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RE: Docket Number: NHTSA-2023-0023 / FMCSA-2022-0171
Heavy Vehicle Automatic Emergency Braking; AEB Test Devices

The Commercial Vehicle Safety Alliance (CVSA), on behalf of the Commercial Vehicle Brake Manufacturers Council (CVBMC), respectfully submits the following comments regarding the joint notice of proposed rulemaking (NPRM) from the National Highway Traffic Safety Administration (NHTSA) and the Federal Motor Carrier Safety Administration (FMCSA) proposing automatic emergency braking (AEB) and other related requirements for heavy duty vehicles. Specifically, NHTSA proposes to create a new Federal Motor Vehicle Safety Standard (FMVSS) to require AEB systems on vehicles with a gross vehicle weight rating greater than 4,536 kilograms (10,000 pounds) and amend FMVSS No. 136 to require nearly all heavy vehicles to have an electronic stability control (ESC) system that meets the equipment requirements, general system operational capability requirements and malfunction detection requirements of FMVSS No. 136. In addition, FMCSA proposes new Federal Motor Carrier Safety Regulations requiring that the ESC and AEB systems be on during vehicle operation.

CVSA is a nonprofit organization comprised of local, state, provincial, territorial and federal commercial motor vehicle (CMV) safety officials and industry representatives. The Alliance aims to prevent commercial motor vehicle crashes, injuries and fatalities and believes that collaboration between government and industry improves road safety and saves lives. Our mission is to improve commercial motor vehicle safety and enforcement by providing guidance, education and advocacy for enforcement and industry across North America.

CVBMC is a council of original equipment manufacturer company representatives under CVSA. The primary objective of CVBMC is to provide expertise, leadership, data and direction regarding commercial motor vehicle brake systems and components. CVBMC is currently comprised of members from the following brake manufacturers: Bendix Commercial Vehicle Systems, Consolidated Metco, Fras-le, SAF Haldex Commercial Vehicle Systems, Hendrickson International, Meritor, Walther Engineering & Manufacturing Co., Webb Wheel Products, Inc. and ZF Group.

General Comments

CVSA and CVBMC appreciate the opportunity to comment on the joint proposal from NHTSA and FMCSA requiring that all heavy vehicles be equipped with an AEB system. CVSA and CVBMC strongly support deployment of safety technology, like AEB, proven to mitigate the severity of crashes and save lives, and we applaud NHTSA and FMCSA for moving forward with this critical rulemaking. After reviewing the NPRM, however, CVBMC has identified a number of challenges with the proposed implementation, testing procedures and timeline that should be addressed prior to the agencies publishing their final rules. In addition to the comments below, which provide specific feedback to the proposal and many of the questions posed by NHTSA and FMCSA, CVBMC has several general observations for NHTSA and FMCSA to consider.

Mitigation vs. Prevention

In the joint proposal, NHTSA and FMCSA characterize AEB as crash prevention technology. This thought is reflected in the minimum test procedures and minimum performance requirements that do not allow for vehicle contact at high speeds. However, in speaking with the developers of AEB and in conversations with other stakeholders, the consensus is that AEB is intended to serve as crash mitigation technology. Forward collision warning (FCW) and AEB are designed to alert the driver to a potential crash and then to help the driver respond if necessary. It is not designed to prevent crashes. As noted by other stakeholders, AEB is intended to be a tool to help reduce the risk associated with collisions through speed reduction. Many of the testing procedures and performance standards appear to be crafted for AEB as a prevention tool, rather than a mitigation tool, and this disconnect must be addressed. CVBMC encourages NHTSA and FMCSA to consider this distinction and incorporate it into their final rules, focusing on crash mitigation, rather than prevention.

Class 3-6 Challenges

In addition, while CVBMC encourages adoption of AEB within the Class 3-6 vehicle populations, additional data and information is needed in order to effectively implement this requirement. Currently, ESC and AEB are not readily available in the medium class space. As a result, deployment will take more time and require additional coordination to effectively implement. CVBMC strongly encourages NHTSA and FMCSA to engage with the original equipment manufacturers (OEMs) to get a sense of the state of the industry and the most effective path forward to deployment.

