National Transportation Safety Board
Office of the Chairwoman
Washington, DC 20594

May 6, 2026

Docket Management
US Department of Transportation
1200 New Jersey Avenue SE
West Building, Ground Floor
Room W12-140
Washington, DC 20590

Attention: Docket No. NHTSA–2025–0056

Dear Sir or Madam:

The National Transportation Safety Board (NTSB) has reviewed the National Highway Traffic Safety Administration's (NHTSA) notice and request for comment on the proposed information collection activities titled "Driver Monitoring System (DMS) in SAE L2 Driver Support Systems," published at 91 *Federal Register* 18524 on April 10, 2026. In this notice, NHTSA requests public comments regarding the agency's intention to conduct a study examining drivers' interactions with SAE International Level 2 (L2) driver support systems equipped with DMS, with the goal of informing the development of DMS performance standards and implementation guidelines.

The NTSB recognizes NHTSA's efforts and supports the proposed study as a meaningful step toward the development of future DMS performance standards. In our response, we discuss lessons learned from our previous investigations related to driver disengagement and partial automation and offer comments on the proposed study design.

NHTSA's Proposed Data Collection

The proposed study is structured in two phases, with the goal of examining how drivers interact with vehicles equipped with partial automation systems and DMS. The first phase consists of focus groups intended to explore driver awareness, understanding, and perceptions of L2 (partial driving automation) systems and their DMS components. The second phase consists of an on-road driving study—about 55 minutes in duration—in which participants operate L2-equipped vehicles instrumented to capture driver behavior, including eye-tracking data as a measure of driver attention.

The study's goals include characterizing the strengths and weaknesses of different DMS implementation strategies and examining driver behaviors that deviate

from the intended use of the system. NHTSA intends to use the findings to produce a technical report informing future DMS performance standards and implementation guidance.

NTSB Investigations and Safety Recommendations:

DMS and L2 Systems

The NTSB has investigated multiple crashes involving vehicles operating L2 systems. In each of these investigations, the probable cause included driver inattention or distraction stemming from overreliance on automation.

Starting with our investigation of the first fatal partial automation crash in Williston, Florida, in 2016, the NTSB identified two primary deficiencies related to driver disengagement during partial automation operation: (1) reliance on detection of driver-applied steering wheel torque as a method of inferring driver engagement, and (2) the lack of standards for systems that monitor driver engagement.[1]

As a result of the Williston, Florida investigation, we issued the following recommendation:

> *To manufacturers of vehicles equipped with Level 2 vehicle automation systems (Volkswagen Group of America, BMW of North America, Nissan Group of North America, Mercedes-Benz USA, Tesla Inc., and Volvo Group North America)*: Develop applications to more effectively sense the driver's level of engagement and alert the driver when engagement is lacking while automated vehicle control systems are in use. (H-17-42)

In 2020, we investigated a collision between a sport utility vehicle operating with partial driving automation and a crash attenuator in Mountain View, California. The driver's lack of response was due to distraction likely from a cell phone game application and overreliance on the partial driving automation system. Contributing to the crash was the vehicle's ineffective monitoring of driver engagement, which facilitated the driver's complacency and inattentiveness.[2]

As a result of the investigation into the Mountain View, California, crash, we issued the following recommendations:

> *To NHTSA*: For vehicles equipped with Level 2 automation, work with SAE International to develop performance standards for driver monitoring systems that will minimize driver disengagement, prevent

---

[1] 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.

[2] 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.

automation complacency, and account for foreseeable misuse of the automation. (H-20-3)

A companion recommendation to SAE International: For vehicles equipped with Level 2 automation, work with NHTSA to develop performance standards for driver monitoring systems that will minimize driver disengagement, prevent automation complacency, and account for foreseeable misuse of the automation. (H-20-7)

To NHTSA: After developing the performance standards for driver monitoring systems recommended in Safety Recommendation H-20-3, require that all new passenger vehicles with Level 2 automation be equipped with a driver monitoring system that meets these standards. (H-20-4)

In March 2026, we issued a report examining two fatal crashes involving 2022 Ford Mustang Mach-E vehicles equipped with hands-free BlueCruise partial automation, in San Antonio, Texas, and Philadelphia, Pennsylvania.[3] In both crashes, the Ford Mach-E was traveling on a highway with BlueCruise engaged when it encountered a stationary vehicle. The partial automation system failed to respond to the hazard, and the disengaged driver failed to detect it, resulting in a rear-end collision. While the crash-involved Ford Mach-E vehicles used camera-based DMS to monitor driver engagement—an improvement over steering-wheel torque methods—the investigation identified significant limitations of DMS implementation.

As a result of these two investigations, the NTSB issued the following safety recommendation:

To NHTSA: Require that all new SAE International Level 2-capable passenger vehicles be equipped with driver monitoring systems capable of minimizing driver disengagement, automation complacency, and misuse of vehicle automation by, at a minimum:

- providing warnings about accumulated short glances over a prolonged period of time;
- differentiating genuine on-road glances from attention directed to objects, such as cell phones, located in the driver's forward line of sight; and

[3] (a) NTSB. 2026. *Fatal Crashes Between Vehicles Operating in Hands-Free Partial Automation Mode and Stationary Vehicles in San Antonio, Texas, and Philadelphia, Pennsylvania*. NTSB-HIR-26-02. (b) See NTSB's Board Meeting, March 31, 2026.

- issuing initial and subsequent multi-modal alerts at intervals that minimize eyes-off-road duration (H-26-4).[4]

Holistic L2 Systems Implementation

The San Antonio and Philadelphia crashes serve as a reminder not only of the limitations of partial driving automation systems and the supporting technologies in responding to hazards, but also that the mere presence of a DMS does not automatically eliminate driver disengagement. This underscores the need for a holistic view of partial automation implementation.

