

United States Senate

WASHINGTON, DC 20510

April 18, 2024

Sophie Shulman
Deputy Administrator Performing the Duties of the Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Acting Administrator Shulman:

Over the past few months, several high-profile crashes have highlighted the risks that vehicles equipped with partially automated and Automated Driving Systems (ADS) pose for road users. These incidents have focused attention on the after-the-fact responses of the National Highway Traffic Safety Administration (NHTSA) and the lack of a more proactive agency response to address the dangers of these systems. We urge NHTSA to use its existing regulatory authorities to ensure vehicles equipped with partially automated driving systems and ADS are safe for all road users. We cannot allow partially automated driving systems and ADS to accelerate the road safety crisis. NHTSA must take firm control of the wheel and steer manufacturers towards prioritizing safety.

Driving automation technology varies, but can generally be divided into two categories: (1) partially automated driving systems and (2) Automated Driving Systems, known as ADS. Each present varying degrees of sophistication and risk. Vehicles with partially automated driving systems, for example, can perform certain combinations of tasks under driver supervision, such as controlling speed while keeping a vehicle centered in its lane on a highway.¹ Although Tesla is the most well-known manufacturer of vehicles equipped with partially automated driving systems, more than half of all 2023 model-year vehicles sold in the United States had partially automated systems, known as Level 2 (L2) systems.² By contrast, vehicles with ADS — the most common level being the Level 4 systems or L4 ADS — can complete the entire driving task, including steering, accelerating, and braking, unsupervised by a human driver under certain conditions.³ Today, a handful of manufacturers have deployed L4 ADS, including Cruise, Waymo, and several commercial trucking companies.⁴

¹ Jennifer Shuttleworth, *SAE Standards News: J3016 automated-driving graphic update*, SAE International (Jan. 7, 2019), <https://www.sae.org/news/2019/01/sae-updates-j3016-automated-driving-graphic>.

² Mike Monticello, *Ford's BlueCruise Remains CR's Top-Rated Active Driving Assistance System*, Consumer Reports (Oct. 17, 2023), <https://www.consumerreports.org/cars/car-safety/active-driving-assistance-systems-review-a2103632203>.

³ Keith Barry & Jeff Plungis, *Do Levels of Automation Matter?*, Consumer Reports (Oct. 28, 2019), <https://www.consumerreports.org/autonomous-driving/levels-of-car-automation/>.

⁴ David Seeley, *Kodiak Unveils First 'Driverless-Ready' Semi-Truck Designed for Scaled Deployment, Plans Commercial Runs on I-45 This Year*, Dallas Innovates (Jan. 9, 2024), <https://dallasinnovates.com/kodiak-unveils-first-driverless-ready-semi-truck-designed-for-scaled-deployment-plans-commercial-runs-on-i-45-this-year/>.

Over the past decade, as manufacturers and operators have increasingly deployed both partially automated driving systems and ADS, NHTSA has taken certain actions regarding these systems. For example, the agency published a series of reports providing a framework for autonomous vehicles,⁵ issued final rules to clarify physical vehicle design safety standards for vehicles with ADS,⁶ and required autonomous vehicle manufacturers and operators to report crash data to the agency.⁷ Additionally, the agency has opened a series of investigations into crashes involving partially automated driving systems, resulting in high-profile recalls.⁸ Yet, beyond the traditional Federal Motor Vehicle Safety Standards (FMVSS) applicable to all vehicles, partially automated driving systems and ADS vehicle manufacturers and operators face few barriers to deploying partially automated driving systems or even L4 ADS. Consequently, NHTSA's actions on these driving systems have not kept pace with the unique safety risks these vehicles pose.