Standard CMVs vs. Specialty/Vocational Vehicles

Similarly, CVBMC encourages the agencies to consider the different vehicle configurations within the Class 7-8 vehicle populations impacted by the proposed requirements. Implementation of an AEB requirement for the typical truck tractor will be fairly straightforward. However, implementation of the requirement on vocational vehicles, such as front discharge garbage trucks, cement mixers and snowplows, will be significantly more complicated and will likely require additional time and consideration. These types of vehicle configurations have unique features that would interfere with the sensors necessary for the AEB system to function. It is imperative that NHTSA and FMCSA have a strategy in place for addressing these unique configurations. CVBMC encourages NHTSA and FMCSA to engage with vehicle manufacturers to evaluate which vehicle types lend themselves to swift adoption of AEB and to move forward with those vehicles first, allowing more time to address the challenges associated with the specialized vehicles. This recommendation is not intended to delay deployment of this life

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saving technology; it is merely recognition that some vehicle configurations are more complicated and will require additional thought and discussion to best craft an effective AEB requirement. It is also likely that some vehicle configurations simply are not compatible with AEB adoption, and a process for identifying those configurations will need to be established to handle the large volume of vehicle exemption requests efficiently.

Availability of Testing Resources

While CVBMC supports and understands the agencies' interest in implementing the AEB requirement swiftly, the Council has concerns regarding the feasibility of implementing the AEB requirement across Class 3-8 vehicles in the time proposed. This concern is further compounded by the expectation that NHTSA will be moving forward with an AEB requirement for light vehicles essentially concurrently with the heavy and medium vehicle requirements. Simply put, there is not enough testing infrastructure in place to meet these timelines. CVBMC strongly recommends that NHTSA and FMCSA consider a phased approach for implementation, allowing each phase to inform the next. CVBMC suggests implementing the light vehicle requirements first, then moving to standard Class 7-8 configurations, followed by the specialized vocational configurations in Class 7-8, and finally Class 3-6 vehicles. This staggered approach would ensure each phase had adequate access to the test track facilities and would allow additional time for input and discussion to address the challenges associated with Class 3-6 and specialized configurations in the vocational market.

Electric Vehicles

To date, the testing related to AEB systems has been on internal combustion engines. NHTSA should engage with industry stakeholders and gather feedback on how an AEB requirement would be applied to electric powered heavy vehicles, including how testing should be conducted and what, if any, additional safety precautions are necessary.

Stakeholder Engagement

Finally, throughout these comments, CVBMC will note questions and issues that require additional stakeholder input. CVBMC strongly encourages NHTSA and FMCSA to conduct additional stakeholder outreach, through listening sessions, to gather much needed feedback on the testing procedures, performance standards and all the challenges associated with deploying AEB across all heavy vehicles. The challenges should not prevent the AEB requirement from moving forward, but it is imperative that NHTSA and FMCSA have the information needed to craft regulations that are practical and will achieve the intended results. CVSA and CVBMC agree that it is important to move forward with deployment of this life saving technology at a swift pace. However, it is equally, if not more important, that issues and concerns outlined in comments from CVBMC and other stakeholders are addressed prior to implementation. Industry stakeholder engagement is crucial to avoid the challenges that were associated with implementing the anti-lock braking systems (ABS) requirements in the 1970s.

Heavy Vehicles Not Currently Subject to ESC Requirements

Multi-Stage Vehicle Manufacturers and Alterers

In the NPRM, NHTSA and FMCSA acknowledge the unique nature of multi-stage vehicle manufacturing and specialty/vocational vehicle configurations and requested comments on the impacts of the AEB proposal on this segment of the industry.

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CVBMC is concerned that implementing the AEB requirement for vehicles in this segment of the industry will be more complicated than anticipated in the NPRM. As these third-party body builders add equipment and adjust and move the various AEB sensors in order to accommodate the needs of the particular configuration, it becomes difficult for the secondary manufacturer to validate that the AEB system functions properly. Unfortunately, after discussions with industry stakeholders, it is clear to CVBMC that there is no simple, 'one size fits all' solution to this issue. It is imperative that NHTSA and FMCSA work with industry to identify a solution to this challenge. Developing an efficient exemption process that allows time to evaluate and respond to the various configurations is likely necessary and CVBMC encourages the agencies to delay implementation of this portion of the AEB requirement until a dialogue with industry has been conducted and a viable solution has been identified.

ESC and AEB Requirements for FMVSS 136 Exempt Vehicles

In the NPRM, NHTSA proposes to remove the exemptions that exist for vehicles that are outside the current FMVSS 136 requirements, such as straight trucks, city buses, school buses and tow trucks.

