# National Transportation Safety Board

Office of the Chair

Washington, DC 20594


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Docket Management Facility (M-30)
US Department of Transportation
1200 New Jersey Avenue SE
West Building, Ground Floor
Room W12–140
Washington, DC 20590

Re: Docket Number NHTSA–2023–0021

Dear Sir or Madam:

The National Transportation Safety Board (NTSB) has reviewed the National Highway Traffic Safety Administration's (NHTSA) notice of proposed rulemaking (NPRM) titled "Federal Motor Vehicle Safety Standards: Automatic Emergency Braking Systems for Light Vehicles," published at 88 *Federal Register* 38632 on June 13, 2023. In the NPRM, NHTSA proposes adopting a Federal Motor Vehicle Safety Standard requiring automatic emergency braking (AEB) and pedestrian AEB (PAEB) systems on new passenger vehicles with gross vehicle weight ratings of up to 10,000 pounds.[1] This NPRM references section 24208 ("Crash Avoidance Technology") of the Infrastructure Investment and Jobs Act (Public Law 117-58, signed on November 15, 2021), which directs the US Department of Transportation (USDOT) to establish minimum performance standards and require all passenger motor vehicles to be equipped with forward collision warning (FCW) and AEB systems.[2]

NHTSA proposes to test AEB compliance with the stated requirements in three crash scenarios: (1) the test vehicle encounters a stopped lead vehicle in the same lane of travel, (2) the test vehicle encounters a slower-moving lead vehicle, and (3) the test vehicle follows a lead vehicle that decelerates after a time. The proposed test procedure would be evaluated during daytime and nighttime conditions, at a range of test speeds, up to the test vehicle speed of 100 km/h (62 mph), and with the lead vehicle representing a profile of a compact passenger car. The passing criterion in each test condition is AEB activation on the test vehicle that completely avoids a collision with the lead vehicle.

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[1] When an AEB system detects a crash-imminent situation, it automatically applies the vehicle's brakes (if the driver has not) or applies additional braking force to supplement the driver's braking.

[2] An FCW system typically activates before AEB engagement, providing an alert to the driver about the upcoming imminent crash situation.

In addition to AEB compliance for vehicle-to-vehicle collision avoidance, NHTSA also proposes to test PAEB compliance for vehicle-to-pedestrian collision avoidance, with stated requirements in three crash scenarios in which a pedestrian is: (1) crossing the path of the test vehicle, (2) walking along the same path as the test vehicle, and (3) stationary along the path of the test vehicle. The proposed test procedure would be evaluated during daytime and nighttime conditions, at a range of speeds, up to the test vehicle speed of 65 km/h (40 mph), and with pedestrian surrogates representing both adult and child pedestrians. The passing criterion in each test condition requires PAEB activation on the test vehicle that completely avoids a collision with the pedestrian surrogate.

The proposed rulemaking requires both AEB and PAEB systems to be operational at all speeds above 10 km/h (6 mph). The proposal also specifies the requirements for FCW activation, the timing and necessity of which is dependent on a particular situation.

The NTSB recognizes the safety benefits of AEB and PAEB systems and largely supports the scope, test procedures, and performance standards in the NPRM. In our response, we first discuss the NTSB's safety recommendations related to FCW, AEB, and PAEB, as well as reaffirm our support for vehicle-to-everything (V2X) technology. We then provide comments about selected aspects of the proposed rule. Lastly, we provide comments about NHTSA's expectations for AEB system performance beyond the parameters described in the proposed test procedures.

**NTSB Safety Recommendations**

The NTSB has a long history of advocating for crash avoidance technologies, starting with a 1995 safety recommendation to USDOT to examine the effectiveness of collision warning technology in commercial vehicle fleets.[3] Since that time, we have issued more than 25 safety recommendations, frequently to NHTSA, related specifically to FCW and AEB systems. Over the years, the NTSB's advocacy approach has focused on research, deployment, and advancement of the technology.

In our 2001 special investigation report titled *Vehicle- and Infrastructure-Based Technology for the Prevention of Rear-end Collisions,* the NTSB issued a series of recommendations to NHTSA and automobile manufacturers to develop and implement a program to inform the public about the benefits and proper use of these technologies, specifically FCW systems.[4] In the report, the NTSB also recommended

[3] See Safety Recommendation H-95-44. Because of a lack of progress, the recommendation was classified Closed—Unacceptable Action in August 1999.

