Motor & Equipment Manufacturers Association

Comments to the
Federal Motor Carrier Safety Administration

RE: Request for Comments; Concerning Federal Motor Carrier Safety Regulations (FMCSRs) Which May Be a Barrier to the Safe Testing and Deployment of Automated Driving Systems-Equipped Commercial Motor Vehicles on Public Roads

Docket No. FMCSA-2018-0037

May 10, 2018

Introduction

The Motor & Equipment Manufacturers Association (MEMA) submits these comments in response to the U.S. Department of Transportation (USDOT) Federal Motor Carrier Safety Administration's (FMCSA) *Federal Register* request for comments (RFC), 83 Fed. Reg. 12933 (March 26, 2018), on the cited subject above. MEMA is the leading international trade association in the fast-changing mobility industry and represents 1,000 vehicle suppliers that manufacture and remanufacture components and systems for use in passenger cars and heavy trucks as new original equipment (OE) and aftermarket parts.[1] MEMA represents suppliers of parts and systems for commercial vehicles through its Heavy Duty Manufacturers Association (HDMA) division.[2]

MEMA supports policies that enable the introduction of new technologies necessary to facilitate sustainable mobility. In previous public comments about automated driving systems (ADS), MEMA has commended the leadership at USDOT and the National Highway Traffic Safety Administration (NHTSA) on their proactive, pragmatic, iterative approach to providing industry guidance and policies.[3] Moreover, NHTSA's efforts to seek public comments and evaluate the potential impacts of ADS-equipped vehicles on the U.S. Federal

[1] MEMA represents its members through four divisions: Automotive Aftermarket Suppliers Association (AASA); Heavy Duty Manufacturers Association (HDMA); Motor & Equipment Remanufacturers Association (MERA); and, Original Equipment Suppliers Association (OESA). The motor vehicle components manufacturing industry is the largest direct employer of manufacturing jobs in the United States directly employing more than 871,000 Americans, generating a total employment impact of 4.26 million jobs, and contributing nearly $435 billion to the U.S. GDP.

[2] Heavy vehicle component and system suppliers directly employ 203,000 Americans – an increase of 18.7% since 2012. Source: "Driving the Future: The Employment and Economic Impact of the Vehicle Supplier Industry in the U.S." MEMA, Jan. 2017 https://www.mema.org/resource/mema-economic-impact-study-driving-future

[3] "Automated Driving Systems 2.0: A Vision for Safety" USDOT/NHTSA, Sept. 2017.

Motor Vehicle Safety Standards (FMVSS) are critical to finding the appropriate pathways to prepare for the future of our nation's transportation and infrastructure systems.[4] For the near-term, the policy guidelines are the appropriate tactics in the face of rapidly developing technology. Concurrently, there is the burgeoning need for government and industry stakeholders to work together and identify potential challenges and barriers to deployment of these technologies. Such collaboration is vital to achieving the goals envisioned for this ambitious undertaking.

Trucks today have a range of safety features and technologies, such as advanced driver assistance systems (ADAS) technologies with increasing levels of automated braking and steering stability controls. As such, MEMA encourages FMCSA to continue to collaborate with NHTSA (in addition to other State and Federal agencies) as ADS technology develops to ensure a harmonized regulatory framework to avoid any conflicting federal and state laws and regulations or other roadblocks to testing ADS on roadways or, ultimately, deploying ADS in fleets.

MEMA is encouraged by FMCSA's endeavor to also evaluate the impact of potential barriers of Federal Motor Carrier Safety Regulations (FMCSRs) to testing and deployment of ADS-equipped commercial motor vehicles (CMVs) on public roads. MEMA's comments will mainly provide background information and address parts of Section III of the RFC. However, regardless of which FMCSRs are identified in this docket and in the agency's own research as potential barriers for vehicles with ADS, ultimately, the integrity of the regulatory framework must always protect the primary intentions behind these standards, which are the safety and protection of the vehicle, its occupants, and other road users.

Supplier Role in Technology Development

Our members are key developers of the software and components that enable ADS for highly automated vehicles. Suppliers have developed a wide range of ADAS, as well as integrated active/passive safety systems that are the foundation for ADSs. ADAS technologies are available and can deliver real safety benefits now, today. In the future, if widely deployed, ADS technologies have the potential to take those benefits further and radically improve vehicle safety and enhance mobility.

Typically, suppliers take on the initial investments and the associated risks to develop these technologies for their vehicle manufacturer customers (OEMs), who are concurrently planning for their own future vehicle design cycles. Suppliers' product planning and investment costs include: product concept research; engineering development for the part or system; design of the manufacturing process; customer validation of part or system prior to production; production facility updates; and, finally, product manufacturing.

[4] 82 Fed. Reg. 49472, Oct. 25, 2017.