Generally, CVBMC supports deployment of ESC and AEB technology in order to improve overall roadway safety. However, CVBMC has concerns about the practical impacts of requiring vehicles currently exempt from FMVSS 136 to be equipped with ESC and AEB and encourages NHTSA to engage with industry stakeholders, including the OEMs, to better understand the impact of requiring these vehicles to be equipped with ESC and AEB. For example, requiring city buses to be equipped with ESC/AEB could lead to jarring disruptions for passengers who may be standing and are not belted. Ultimately, NHTSA may conclude that the safety benefits of requiring ESC and AEB outweigh the risks associated with the requirement, but it's important to fully explore the issue before moving forward.

Proposed Performance and Test Requirements

Generally, CVBMC has concerns regarding several aspects of the proposed performance and test requirements, many of which are detailed below. As proposed, the requirements are not practical in terms of application and the timeline and would be incredibly costly for industry. There are simply far too many variables – speed, number of tests, load, mitigation/avoidance, etc. – and too little specificity. Before publishing a final rule, it is critical that NHTSA review the stakeholder feedback received in response to this NPRM, incorporate the necessary changes to improve the performance and testing procedures and publish a subsequent notice allowing for additional review and comment on the revised performance and test requirements.

On Aug. 29, CVSA and CVBMC held a stakeholder roundtable discussion on the AEB proposal, attended by brake manufacturers, OEMs, and representatives from the motor carrier, testing and research communities. Consensus among the group is that the proposed performance and test requirements require significant changes. CVBMC intends to work with the appropriate representatives from the CMV brake industry to develop a consensus set of performance and test requirements for NHTSA's consideration. CVBMC will file subsequent comments to the docket, outlining an alternative set of performance and test requirements.

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No Contact Performance Criteria

As noted in the 'General Comments' section above, one of the most significant concerns to CVBMC is that the proposal seems to characterize AEB as crash prevention technology, which is not an accurate assessment of the technology's intent or design. FCW and AEB systems are designed to mitigate collisions by alerting the driver to a potential crash and helping the driver respond, if necessary, by automatically applying the brakes. It is not designed to prevent crashes. As noted by other stakeholders, AEB is intended to be a tool to help reduce the risk associated with collisions through speed reduction. CVBMC encourages NHTSA and FMCSA to consider this distinction and to work with industry stakeholders to update the testing procedures to reflect the technology's capabilities and intent more accurately. Requiring that the AEB system prevents the vehicle from colliding with a lead vehicle when tested is not a reasonable standard. CVBMC does not support this requirement and encourages NHTSA to reconsider the issue. While significant reduction in energy from the collision can be achieved with AEB, complete avoidance at higher speeds with either pneumatic or hydraulic brakes will be difficult to achieve.

Furthermore, NHTSA needs to clarify when the latest point of activation can occur for the FCW presentation which should be respective to AEB activation. Earlier activation of the FCW presentation should be decided by the manufacturers, providing them the flexibility to design systems that are most appropriate for their vehicle application and markets.

Consequences of Allowing Vehicle Contact

There are a number of factors to consider if test vehicles are permitted to make contact during testing. If the vehicle makes contact during testing, the entire system then must be repaired, calibrated and operational to the same performance level as prior to the crash. In addition, there may be repairs necessary to the target vehicle and, after multiple strikes, the target vehicle may need to be replaced due to the accumulated damage. In addition, cleanup of the test track would need to be considered following a collision. This process adds costs and takes additional time, further compounding the issue noted above regarding limited test track infrastructure, slowing down the entire testing and certification process for the manufacturers.

In the NPRM, NHTSA expresses concern that any performance test requirement that allows for vehicle contact not resulting in immediate test failure could result in the non-repeatability of testing without expensive or time-consuming interruptions to testing and requested comment.

CVBMC concurs with NHTSA's concerns.

Performance Test Scenarios

NHTSA is proposing three track test scenarios to evaluate AEB performance. The test scenarios have the subject vehicle travelling toward a lead vehicle which is ahead in the same lane. However, the lead vehicle may be either stopped, moving at a constant but slower speed, or decelerating to a stop.

CVBMC agrees the proposed test scenarios are appropriate to demonstrate and test the AEB system capabilities, but there also needs to be a performance on vehicle's offset where the rear-end is partially in the lane. CVBMC

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also recommends that NHTSA consider testing to determine the AEB system capabilities to provide vehicle offset performance while minimizing interference with other vehicles in other lanes.