[4] NTSB. 2001. *Vehicle- and Infrastructure-Based Technology for the Prevention of Rear-end Collisions*. Special Investigation Report NTSB/SIR-01-01. Washington, DC.

that NHTSA develop performance standards for FCW and require those systems to be installed on all new passenger vehicles (Safety Recommendation H-01-8).

In the meantime, forward collision avoidance technology has progressed to active application, via AEB. In 2015, the NTSB published another special investigation report titled *The Use of Forward Collision Avoidance Systems to Prevent and Mitigate Rear-End Crashes*, in which we examined the state of collision avoidance technologies for preventing rear-end crashes and determined that the technologies were mature and effective in reducing such crashes.[5] Although NHTSA had funded and conducted considerable research into the development of various human factors guidelines related to operational characteristics of FCW—which automakers have incorporated into the development of their FCW systems—the agency did not require the use of these guidelines. Based on this supporting human factors research, in the 2015 report, we classified Safety Recommendation H-01-8 Closed–Acceptable Alternate Action. In the same report, the NTSB also adopted a two-pronged alternative approach to expedite the deployment and advancement of FCW and AEB systems.

The first prong of our approach was intended to encourage rapid deployment of these technologies in all new passenger vehicles. As such, the NTSB issued new safety recommendations to all passenger vehicle manufacturers to install FCW and AEB systems as standard equipment on their new vehicles (Safety Recommendations H-15-8 and -9). The NTSB expected that these systems would meet the criteria of testing protocols that NHTSA had developed for the New Car Assessment Program (NCAP). These two recommendations to vehicle manufacturers are classified Open—Acceptable Response.[6]

The second prong of our approach was intended to incentivize future improvement of the technologies through NCAP as the advancement mechanism. As such, the NTSB issued safety recommendations to NHTSA to (a) expand the FCW and AEB testing protocols within NCAP to better represent real-world fatal crashes by including high-speed and high-velocity differential scenarios (Safety Recommendation H-15-4), and (b) expand the NCAP 5-star safety rating system to include ratings of FCW and AEB systems (Safety Recommendations H-15-6 and -7). Despite the NTSB's reservations about the limitations of NCAP's testing protocols for FCW and AEB systems in passenger vehicles, we considered NHTSA's development of these protocols as progress toward standardized performance.[7] However, given

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[5] NTSB. 2015. *The Use of Forward Collision Avoidance Systems to Prevent and Mitigate Rear-End Crashes*. Special Investigation Report NTSB/SIR-15/01. Washington, DC.

[6] Both safety recommendations were issued to 31 passenger vehicle, truck, and motorcoach manufacturers. Open—Acceptable Response is the overall (plurality) classification for each of the recommendations.

[7] See the NTSB's response to NHTSA's 2022 request for comments regarding NCAP.

NHTSA's inaction in expanding NCAP ratings and test procedures, all three safety recommendations are classified Open–Unacceptable Response.

About 3 months after the NTSB issued the 2015 special investigation report, NHTSA, the Insurance Institute for Highway Safety (IIHS), and 10 automakers announced a voluntary agreement to install AEB systems as standard equipment on new vehicles by 2022.[8] Although the voluntary agreement initiated broader AEB deployment across the passenger car market, the agreed-upon performance metrics were minimal: the stopped lead vehicle test scenario was to be conducted at speeds up to 25 mph, with AEB systems needing to reduce the vehicle speed by only 10 mph. Although signifying progress, this level of performance would have an almost negligible impact on fatalities because it does not address crashes at higher speeds and its established performance metric focuses on crash mitigation (speed reduction) rather than crash avoidance.

Over the following years, the NTSB continued investigating crashes that could have been prevented or mitigated with AEB systems. Our investigations also revealed the necessity of expanding the existing NCAP test protocols to account for varying crash characteristics. In 2018 and 2019, the NTSB published a special investigation report and two safety studies, each focusing on specific vulnerable road users: *Pedestrian Safety*, *Select Risk Factors Associated with Causes of Motorcycle Crashes*, and *Bicyclist Safety on US Roadways: Crash Risks and Countermeasures*.[9] In these reports, the NTSB determined that collision avoidance technologies could reduce the frequency of crashes with pedestrians, motorcyclists, and bicyclists, and identified the need for performance test protocols. As a result, the NTSB made the following safety recommendations to NHTSA:

- Develop performance tests for evaluating pedestrian collision avoidance systems (H-18-42) and incorporate such systems into NCAP (-43). In 2022, these recommendations were classified Open–Acceptable Response and Open–Unacceptable Response, respectively.