Partially automated (L2) systems, for example, can lull drivers into a false sense of security when driver-assist features are activated, commonly referred to as “driving automation complacency.” Drivers who utilize partially automated systems often become distracted or unaware of road risks due to overconfidence or overreliance on the system. In fact, many consumers are confused about or misunderstand the limits of partially automated driving systems, sometimes due to manufacturers' misleading names for these systems.⁹ A recent analysis of 14 partially automated driving systems found that 11 of the 14 systems did a poor job of safeguarding the system from driver distraction or complacency.¹⁰ Driver distraction or confusion is especially dangerous if the system is engaged outside the road conditions under which it is designed to operate, known as the Operational Design Domain (ODD). For example, some partially automated driving systems are designed to operate on highways, not streets with cross-traffic. Yet, in many vehicles, nothing prevents drivers from engaging partially automated driving systems outside the ODD.

Recently, the dangers of partially automated driving systems sped into the public eye when Tesla issued a recall for its Autopilot, an L2 partially automated driving system feature that

⁵ L. Staplin et al., *A Framework for Automated Driving System Testable Cases and Scenarios*, Dep't of Transp., Nat'l Highway Traffic Safety Admin (Sept. 2018), https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/13882-automateddrivingsystems_092618_v1a_tag.pdf; *Automated Driving Systems*, Dep't of Transp., Nat'l Highway Traffic Safety Admin., <https://www.nhtsa.gov/vehicle-manufacturers/automated-driving-systems#resources>.

⁶ Occupant Protection for Vehicles with Automated Driving Systems, 49 C.F.R. § 571, <https://www.federalregister.gov/documents/2022/03/30/2022-05426/occupant-protection-for-vehicles-with-automated-driving-systems>.

⁷ *Standing General Order on Crash Reporting*, Dep't of Transp., Nat'l Highway Traffic Safety Admin. (Apr. 2023), <https://www.nhtsa.gov/laws-regulations/standing-general-order-crash-reporting>.

⁸ Matthew Wansley, *Regulating Automated Driving*, 73 Emory L. J. 505 (2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4190688.

⁹ Michael Taylor, *German Court Bans Tesla 'Autopilot' Name for Misleading Customers*, Forbes (Jul. 14, 2020), <https://www.forbes.com/sites/michaeltaylor/2020/07/14/german-court-bans-tesla-autopilot-name-for-misleading-customers/?sh=5999a308c7fb>; Letter from Sen. Edward Markey and Sen. Richard Blumenthal to Chair Lina Kahn, Federal Trade Commission (Aug. 18, 2021), <https://www.blumenthal.senate.gov/imo/media/doc/2021.08.18%20-%20FTC%20-%20Tesla.pdf>; Letter from Sen. Edward Markey and Sen. Richard Blumenthal to Elon Musk, Tesla, (Feb. 8, 2022), <https://www.blumenthal.senate.gov/imo/media/doc/0208.22teslafsdautopilotconcerns.pdf>.

¹⁰ *First partial driving automation safeguard ratings show industry has work to do*, The Insurance Institute for Highway Safety (Mar. 12, 2024), <https://www.iihs.org/news/detail/first-partial-driving-automation-safeguard-ratings-show-industry-has-work-to-do>.

is intended to keep a Tesla within a lane and match the speed of the vehicle to surrounding traffic. After several fatal crashes involving Tesla's Autopilot since 2016, NHTSA opened an investigation into Autopilot in August 2021 and upgraded it to an engineering analysis in 2022.¹¹ In December 2023 — nearly two-and-a-half years after opening the investigation — NHTSA determined that Autopilot played a role in these crashes and urged Tesla to recall the affected vehicles. The recall consisted of an over-the-air software update that included measures focused on improving driver attentiveness, which some advocates found insufficient.¹² Following the recall, additional details involving a 2022 fatal crash emerged showing Tesla's Autopilot may have contributed to that crash as well.¹³ We remain concerned that Autopilot, and features like it in other vehicles, could lead drivers to become overconfident and distracted, putting them and other road users at risk.

Although we are pleased that NHTSA investigated Autopilot, the agency stopped short of requiring Tesla — or automakers more broadly — to disable any L2 features outside their ODD, as other safety experts have suggested. The National Transportation Safety Board, for example, has long recommended NHTSA restrict all driving systems to the safe ODD.¹⁴ For example, operators and manufacturers can use a technique known as “geo fencing” to limit operation of these systems to only those locations within the ODD. This safeguard already exists and is used in L4 ADS and some L2 partially automated driving systems.¹⁵ Although recalls play an important role in keeping the public safe, we urge NHTSA to proactively pair recalls with new safety regulations that limit operation of partially automated driving systems and ADS to their ODDs.