Stopped Lead Test:

Regarding the Stopped Lead Test, NHTSA notes that to satisfy the proposed performance requirement, the subject vehicle must provide a FCW and stop prior to colliding with the lead vehicle.

CVBMC disagrees. As previously discussed, the AEB system is a collision mitigation system not a collision avoidance system. AEB is part of an overall safety system, which includes the driver. Requiring that the subject vehicle not come into contact with the lead vehicle is not a realistic standard to set.

Slower Moving Lead Test:

Regarding the Slower Moving Lead Test, NHTSA proposes to require that to satisfy the proposed performance test requirement, the subject vehicle must provide a FCW and slow to a speed equal to or below the lead vehicle's speed without colliding with the lead vehicle.

CVBMC again disagrees. As previously discussed, the AEB system is a collision mitigation system not a collision avoidance system. Requiring that the subject vehicle not come into contact with the lead vehicle is not a realistic standard to set. Furthermore, these are all proposed straight line tests with variation in the forward vehicle path. The variable speed needs to be clarified by NHTSA. Variable speed is handled not much differently than the lead vehicle decelerating, but if the lead vehicle is weaving, the amount of allowed sideways movement needs to be defined by NHTSA. Vehicle heading maintained with minimal steering input such that the travel path does not deviate more than .3 meters laterally from the intended travel path and the subject vehicles yaw rate does not exceed 1 degree per second, which is reasonable for vehicles that are both in the same lane.

Decelerating Lead Test:

Regarding the Decelerating Lead Test NHTSA proposes to require that to satisfy the proposed performance test requirement, the subject vehicle must provide a FCW and slow to a speed equal to or below the lead vehicle's speed without colliding with the lead vehicle.

CVBMC again disagrees. As previously discussed, the AEB system is a collision mitigation system not a collision avoidance system. Requiring that the subject vehicle not come into contact with the lead vehicle is not a realistic standard to set. Does the regulation also now allow braking into to the warning phase? Full breaking during warning phase? NHTSA needs to define the FCW phase in terms of maximum allowable speed reduction, distance to target, time, distance to collision, etc.? In addition, NHTSA should address how FCW is to operate. Is NHTSA suggesting that forward collision warning and brake actuation coincide? NHTSA needs to be clear regarding what they intend to define and what they will leave open, and if they leave it open, how much variation will be allowed.

Manual Brake Application in the Subject Vehicle

NHTSA proposes testing under two conditions for the subject vehicle: testing without any manual brake application and testing with manual brake application.

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After discussion with other industry stakeholders at the Aug. 29 roundtable, CVBMC has concluded that the manual brake application test is not necessary, adds to testing expense and would further complicate and undermine the system testing. Incorporating a human into the testing process presents uncontrollable variables across the test iterations that impacts the repeatability of the testing parameters. CVSA recommends proceeding with the testing without the manual brake application and does not believe this will have a negative impact on the overall quality of the testing.

Brake Application Test Speeds

In the NPRM, NHTSA proposes that for testing with manual brake application of the subject vehicle, the subject vehicle test speed is any speed between 70 km/h and 100 km/h, and the lead vehicle speed is 20 km/h and testing without manual brake application would be conducted at any constant speed between 10 km/h and 80 km/h.

First, as noted in the previous section, CVBMC reiterates that testing with manual brake application is not necessary and will significantly impact the repeatability of the testing. Further, the lack of specificity in the speed points places a tremendous burden on industry and will result in higher costs and longer timelines for testing.

As noted above, CVBMC strongly encourages NHTSA to evaluate the overall performance and testing criteria and revise to incorporate a set number of specific speed points at which manufacturers are expected to use. When determining the speed increments and vehicle load conditions, NHTSA should consider the necessary wait time between tests for the brakes to cool. The agency should define the speed increments to be used in testing, while also considering the wait time necessary between tests to allow the brakes to cool. A feasible set of test parameters needs to be defined, otherwise it can take up to four weeks with one vehicle. Finally, additional data is necessary to determine the performance of non-traditional CMVs.

Conditions for Vehicle Tests: Subject Vehicle Conditions

<u>Brake Testing Temperatures</u>

The agency proposes that the brake temperatures be between 66 and 204 degrees Celsius prior to the beginning of a test, which is the same as specified in FMVSS. 136.