To address the safety issues identified in these investigations, we also issued the following safety recommendation:

To the United States Department of Transportation: Issue comprehensive guidelines for vehicle manufacturers implementing partial vehicle automation systems that address known system limitations, including:

- integration and concurrent engagement of other safety-critical technologies (such as automatic emergency breaking, active intelligent speed assistance, and driver monitoring system);

- promoting driver engagement by design;

- reducing the safety risks associated with automation complacency and misuse; and

- setting maximum operational speeds for automation systems based on overall system capabilities. (H-26-1)

Based on these lessons from our previous investigations, we offer the following comments on the proposed study.

Comments on Study Design

The NTSB is encouraged that the proposed study addresses several areas of concern identified in our investigations. Some of the goals stated in this notice—such as examining the extent to which "DMSs support compliant driver behaviors" and the recognition that DMS implementation "must be considered holistically with respect to the larger L2 ecosystem"—reflect the NTSB's own findings and the intent of our recommendations.

While the notice states that the study will examine "driver behaviors that deviate from the intended purpose of the system including misuse and abuse," our

[4] This safety recommendation superseded Safety Recommendations H-20-3, -4, and -7.

investigations reveal that many systems and mechanisms of driver monitoring lack the capability to detect some of the most common examples of such misuse. The driver in the Mountain View, California, crash was likely playing a game on his phone at the time of the crash—a form of distraction the vehicle's steering-wheel torque monitoring could not detect. The driver in the Philadelphia crash—in addition to being impaired—was likely using her phone in a manner that caused the camera-based DMS to categorize her gaze as directed toward the forward roadway. Across these differing methods of monitoring driver engagement, neither vehicle had a system capable of detecting cell phone use. The NTSB encourages NHTSA to design the study such that it captures instances of cell phone use and to differentiate genuine driver on-road glances from attention directed to objects—such as cell phones—located within the driver's forward line of sight. The study's value would be enhanced by identifying what current DMS implementations can and cannot detect, rather than merely characterizing variation across automakers.

Our most recent investigations also revealed concerns related to the timing of disengagement alerts and limitations in current DMS implementation regarding the role of brief forward glances. The DMS on the 2022 Ford Mach-E was designed to provide the first distraction alert after 5 seconds of off-road gaze. While this threshold is among the shortest across automakers, 5 seconds of continuous disengagement cannot be considered safe. The NTSB has elected not to prescribe an acceptable duration of disengagement—recognizing that any disengagement poses risk—but believes that alert timing must be addressed in future performance standards. The NTSB encourages NHTSA to include examination of the feasibility and appropriateness of disengagement alert timing as part of the proposed study.

The DMS on these Ford Mach-E vehicles was also designed such that even a momentary glance toward the forward roadway—as brief as 0.2 seconds—would reset the disengagement timer, despite such glances being clearly insufficient for a driver to regain situational awareness or detect a failure of automation. Of equal concern is that the DMS did not account for the cumulative effect of repeated, shorter off-road glances. In the San Antonio, Texas, crash, the driver was looking away from the forward roadway for at least 14 of the last 30 seconds before the crash, including 4 of the last 5 seconds. The NTSB encourages NHTSA to design the study to include dependent variables that capture duration and frequency of off-road glances over extended periods, as they may reveal patterns of insufficient situational awareness.

The notice states that the study will identify "strengths and weaknesses of different DMS approaches and mitigation strategies." Meaningful evaluation of DMS effectiveness requires knowledge of DMS alert timing, accuracy, and the conditions under which alerts are triggered or suppressed. The notice does not explicitly state that these implementation elements will be included in the final report, nor does it describe the data elements that will be captured from the vehicles used in the study. The NTSB encourages NHTSA to explicitly document: (1) the DMS alert parameters

for each vehicle used in the study, including reset conditions, (2) whether and how DMS-generated alerts will be captured as data elements, and (3) whether and how the accuracy of DMS determination of driver engagement will be measured across the conditions studied.

Study Limitations

NHTSA acknowledges several limitations of the proposed study, including the duration of the on-road component. The NTSB agrees that this is a meaningful constraint: a 55-minute on-road study may not capture driver adaptation—whether beneficial or adverse—that takes longer to develop, including the automation complacency that has contributed to the crashes we investigated.

While the proposed study represents a key step toward the development of DMS performance standards, the NTSB is concerned about the time that will elapse between the completion of this study and the establishment of standardized performance requirements. The deficiencies our investigations have identified are present in vehicles operating on public roads today.

Summary

There is an urgent need for standardized US-based DMS performance requirements.

The NTSB encourages NHTSA to incorporate the following components in the study design:

- Capture instances of cell phone use and differentiate genuine driver on-road glances from attention directed to objects located within the driver's forward line of sight.
- Include examination of the feasibility and appropriateness of disengagement alert timing.
- Include dependent variables that capture duration and frequency of off-road glances over extended periods, as they may reveal patterns of insufficient situational awareness.
- Document the DMS alert parameters for each vehicle used in the study, including reset conditions; whether and how DMS-generated alerts will be captured as data elements; and whether and how the accuracy of DMS determination of driver engagement will be measured across the conditions studied.

We also encourage the US Department of Transportation to pursue complementary efforts to limit opportunities for driver disengagement and misuse of partial automation systems, including the development of broader guidelines for safe L2 system implementation.

The NTSB appreciates the opportunity to provide comments on NHTSA's proposed information collection. We recognize the importance of the proposed study and urge NHTSA to move expeditiously to translate its findings into performance standards that protect drivers on public roads.

Sincerely,

[Original signed]

Jennifer Homendy
Chairwoman
On behalf of the entire Board