- Incorporate motorcycles in the development of performance standards for passenger vehicle crash warning and prevention systems (H-18-29). In 2022, this recommendation was classified Open–Acceptable Response.

[8] The NTSB special investigation report was published in June 2015, and the first voluntary agreement was announced in September 2015. NHTSA announced the commitment of 20 vehicle manufacturers in March 2016.

[9] (a) NTSB. 2018. *Pedestrian Safety*. Special Investigation Report NTSB/SIR-18/03. Washington, DC. (b) NTSB. 2019. *Bicyclist Safety on US Roadways: Crash Risks and Countermeasures*. Safety Research Report NTSB/SS-19/01. Washington, DC. (c) NTSB. 2018. *Select Risk Factors Associated with Causes of Motorcycle Crashes*. Safety Report NTSB/SR-18/01. Washington, DC.

- Incorporate into NCAP tests to evaluate a car's ability to avoid crashes with bicycles (H-19-36). In 2022, this recommendation was classified Open–Unacceptable Response.

In the NPRM, NHTSA states that its proposal is responsive to NTSB Safety Recommendations H-15-4, H-18-41, and H-18-42. We encourage NHTSA to consider our comprehensive approaches as described in this section, including those related to NCAP improvements, as part of this rulemaking.

Further, the NTSB also reaffirms our long-standing support for V2X technology.[10] V2X relies on direct communication between vehicles as well as between vehicles and infrastructure and vulnerable road users. As such, when compared to vehicle-resident systems (such as AEB), V2X can provide considerably earlier conflict detection as well as the ability to see around corners or through objects, and is also unaffected by inclement weather. Combined, V2X and vehicle-resident systems complement each other's capabilities and can provide greater safety benefits than either of the two technologies on its own. Most recently, in 2022, following an investigation of a crash that featured several challenging characteristics that could have been addressed by V2X, the NTSB issued an additional safety recommendation to USDOT to implement a plan for nationwide deployment of this technology.[11]

**Comments on the Proposed Performance Requirements**

Although more than two decades have passed since the NTSB's initial call for performance requirements for forward collision avoidance technologies, we are pleased that NHTSA is finally proposing a rule to require FCW and AEB on all new passenger vehicles.

In the following sections, we provide comments regarding various aspects of the proposal, within the context of NTSB investigations.

**AEB Test Scenarios**

The NTSB supports the inclusion of the three crash scenarios identified in the NPRM and the inclusion of a broad range of speeds. We are pleased that vehicles will be tested at higher speeds. As NHTSA states in the NPRM, some AEB systems may be tuned to perform better at higher speeds than at lower speeds.

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[10] See our description of the item to Require Collision-Avoidance and Connected-Vehicle Technologies on all Vehicles on our 2021-2023 Most Wanted List. See also our safety topics website "V2X: Preserving the Future of Connected Vehicle Technology."

[11] See Safety Recommendation H-22-1, classified Open—Unacceptable Response and issued in the following report: NTSB. 2022. *Multivehicle Crash Near Mt. Pleasant Township, Pennsylvania, January 5, 2020.* NTSB/HIR-22/01. Washington, DC.

We are hopeful that the test scenarios will be designed to best reflect real-world operating conditions. Our investigations have shown the need to consider systems' performance in other crash-relevant scenarios including unusual vehicle profiles and configurations encountered in real-world conditions. NTSB investigations have also demonstrated the need to assess the ability of AEB systems to detect traffic safety hardware and other unusual potential traffic safety hazards.

***Offset and Vehicle Profiles*.** In 2018, the NTSB investigated a crash in Culver City, California, involving a passenger vehicle operating in a partial automation mode that was traveling in the left lane of an interstate at low speed due to congestion.[12] As the vehicle ahead changed lanes, the partial automation system started to accelerate the vehicle to its pre-set cruise speed until the vehicle struck the rear of a stopped fire truck at a speed of 31 mph. The fire truck was responding to a previous collision and had parked at an angle, occupying the left shoulder and the left travel lane. The AEB on the passenger vehicle did not engage, and the FCW alerted the driver of a hazard 0.5 seconds before impact. The driver did not react. The crash occurred in daytime and in good visibility conditions. There were no injuries.