CVBCM concurs with the suggested temperature range.

<u>Subject Vehicle Weight:</u>

The NPRM specifies that during testing the subject vehicle is loaded to its gross vehicle weight rating.

Loading the vehicle to its gross vehicle weight rating for testing is unnecessary. The purpose of the testing is to validate the functionality of the AEB system – to determine if the system responds properly. Adding additional weight goes beyond testing the system response and instead begins to test overall brake performance, which is beyond the scope of this proposal. The AEB system will respond appropriately if you have a brake system that meets the requirements of FMVSS 121. Testing at lower weights is sufficient to confirm proper function of the AEB, without the additional costs, safety issues and challenges associated with using a vehicle loaded to its maximum gross vehicle weight rating.

CVBMC recommends testing of the tractors in bobtail and straight trucks empty to confirm system performance. Using the bobtail is safer as well. In the worst-case scenario, if the system does not respond correctly during testing and the driver is forced to take evasive action, it is better to not have a loaded trailer connected.

Proposed Requirements for False Activation

No Automatic Braking Requirement:

NHTSA proposes a requirement that the subject vehicle, when presented with two false activation test scenarios, must not automatically apply braking that results in a peak deceleration of more than 0.25g when manual braking is not applied, nor a peak deceleration of more than 0.45g when manual braking is applied.

CVBMC cannot comment on this proposal at this time, as it is unclear to the council how NHTSA reached the deceleration values included in the proposal. CVBMC encourages NHTSA to clarify how these values were reached in a subsequent notice to allow for better informed stakeholder input.

Vehicle Test Scenarios:

In the NPRM, NHTSA states that the false activation requirement would be evaluated by executing two vehicle tests. One is the steel trench plate test and the second would be the pass-through test.

CVBMC acknowledges that these two test methods are established and have been used for several years in the industry. The false positive tests are important to driver satisfaction but should not have a 100% pass rate. CVBMC recommends that NHTSA engage with industry stakeholders to determine a minimal acceptance pass rate for false positives when using the two test methods. FCW and AEB systems at times will provide false alerts and interventions, but that does not mean they are unsafe. It should also be noted that neither of these tests replicate the uncontrolled environment of the real world which is a necessary validation for any new system evaluation.

Conditions for False Activation Tests

In the proposal, NHTSA notes that false activations occurring at interstate speeds would create the most severe unintended consequences of AEB braking. Therefore, the proposal includes only a test at a single speed of 80 km/h.

CVBMC concurs with NHTSA's conclusion and notes that this approach is standard practice for AEB equipped vehicles.

Proposed Requirements for Malfunction Indication

In the NPRM, NHTSA is proposing that AEB systems must continuously detect system malfunctions and, when a malfunction is detected, provide the vehicle operator with a warning.

CVBMC concurs with the agency's decision to require that the AEB be equipped with a malfunction notification. Drivers, maintenance personnel, law enforcement and other fleet personnel will all need a visual indicator of the status of the AEB. Consideration should be given to the need to balance making information available with the need to not overwhelm or distract the driver. CVBMC recommends requiring that the forward collision warning

symbol be the same for the malfunction telltale and it should function similar to the existing ESC malfunction telltale - flashing the telltale during the actuation of the event and illuminating it solid during a malfunction or if the AEB has been deactivated. To ensure compliance CVBMC recommends that the telltale indicate AEB system functionality by using the following color scheme: Green – system is operational; Yellow – system has a diagnostic fault; and Red – system has been manually shut off.

Further, CVBMC agrees with NHTSA's proposal that the FCW auditory signal fundamental frequency must be at least at 800 Hertz. An audible alarm along with a heads-up display notifies the driver of the risk of a collision without having to take the eyes off the road during a possible forward collision event.

In addition, NHTSA defines a malfunction as any condition in which the AEB system fails to meet the proposed performance requirements. CVBMC, along with other industry stakeholders, does not agree with NHTSA's definition of malfunction. A malfunction is a condition where a portion of the system has failed. Instances where an external factor is preventing the system from functioning, such as ice or snow build up, should be considered impairment or limitations. It is also possible for an external source to deactivate the system. These are important distinctions for monitoring and measuring the safety performance of AEB systems and understanding how they perform in real world scenarios.

Finally, the agency also asked for feedback on the need and potential safety benefits of requiring a standardized appearance of the malfunction telltale and what standardized characteristics would achieve the best safety outcomes.

