedures which seem, based on a plain reading of their language, to accommodate vehicles that cannot be driven by humans, but it is unclear how NHTSA or a manufacturer would instruct the vehicle to perform the test as written." AAMVA recommends that if there is a testing procedure for a functional component of a vehicle, that the same standard that applies to a vehicle equipped with ADS technologies be applied as it would to a vehicle dependent on a human driver. The

functionality of the system as a whole should operate as intended by the safety aspects of the standard unless it performs at a safety equivalency level, without outside instruction, as that of a human operator. Further, AAMVA recommends that while manufacturer certification of a vehicle has met “all applicable FMVSS” at the time of manufacture, vehicles may be equipped aftermarket whereby that certification may be voided. In these instances, it is important to retain the testing procedures which instruct the overall safety standard of the vehicle. Should NHTSA choose to allow ADS to meet certain functional aspects requiring testing, it is important that ADS technologies that only satisfy a component of that test not be separated from the suite of technologies that successfully demonstrate an equitable safety level for satisfaction of the entire test.

### **Mandatory Submission of Data Supporting Testing**

AAMVA recommends that data supporting the testing of vehicle functionality be submitted with direct correlation to the standards they satisfy. Obviously each of the safety standards apply to a discrete function of the vehicle. New ADS technologies may work in tandem with other technologies, and it will be important to have the appropriate satisfactory technologies aligned with the appropriate FMVSS they satisfy. While certain FMVSS may be rendered obsolete, it will likely be done under conditions where an emergent technology has taken its place. For instance, if the removal of mirrors in absence of a human driver is considered an option, it will be important for data supporting the robust functionality of the sensor systems tasked with detecting obstacles or dangers in a vehicle’s path to be documented. As noted previously, while this may be a daunting and complex endeavor, it is nevertheless important to ensure that the same principles for preexisting FMVSS apply to ADS-equipped vehicles whether there is a human driver or not.

### **Telltale and Displays**

The notice requests, “Is there is a safety need for telltales and other displays in Table 1 and 2 of FMVSS 101 to be visible to any of the occupants in vehicles without manual driving controls?” AAMVA suggests that there is still a need for an occupant, whether operator or not, to know the safety status of the vehicle. While a non-driving occupant may not be as responsive to the display warnings as they would when in direct control of the vehicle, these telltales and displays still inform occupants of the general safety and condition of the vehicle. This is particularly important in instances where the occupant is not entering their own vehicle (such as a shared asset or networked vehicle), and there may be pre-trip unsafe conditions that inform the occupant about whether they feel the vehicle provides a sufficiently safe environment. Additionally, the telltales and displays may serve an additional safety role in communicating the nature of unforeseen events to occupants and first responders. Being forewarned about an impending failure can help instruct safe evacuation and rescue of an occupant, and allow occupants to make informed decisions regarding level of risk. While not all displays may be necessary to communicate essential safety conditions, NHTSA should review which required displays should be available to all occupants.

NHTSA requests information on whether this information should be made available to all occupants. AAMVA recommends that essential safety information be made available to all occupants, in all seating positions. With the potential for redesign of cabin interiors based upon introduction of ADS technologies, it will become impossible to know which seating position a single occupant chooses to employ. Further, if there are multiple occupants in a self-driving vehicle, 2 out of 3 may be engaged in tasks monopolizing their attention, while 1 notices important safety information being displayed. That 1 could inform the other 2 and provide potentially life-saving information.

### **NHTSA Research on Safety Need for Occupants of Fully Self-Driving Vehicles to Have Access to Non-Driving Controls**

NHTSA needs to further explore the need for occupants of fully self-driving vehicles to have access to non-driving controls. For example, many stakeholders have discussed the potential for vehicles to have immediate, manual controls that disable a vehicle. There are numerous considerations from crime to health that make this a worthwhile consideration. Further, there may be occupant non-driving controls that impact the level of confidence an occupant has in a vehicle such as engaging lighting under circumstances not anticipated by the ADS, or even something as simple as engaging the windshield wipers so occupants can retain a modicum of comfort regarding environmental safety. Additional non-driving functions that still have high safety values are door and window controls and their locking mechanisms to ensure the integrity and safety of the occupants and its contents. Owners, as well as occupants, will also need to have access to vehicle-dependent non-driving related gauges such as the odometer for purposes of sale, reporting, etc.

### **Crashworthiness and Safety**

As noted above, the ability to explore new cabin configurations has been cited as one of the exciting trends associated with ADS. While rearrangement of the cabin into unique configurations becomes possible, AAMVA emphasizes that the same crashworthiness standards that applied to vehicles under previous cabin configurations should apply to any future configurations as well. Given the continued expectancy for mixed fleet populations into the foreseeable future, rigorous crashworthiness testing upon new configurations will require a large amount of data. For each non-standardized seating situation, the number of variables in differing impacts is extensive, and each seating arrangement may require additional mandatory safety features.

### **Prioritization of FMVSS Issues and Research**

The ultimate decision on how to prioritize FMVSS research will depend on what NHTSA determines is its ultimate goal. If the goal is to prompt ADS deployment, then it would be best to explore and research the effects of removing those standards identified as absolute barriers to ADS technology. AAMVA recommends that NHTSA continue to engage the stakeholder community as it makes those identifications so that a broad perspective can be considered.

AAMVA thanks NHTSA for the opportunity to comment on its consideration of safety standardization. AAMVA understands the need for NHTSA to be agile in its approach to moving life-saving technologies to consumers and stands willing to work with the agency as we revisit what it means to be deemed federally compliant with all applicable safety standards.