Considering the critical characteristics of the Culver City crash—daytime; clear weather; vehicle speed around 30 mph; stopped emergency vehicle at an angled, offset position—it is unclear whether the proposed AEB performance standard would be sufficient to address similar crashes, specifically those involving lead vehicles with untested profiles (such as non-passenger vehicles) or at varying angles and offsets, which are common hazards on roadways.

In the previous section, we discussed two safety recommendations related to non-vehicle roadway users, specifically bicyclists and motorcyclists. In the NPRM, NHTSA describes the ongoing research the agency is conducting to characterize the AEB performance to respond to bicycles and motorcycles in the three crash scenarios discussed above. NHTSA expects to complete a report on this research by the end of 2023 and has stated that it may use these findings to redefine test protocols and include bicycle and motorcycle surrogates in the final rule.

We encourage NHTSA to consider expanding the proposed protocols or having the capability to examine—through technical documentation, for example—the functionality of AEB systems in other crash-relevant scenarios including those

[12] (a) NTSB. 2019. *Rear-End Collision Between a Car with Advanced Driving Assistance Systems and a Stationary Fire Truck, Culver City, California, January 22, 2018*. NTSB/HAB-19/07. Washington, DC. (b) Partial automation systems are designed to maintain longitudinal and lateral control of the vehicle but still require constant driver monitoring and readiness to assume full control.

involving untested profiles (such as non-passenger vehicles), varying angles and offsets, and other vulnerable road users such as bicyclists and motorcyclists.[13]

***Object Detection*.** In 2018, the NTSB investigated a crash in Mountain View, California, involving a passenger vehicle operating in a partial automation mode that was traveling about 60 to 65 mph on US-101 when it moved into a gore area, at which time it accelerated toward a previously damaged crash attenuator and a concrete barrier.[14] The vehicle struck the barrier, and the driver was fatally injured. Damage to the vehicle initiated a postcrash fire. In this investigation, the FCW system did not provide an alert and the AEB did not activate. The crash occurred during daytime and in good visibility conditions. The driver did not respond due to distraction and overreliance on the vehicle's partial driving automation system.

Considering the critical characteristics of the Mountain View crash—daytime, clear weather, vehicle speed around 62 mph when it entered the gore, concrete barrier as the hazard—it is unclear whether the proposed AEB performance standard would be sufficient to address similar crashes, specifically those involving traffic safety hardware and other static and permanent hazards encountered at highway speeds. In the Mountain View report, the NTSB recommended that NHTSA expand NCAP testing of FCW and AEB to include common obstacles, such as traffic safety hardware, cross-traffic vehicle profiles, and other applicable vehicle shapes or objects found in the highway operating environment (Safety Recommendation H-20-1). In 2023, this recommendation was classified Open–Acceptable Response.

We encourage NHTSA to consider expanding the proposed protocols or having the capability to examine—through technical documentation, for example—the ability of AEB systems to detect traffic safety hardware and other unusual potential traffic safety hazards.

## PAEB Darkness Performance Tests

The NTSB supports the proposed inclusion of both daytime and darkness performance tests for PAEB. In 2018, the NTSB investigated a crash in Tempe, Arizona, in which an Uber ATG test automated vehicle, occupied by a safety operator and traveling at a speed of about 40 mph, struck and killed a pedestrian walking a bicycle across a roadway.[15] This crash occurred at night with roadside lighting present and with the vehicle's low-beam headlights activated. The automated system did not

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[13] When used in this response, "having the capability to examine" refers to NHTSA's ability to conduct compliance testing or otherwise ensure that requirements are satisfied. Most often, this is achieved through test-track or crash testing, but it may also include technical documentation such as system and logic diagrams.

[14] NTSB. 2020. *Collision Between a Sport Utility Vehicle Operating With Partial Driving Automation and a Crash Attenuator, Mountain View, California, March 23, 2018*. NTSB/HAR-20/01. Washington, DC.