CVBMC recommends that NHTSA establish a minimum set of specific AEB failures for the purpose of verifying that the AEB system will activate the malfunction telltale. This includes proposing requirements pertaining to specific failures and including an accompanying test procedure. For instance, the agency could develop or use available tests that specify disconnecting sensor wires, removing fuses or covering sensors to simulate field malfunctions. Such requirements are not included in the proposed regulatory text but should be considered in the AEB test procedure.

Deactivation Switch

In the joint proposal, NHTSA seeks comment on whether or not it is appropriate to allow for a manual switch that would deactivate the AEB system.

CVBMC does not support a physical switch approach to allow for deactivation of the AEB system. However, CVBMC does support allowing drivers and/or fleets with some capability to override or deactivate the AEB system through the vehicle's software. Allowing for AEB deactivation through the software would provide necessary flexibility to vehicles that periodically or seasonally will experience compatibility issues, such as construction vehicles or snowplows. The OEMs should be required to provide documentation to NHTSA and FMCSA regarding the mechanism for allowing deactivation. Fleet operations may have different preferences regarding when it is appropriate to override or deactivate an AEB system, and there needs to be flexibility for various methods of implementation.

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To ensure that the deactivation is not improperly used, FMCSA should enumerate the conditions under which a regulated CMV is not required to have its AEB operational. As noted above, additional input and discussion related to how to apply an AEB requirement to vocational vehicles, such as the snowplow and construction vehicles, is critical and CVBMC encourages both NHTSA and FMCSA to engage with industry stakeholders, including the OEMs and the trade associations that represent them, to determine how best to proceed in regard to vocational vehicles.

System Documentation

In the NPRM, NHTSA seeks comment on documentation requirements that may be effective in encouraging real world effectiveness and in ensuring that AEB systems are developed and maintained in a manner that minimizes performance risks.

It is the OEMs' and system suppliers' responsibility to provide manuals regarding what to do when the system malfunctions and the warning lamp is on. An AEB system should be treated the same as an ABS system when the ABS' warning light is on.

Real world effectiveness is difficult when there are so many aspects which are not clearly defined. When you look at the system what you can do is make it function and work correctly when in use to become effective. The vehicle manufacturer and the system supplier give clear guidelines on how to calibrate, when to collaborate with windshield replacements, windscreen, need to be replaced with a new camera, auto calibrate and so forth. Manuals are provided on how to deal with the subject, so calibration can be performed. Calibration is a complex process and verifying calibration should not be included in the annual inspection if you do not have damage to the vehicle. There is no need for a new calibration unless the windscreen is broken. The manuals do require recalibration after certain events. For example, recalibration is going to be required when replacing a sensor with the windscreen, having a new radar sensor installed, etc. When there is damage to the front of the vehicle is when recalibration will be required.

Training is also important to ensure drivers know how the AEB system works and may react under various situations. CVBMC recommends that FMCSA require drivers receive a minimum of three hours of training on the AEB system installed on their vehicles. Training should include the following:

- Classroom and on-the-road events, both with testing to ensure understanding of the AEB system's capabilities, potential driver overrides and system impacts; repercussions for tampering with the system.
- Review of driver tools and references, to include a review of the operator's manual, OEM training/supplier videos to ensure understanding of system capabilities.
- Information on FCW, AEB and ESC technologies, included in the CDL standard test approach.

ESC Performance Test

In the NPRM, NHTSA proposes to require nearly all heavy vehicles to have an ESC system that meets the equipment requirements, general system operational capability requirements and malfunction detection requirements of FMVSS No. 136. However, NHTSA would not require vehicles that are not currently required to have ESC systems to meet any test track performance requirements for ESC systems, due to the potential testing burden on small businesses and the multi-stage vehicle manufacturers involved in Class 3-6 vehicle production.

NHTSA requests comments on whether the agency should establish performance requirements for ESC for all vehicles covered by this proposal.

CVBMC is strongly opposed to requiring ESC without the corresponding performance requirements. While the Council understands NHTSA's concern regarding the impact on small businesses, it is not prudent to eliminate the necessary safety validations as a result. Minimum performance requirements are critical to verifying that the ESC operates properly. NHTSA should work with industry stakeholders to identify appropriate performance requirements that are not overly burdensome for industry. If NHTSA cannot identify appropriate performance requirements for Class 3-6 vehicles and find an equitable path forward to verify performance requirements with industry stake holders, those vehicles should not be required to be equipped with ESC.