Commercial Motor Vehicles Utilize a Range of Safety Technologies to Address Service Applications and Vehicle Characteristics

CMVs Have Unique Needs – As FMCSA is aware, CMVs have drastically different characteristics compared to light passenger vehicles. First, there are drastic differences in production volume and costs-per-vehicle. Heavy vehicles are utilized for commercial purposes, are highly customizable to fleet specifications, are typically manufactured in low-volumes, and are expensive. Conversely, passenger vehicles are not (typically) made-to-order, are produced at high volumes and, thus, are less expensive. Second, and perhaps the most obvious differences between them, are vehicle dynamics and handling characteristics. CMVs have significantly higher centers of gravity, axle ratings, and load ratings, as compared to passenger vehicles. Also, heavy vehicles come in a wide range of configurations from combination over-the-road, long-haul tractors, to urban delivery trucks; from extremely large, specialty heavy-haul tractors, to passenger motorcoaches and buses. Moreover, CMVs are available in a seemingly endless variety of wheelbases, axles, suspensions, brakes, and tires. Challenges arise when applying the same or similar light vehicle performance requirements to larger, heavier commercial vehicles.

Foundational Brakes, ABS & ESC – It is critical to remember that the backbone of most automated steering or braking are built on building-block technologies and systems like foundational brakes and the anti-lock braking system (ABS). Moreover, to manage vehicle excessive roll and yaw, a vehicle's electronic stability control system (ESC) is closely integrated with its ABS and is capable of automatically intervening when vehicle instability is detected. Utilizing standard ABS components (e.g. wheel speed sensor) together with additional solenoid valves, sensors, and advanced algorithms, the ESC can react to a potential instability by de-throttling the engine and appropriately applying the engine and foundation brakes to help re-stabilize the vehicle.

ADAS and V2V are Building Blocks to Highly Automated Vehicles – Today, there are many advanced safety features available in the vehicle marketplace ranging from passive to active systems that either warn, aid, and/or assist a driver to avoid or mitigate vehicle crashes. Various ADAS and vehicle-to-vehicle (V2V) technologies are the foundational systems upon which more complex automated systems are built. These technologies are mature, affordable, and effective. These technologies are available now and have the potential to yield huge safety benefits by avoiding almost 30 percent of U.S. vehicle crashes.[5]

Assistance features actively engage steering, acceleration, and/or braking systems as needed in order to ensure the vehicle's safe operation. Such features include: automatic emergency braking (AEB), adaptive cruise control, intelligent speed adaptation, automatic lane keeping, and pedestrian avoidance. As in the case of warning and aid features, assistance features are enabled by technologies such as processors and

[5] "A Roadmap to Safer Driving Through Advanced Driver Assistance Systems" MEMA, Sept. 2015.

software, mono- and stereo-vision cameras, short- and long-range radar, and light detecting and ranging (LiDAR) technology.

To address one of most common crash scenarios – rear-end collisions – AEB, utilizes sensors to detect obstacles ahead and determine whether a collision is imminent. First, the system warns the driver with warnings (audio, visual, haptic or a combination of those). However, if the driver does not act and brake, the automated system intervenes and applies the brakes to avoid or mitigate a collision. An AEB system uses a variety of radars to determine angle, velocity, and range to objects. For improved capabilities, some systems fuse radar sensors and camera/imaging inputs to detect an imminent crash.

Again, a suite of ADAS technologies combined with V2V/V2X and other integrated systems are all part of the evolution to reach higher levels of automation. These building blocks to automated driving system-enabled vehicles are available now and can provide fleets with real-world safety benefits today. Moreover, exposing drivers to these ADAS and V2X systems now will enable them to interface with higher levels of automation over time. This will improve driver comfort levels and add to their skill sets. Plus, increasing the deployment of these ADS building blocks gives commercial vehicle technicians and fleet managers opportunities to work on and learn about how to monitor, maintain, and repair these systems.

MEMA Input on FMCSA's Notice Section III. Request for Information: Current Testing and Operation of CMVs with ADS

Because the roll-out of these technologies require major economic resources, research and testing, and significant lead-time, it is important that the federal government agencies provide clarity and certainty about its near-term policy goals and objectives for regulatory modernization. Thus, FMCSA and NHTSA should work closely together to ensure that they are working in parallel on endeavors (policies, guidelines, or regulations) that may impact ADS-equipped vehicles and related technologies.

Data Sharing – FMCSA indicated they would like "to receive and review data and information from the private sector to understand a driver's experience with ADS technologies in real-world settings." Following that, FMCSA asked a series of four questions related to types of data collected and how can the agency asses that data. While MEMA cannot address the specific questions, we would like to provide some background information for your consideration. Most of this relates to previous comments on the US DOT ADS "2.0" guidelines.

In general, all companies – not just those in the vehicle sector – safeguard proprietary intellectual property and other confidential business information from dissemination. Likewise, suppliers seek to safeguard commercially sensitive information, especially given their ongoing investments in research and development and validation testing of their product innovations of the various components, modules, and sensors that comprise ADSs. This data is critically essential in the development of ADS technology.

MEMA would also like to highlight that testing and validation of ADS-related components and systems are implemented not only in virtual "hardware in the loop" scenarios, but also via real-world exposures. Data collected during the testing phase are highly proprietary as it is primarily being collected by the company's testers for the purposes of refining and advancing the capabilities of the specific company's component, module, or system. At the same time, while MEMA understands the desire for communal and continual learning, such matters are best addressed through industry standard development bodies, such as SAE International.