[15] NTSB. 2019. *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*. NTSB/HAR-19/03. Washington, DC.

recognize the conflict with the pedestrian in time to respond, and the safety operator was distracted due to automation complacency. The test vehicle was a modified 2017 Volvo XC90 with automated system components added to the vehicle. The Volvo's own AEB system was purposely disabled during the testing of the automated system due to Uber ATG's inability to resolve the conflict of radars operating on the same frequencies. Following the crash, Volvo conducted a simulation study which showed that the vehicle's own AEB system would have been able to detect the pedestrian in time to completely avoid the collision or substantially reduce the impact speed. These findings were replicated by Thatcham Research, which re-created the crash scenario in a closed-course setting.[16]

Considering the critical characteristics of the Tempe crash—nighttime, clear weather, low-beam headlights, vehicle speed of 40 to 45 mph, pedestrian walking a bicycle crossing in front of the vehicle—the NTSB expects that NHTSA's proposed performance standards for PAEB should be able to address similar crashes. The NTSB supports the proposed inclusion of darkness performance evaluation and views it as an essential component, as demonstrated by research that IIHS conducted and that NHTSA references in this NPRM.[17] The NTSB also supports the proposed inclusion of low- and high-beam conditions for nighttime testing as well as the broad range of testing speeds to ensure optimal performance throughout the defined operational capabilities.

**No-Contact Performance Requirement**

NHTSA is proposing a no-contact criterion for the performance test requirements. The agency believes that this is practicable to achieve, consistent with the need for safety, and potentially necessary to ensure test repeatability. However, NHTSA is seeking comments regarding possible alternatives to the no-contact performance criteria for both AEB and PAEB performance standards; one alternative would allow contact but at substantially reduced impact speed. The NTSB supports a mandate that aims to obtain the best possible safety outcome, in this case crash avoidance. However, we recognize the technical challenges and risks associated with false positives, particularly at high speeds. We support the inclusion of the tests to limit false positive activation and encourage NHTSA to further examine the potential unintended consequences of AEB activations in various scenarios to inform the final rule.

[16] See the testing report by Thatcham Research in the public docket for the Tempe, Arizona investigation (Case No. HWY18MH010).

[17] See the IIHS's petition for rulemaking, which includes data detailing the performance of PAEB in daytime and nighttime conditions.

## Malfunction Detection Requirement

We support the requirement for AEB and PAEB systems to detect malfunctions and alert the driver. The NTSB recently investigated a crash near Mt. Pleasant Township, Pennsylvania, in which a vehicle had operated with a non-functional forward collision avoidance system for 6 months. We concluded that maintaining the full functionality of the installed FCW and AEB systems is critical to safety.[18]

## Forward Collision Warning

The NTSB supports the proposed requirements for FCW, specifically pertaining to (1) the use of at least a bi-modal (visual and auditory) alert, (2) the timing of the alert (generally, 1 second before AEB activation), and (3) the necessity of the alert—that activation of FCW must never delay AEB engagement. Our support is rooted in several NTSB investigations pertaining to vehicles operating in partial automation mode at the time of the crash, in which we found visual alerts to be ineffective in capturing drivers' attention.[19]

## Proposed Effective Dates Schedule

NHTSA proposes that all AEB and most PAEB requirements be applicable 3 years after the publication of the final rule, and that the remaining PAEB requirement (for higher-speed and nighttime conditions with low-beam headlights activated) be applicable the following year. Because some manufacturers may be able to achieve the performance requirements in the NPRM immediately—as testing by Thatcham has shown—the NTSB encourages NHTSA to consider reducing the timeline for the rule's effective dates to expedite deployment.

## Comments on NHTSA's Expectations for the Performance of the Systems Outside the Parameters of the Proposed Test Procedures

Most of the crash investigations we discussed in the previous sections contain elements that do not fit the parameters of the proposed test procedures. With those deviations in mind, we examined NHTSA's statements about the expectations of systems' performance outside the strict parameters of the proposed test procedures. The main goal of the test procedures is to provide a standardized set of criteria that can be reliably replicated, allowing automakers to test and self-certify various vehicle components and allowing NHTSA to conduct compliance testing. However, the operational effectiveness of tested components is not typically limited to the exact

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[18] Refer to footnote 11 for additional details about our Mt. Pleasant Township, Pennsylvania report.

[19] See NTSB. 2017. *Collision Between a Car Operating With Automated Vehicle Control Systems and a Tractor-Semitrailer Truck Near Williston, Florida, May 7, 2016.* NTSB/HAR-17/02. Washington, DC. See also the previously mentioned Mountain View, California report.

conditions of test procedures. Indeed, several times in this NPRM, NHTSA indicates broader expectations for system functionality.