Vehicle Test Device

Description and Development

NHTSA is proposing that the vehicle test device be based on the specifications in the International Organization Standardization (ISO) 19206-3:2021.

CVBMC acknowledges that the vehicle test device proposed by NHTSA in the test procedure is a test target commonly used by the industry for quite some time and is consistent with test target used in light vehicle AEB testing. However, CVBMC considers the proposed vehicle test device dated and obsolete. The proposed vehicle test device is not representative of many large vehicles, such as sports utility vehicles (SUVs), on the road today. The agency needs to consider developing a new target that addresses a standardized SUV configuration.

Specifications

Radar Cross Section:

NHTSA is proposing that the radar cross section of the vehicle test device fall within an "acceptability corridor" when measured using an automotive-grade radar sensor.

CVBMC requests NHTSA use a commercial motor vehicle-grade radar sensor, instead of an automotive-grade sensor, due to the difference in the acceptability corridor defined by the upper and lower boundaries specified by ISO 19206.

Rear End Approach:

NHTSA notes in the NPRM that, because the test procedures proposed in the rule only involve rear-end approaches by the subject vehicle, NHTSA is only proposing to establish specifications applicable for the rear end of the vehicle test device. NHTSA seeks comment on whether the specifications for the vehicle test device should include all sides of the vehicle.

CVBMC supports NHTSA's decision to only include specifications for the rear end of the vehicle test device. Due to the diversity of the heavy vehicle fleet population, consideration for all sides for the many different configurations would be overly burdensome. Focusing on the rear for the time being is appropriate.

Alternatives Considered

Use of Real Vehicle as Test Vehicle Devices:

NHTSA requests comments on specifying a set of real vehicles to be used as vehicle test devices in AEB testing.

CVBMC supports exploring the use of real vehicles for the pass-through false detection test. Real vehicles are more cost effective, maneuverable and stable than the standard target balloon car. However, it is important that the vehicle selected be representative of the current state of passenger vehicles. Personal vehicles are trending larger, and the automotive industry is producing a higher number of pickup trucks and SUVs. CVBMC does not recommend using real vehicles as a target vehicle for standing vehicles or decelerating or slow vehicle tests.

UN ECE Regulation No. 152 – Target Vehicle Specification:

NHTSA has tentatively concluded that the target vehicle specification in UN ECE Regulation No. 152 of any high-volume passenger sedan is not sufficiently specific for an FMVSS and seeks comment on whether it should create a list of vehicles from which NHTSA could choose a lead vehicle for testing.

CVBMC supports the agency creating a list of vehicles from which a lead target vehicle could be selected for testing. Having more target vehicles will add more variability and increase the bandwidth of vehicle targets for testing. A list is appropriate from where the largest and smallest target lead vehicles can be selected. CVBMC recommends that NHTSA work with industry stakeholders to identify viable target vehicles.

Proposed Compliance Date Schedule

NHTSA proposes a tiered phase-in schedule for compliance with the proposed standards.

CVBMC agrees that a phase-in approach is appropriate. However, the timelines set in the NPRM are too aggressive and do not provide adequate time for proper development and integration of the AEB technology. Moving forward with the proposed timeline risks undermining the quality of the AEB system implementation. As noted above in the 'General Comments' section, CVBMC has concerns about the feasibility of implementing the AEB requirement across Class 3-8 vehicles in the time proposed. This concern is further compounded by the expectation that NHTSA will be moving forward with an AEB requirement for light vehicles essentially concurrently with the heavy and medium vehicle requirements. Simply put, there is not enough test track infrastructure in place to meet these timelines.

CVBMC recommends that NHTSA and FMCSA consider lengthening the timeline for implementation, allowing each phase to inform the next. CVBMC suggests implementing the light vehicle requirements first, then moving to standard Class 7-8 configurations, followed by the specialized vocational configurations in Class 7-8, and finally Class 3-6 vehicles. This staggered approach would ensure each phase has adequate access to the test track facilities and would allow additional time for input and discussion to address the challenges associated with Class 3-6 and specialized configurations in the vocational market. In addition, implementation of AEB on light vehicles first will allow for field experience with an everyday driver to see how the driver responds to the technology before having it implemented on heavy vehicles.