Testing and Validation – There are inherent and critical differences between ADSs that are being exclusively evaluated and tested by trained professionals versus ADS-equipped vehicles that are intended for production and deployed to the general public. Vehicles used for the purposes of testing and evaluation are often current model vehicles that have been modified and instrumented with test equipment. These test vehicles are driven by professional drivers who are typically trained by the company conducting the test evaluation (often suppliers and/or suppliers in partnership with an OEM customer). Moreover, as logic would dictate, test vehicles with prototype systems may not have the level of reliability and redundancy that will be found in the eventual production version of an ADS-equipped vehicle.

Suppliers are critical to the overall development and refinement of automated vehicle technology. During the testing process, a system will be adjusted, refined, and re-adjusted – sometimes within hours and days, sometimes over a period of weeks and months. The ability for suppliers to utilize public roadways to collect data, refine systems, and fully test and evaluate new technology before systems are finalized is a critical industry need. As such, MEMA has strongly advocated for the automated vehicle legislation pending in the Congress – H.R. 3388, the "Safety Ensuring Lives Future Deployment and Research in Vehicle Evolution Act" (SELF DRIVE Act) and S. 1885, the "American Vision for Safer Transportation Through Advancement of Revolutionary Technologies Act" (AV START Act). There is important language in those bills that will establish a federal framework from which to build key policies and requirements to prepare for an automated future. Since CMVs are not included in the scope of those bills, agency coordination on ADS policies and potential rules impacting heavy trucks is that much more critical.

Beyond Compliance – In 2016, MEMA responded to FMCSA when it took steps to seek input on implementation of its "Beyond Compliance" program mandated in the Fixing America's Surface Transportation (FAST) Act. By encouraging fleets to go beyond minimum requirements in the law, the "Beyond Compliance" program will encourage fleets to voluntarily purchase, install, and deploy advanced safety technologies and fleet management systems for commercial vehicles. Crash avoidance and mitigation technologies will significantly contribute to reducing heavy vehicle-related fatalities and injuries and, consequently, yielding financial and societal benefits. "Beyond Compliance" will allow fleets to address their specific needs in a cost-effective manner without creating new federal mandates or requirements.

For the near term, MEMA would encourage FMCSA to expedite implementation of its "Beyond Compliance" program. For the longer term, MEMA would be supportive of FMCSA considerations to include ADSs as part of that program.

Regulation of Manufacturing Versus Operation – Earlier MEMA stressed the importance of collaboration and coordination between NHTSA and FMCSA. Particularly because NHTSA is undergoing a similar exercise, it is incumbent on the agencies to work closely together to align their respective regulatory requirements – like FMVSSs for new vehicles and assess if there are any corresponding in-service FMCSRs that need to be revised or updated to reflect new vehicle requirements. Suppliers are not the regulated entities for FMCSRs. However, suppliers that manufacture the components and systems of these various technologies have a personal stake in ensuring that in-field FMCSRs reflect the CMVs out on the road and, where appropriate, reflect the FMVSSs on the books. If the agency envisions a future of ADS-equipped vehicles, what would they consider to be the out-of-service criteria against which these complex systems are assessed? Furthermore, there are the added challenges of fleet maintenance and skilled technicians to maintain, repair, and monitor these complex and integrated safety systems.

Importance of Global Collaboration

Many MEMA members are global companies that depend on an integrated worldwide network of suppliers and customers for continued viability and growth. There is a great deal to gain and a lot more to lose if U.S. policy-development activities impacting future vehicles are done in isolation or significantly out of step with our global counterparts in Europe and Asia. To that end, we urge US DOT to explore how existing forums – such as the UNECE World Forum for Harmonization of Vehicle Regulations (WP.29) 1998 Agreement – can be useful bodies in which representatives can to share with and learn from other governments as to how they are evaluating similar issues. In general, opportunities to create harmonized approaches on advanced vehicle technologies increase efficiencies, provide certainty, and reduce costs for both government and industry. With strong leadership and cooperation in addressing ADS, global endeavors to develop aligned standards and regulations have the potential to enable expedited implementation and streamline test development efforts. Overall, these alignments enhance global competitiveness.

Conclusion

Suppliers are committed to leading the way to improve vehicle safety by developing the advanced safety technologies necessary to reduce fatalities and injuries. Public policies and parameters are critical to establish the right frameworks to accommodate future transportation and mobility needs. As the primary developers of ADAS, V2X and ADS components, modules and systems, these needs are even more critical for vehicle suppliers to adequately validate products for their customers for market deployment. As such, MEMA continues to support the iterative, transparent, proactive steps taken by the USDOT, NHTSA

and FMCSA to better understand the technologies and strategies and to identify the key challenges and opportunities.

MEMA thanks FMCSA for consideration of our comments and feedback to the agency's request for comment. We will continue to be part of the public discourse on this subject. For any additional information or questions, please contact Leigh Merino, senior director of regulatory affairs at lmerino@mema.org or CTO Brian Daugherty at bdaugherty@mema.org.

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