One of the proposed requirements in this NPRM is that AEB/PAEB systems be operational and available at all speeds above 10 km/h (6 mph). NHTSA states an expectation that AEB systems will operate even beyond the speeds in the proposed test protocols, which are limited in part due to test-track limitations and safety considerations.

Additionally, when discussing the necessity for FCW, NHTSA describes a cut-in scenario (a lead vehicle cutting immediately in front of an AEB-equipped vehicle) in which AEB engagement must not be delayed by an FCW activation. A cut-in scenario is not a part of the proposed testing protocols, but NHTSA clearly expects AEB systems to address those situations as well.

Further, NHTSA acknowledges the limitations of existing test procedures (NCAP and performance thresholds for the voluntary agreement) when it discusses an IIHS study showing the ineffectiveness of AEB systems in certain crash situations. Specifically, the study references crashes in which AEB-equipped vehicles struck lead vehicles that were turning or changing lanes (at an angle or offset) or were non-passenger or other specialty vehicles (such as emergency vehicles).[20] NHTSA concludes that although NCAP testing protocols and voluntary agreement criteria can address some of the lower-speed crashes, enhanced test procedures are necessary to maximize the safety benefits of AEB systems.

However, without a dedicated test protocol or an explicit statement about the extent of operational functionality, these broader capabilities remain only presumed and not necessarily expected. The NTSB strongly encourages NHTSA to clarify the agency's expectations regarding the performance of AEB and PAEB outside the conditions of the proposed test procedures, particularly whether the operational functionality of AEB systems would extend to non-tested hazards, such as traffic safety hardware, bicyclists and motorcyclists, and vehicles with untested profiles or at varying angles and offsets. As stated previously, we encourage the agency to consider expanding the proposed protocols or having the capability to examine—through technical documentation, for example—the functionality of AEB systems in other crash-relevant scenarios that are frequently encountered on roadways.

Finally, in this NPRM, NHTSA states that it is considering requiring recording of selected data regarding AEB activations—instances of speed reduction greater than 12 mph—for the purpose of examining potential false activations as part of the agency's safety defect investigation. In August 2022, NHTSA published an NPRM that discussed the agency's intent to amend regulations regarding event data recorders to

[20] Cicchino, J.B. and D.S. Zuby. 2019. "Characteristics of rear-end crashes involving passenger vehicles with automatic emergency braking." *Traffic Injury Prevention* 20, No. sup1: S112–S118.

extend the recording period and increase the data recording frequency.[21] In our response, the NTSB supported the proposed rule change but urged NHTSA to expand the required recording metrics to include information related to advanced driver assistance systems, including AEB and FCW.[22]

In response to the current NPRM, the NTSB again urges NHTSA to require recording of data related to activation of AEB and FCW systems. Without such data, it will be extremely challenging to determine whether and to what extent these systems were engaged during a crash.

**Summary**

The NTSB supports the proposed rulemaking and is hopeful that performance standards will be developed and implemented in a timely manner. We are pleased that vehicles will be tested at higher speeds. We support testing and standards for low light (darkness). We are concerned about whether the proposed standards will address real-world operating conditions and crash-relevant scenarios including those involving untested vehicle profiles (such as non-passenger vehicles), varying angles and offsets, and other vulnerable road users such as bicyclists and motorcyclists. We are also concerned about whether AEB systems will be able to detect traffic safety hardware and other unusual potential traffic safety hazards. We encourage NHTSA to clarify its intent and expectations for system performance in scenarios and conditions outside the proposed test-track compliance testing by considering additional testing or other compliance tools to examine the performance of AEB systems in other real-world conditions.

The NTSB appreciates the opportunity to provide comments and recognizes the criticality of the proposed rulemaking, which we believe will save many lives. We also recognize the vast volume of research that NHTSA has conducted and continues to conduct to support this proposal, and we urge the agency to expedite the rulemaking process.

Sincerely,

[Original Signed]

Jennifer Homendy
Chair

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[21] NHTSA. "Event Data Recorders." Notice of proposed rulemaking (NPRM). 87 *Federal Register* 37289. June 22, 2022.

[22] In our response, the NTSB discussed several data recording safety recommendations, including H-17-37, -39, and -40, which were issued in the already referenced Williston, Florida report. All three of these safety recommendations are classified Open—Unacceptable Response.