NHTSA and FMCSA also requested comments on the proposed lead time for meeting these requirements and how the lead time may be structured to maximize the benefits that can be realized most quickly, while ensuring that the standard is practicable. Once again, CVBMC notes that the proposed timeline is impractical, particularly with regard to ensuring adequate access to test track facilities, especially if the agency moves forward with a light vehicle AEB requirement concurrently with the heavy vehicle requirement. CVBMC recommends NHTSA and FMCSA engage in a dialogue with industry stakeholders to better understand the state of the industry and what timeline would be attainable. It is important to note that CVBMC supports implementation of an AEB requirement for heavy vehicles and understands the agency's desire to move forward swiftly to deploy this life saving technology on the roadways. However, it is important that industry be given adequate time to comply.

Retrofitting

In the NPRM, NHTSA concludes that "retrofitting in-service vehicles with AEB systems could be very complex and costly because of the integration between an AEB system and the vehicles' chassis, engine, and braking systems." As a result, the agency does not recommend retrofitting in-service heavy vehicles.

CVBMC agrees with NHTSA's analysis and strongly supports the decision not to require in-service vehicles to be retrofit to comply with an AEB requirement. Retrofitting an in-service vehicle to accommodate the needs of an AEB system would be extremely difficult and is not practical or cost effective. Depending upon the vintage of the vehicle, everything from the engine, transmission and brake system could need to be replaced. Further, even if it were technically feasible, it would be impossible to verify the performance of an AEB system on vehicles that are already in service.

While NHTSA concludes that retrofitting in-service vehicles is not practical, the agency asks a series of questions in the NPRM on the topic. CVBMC reiterates the Council's opposition to a requirement to retrofit in-service vehicles but provides the following feedback to the questions posed in the NPRM.

CVBMC does not believe it is practical to apply a retrofit requirement to existing, in-service vehicles and cannot recommend any approaches for identifying portions of the on-road fleet to which a retrofit requirement could apply. CVBMC concurs with NHTSA's assertion that it is reasonable to assume that older in-service vehicles would have greater challenges to meet retrofit requirement. While it is true that the portion of the vehicle population that are required to meet FMVSS 136 could in theory align with an AEB requirement, it is not guaranteed that the vehicle's existing hardware and software can accommodate the additional requirements associated with the additional AEB specifications. The original platform was designed to support the needs of ESC, not those of ESC with AEB. Further, once a vehicle is on the road, there is no standardization in terms of the vehicle's maintenance condition, which, as noted in the NPRM, is foundational for AEB performance. Given these challenges, CVBMC opposes requiring AEB be retrofit on existing in-service vehicles.

Federal Motor Carrier Safety Regulations Requirements

In the NPRM, FMCSA proposes to require the ESC and AEB systems be inspected and maintained in accordance with 49 CFR Part 396, Inspection, Repair, and Maintenance (§396.3).

CVSA and CVBMC support this requirement. Including the inspection and maintenance of the ESC and AEB systems in Part 396 is necessary to ensure that the systems are maintained properly and remain operational. In addition, CVSA and CVBMC encourage FMCSA to incorporate the ESC and AEB requirements into Appendix A. This is necessary to incorporate inspection of the systems into the periodic inspection requirement in §396.17. Finally, if the AEB and ESC requirements are intended to be enforced roadside, language similar to the ABS requirement in §393.55 will need to be added to Part 393. If the AEB comes equipped with a malfunction lamp (similar to ABS), indication of a fault or the system being deactivated can be easily detected and cited during a roadside inspection.

Conclusion

CVSA and CVBMC support the intent of the proposed rule requiring AEB systems on heavy-duty vehicles and the goals of NHTSA and FMCSA to improve roadway safety. The final AEB rule must consider the many differences in vehicle types, vocation, performance, application, readiness to incorporate ESC and AEB by type and class, along with the costs and time needed to conduct development, testing and certification of these vehicle systems. CVBMC will file subsequent comments to the docket, outlining and proposing an alternative set of performance and test requirements.

CVSA works to closely monitor, evaluate and identify potentially unsafe transportation processes and procedures as well as to help facilitate and implement best practices for enhancing safety on our highways. Commercial motor vehicle safety continues to be a challenge and we need the involvement of all affected parties to help us better understand these issues and put into place practical solutions. We appreciate the opportunity to comment on this proposal and the agencies' commitment to safety and stakeholder involvement.

If you have further questions or comments, please do not hesitate to contact me at 202-998-1008 or collin.mooney@cvsa.org.

Respectfully,

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