The Tesla cases highlight the deadly combination of loosely regulating partially automated driving systems while allowing the manufacturers to effectively market their cars as an automated driving system. In fact, California banned Tesla from advertising its vehicles as “self-driving,” preventing the company from advertising the partial automation features of its vehicles as an automated driving system.¹⁶ It is past time that federal regulators follow California's lead and prohibit this deceptive and dangerous practice. Although regulating the advertising practices of automakers may be outside NHTSA's jurisdiction, we urge the agency to coordinate with other federal agencies to put a stop to the deadly confusion on our roads.

NHTSA should also explore additional steps to ensure manufacturers report comprehensive data on crashes involving vehicles equipped with L2 systems and above. Under a

¹¹ Rachel Lerman et al., *How Tesla Autopilot got grounded*, Wash. Post (Dec. 16, 2023), <https://www.washingtonpost.com/business/2023/12/16/tesla-autopilot-recall-timeline/>.

¹² Keith Barry, *CR's Extensive Testing Shows That Tesla's Autopilot Recall Fix Does Not Address Safety Problems*, Consumer Reports (Feb. 12, 2024), <https://www.consumerreports.org/cars/car-safety/tesla-autopilot-recall-fix-does-not-address-safety-problems-a5133751100/>.

¹³ Trosh Thadani et al., *Tesla worker killed in fiery crash may be first 'Full Self-Driving' fatality*, Wash. Post (Feb. 13, 2024), <https://www.washingtonpost.com/technology/interactive/2024/tesla-full-self-driving-fatal-crash/>.

¹⁴ Rachel Lerman et al., *How Tesla Autopilot got grounded*, Wash. Post (Dec. 16, 2023), <https://www.washingtonpost.com/business/2023/12/16/tesla-autopilot-recall-timeline/>.

¹⁵ Matt Hardigree, *Geofences: the invisible walls surrounding autonomous cars*, ApexOne (May 3, 2019), <https://www.apex.one/articles/geofences-the-invisible-walls-surrounding-autonomous-cars/>.

¹⁶ Ricardo Cano, *New California law effectively bans Tesla from advertising it's cars as Full-Self Driving*, S.F. Chronicle (Dec. 23, 2022), <https://www.sfchronicle.com/tech/article/new-california-law-effectively-bans-tesla-from-17672908.php>.

2021 NHTSA Standing General Order, operators of vehicles equipped with ADS must report all crashes in which an ADS was involved. Under the same order, vehicle and equipment manufacturers of vehicles equipped with partially automated driving systems must report all serious crashes where a partially automated driving system was engaged. In the case of partially automated driving systems, the resulting data has been informative but incomplete; many vehicles do not include the necessary equipment to collect complete crash data on their partially automated systems.¹⁷ Like a car with only one working headlight, NHTSA isn't seeing all the potential safety concerns facing drivers and road users, and therefore can't take the necessary actions to protect them. NHTSA should explore whether requiring more complete reporting from manufacturers on L2 crashes is possible without compromising consumer privacy.

ADS pose their own safety risks to drivers, pedestrians, and road users. A manufacturer or operator seeking to deploy a vehicle equipped with an ADS must comply with only the same federal safety regulations as a traditional vehicle manufacturer. In both cases, NHTSA requires that the vehicle comply with all FMVSS, the safety standards that govern all automobiles on physical components such as the steering wheel, headlights, and seating. This means that — so long as autonomous vehicle manufacturers follow these safety standards — no federal safety requirements restrict or regulate their ability to deploy on U.S. streets vehicles with ADS or partially automated driving systems. This federal regulatory gap leaves a dangerously wide lane for autonomous vehicle manufacturers to maneuver within.

This absence of meaningful federal regulation was particularly notable in an October incident involving a Cruise ADS. A pedestrian who was struck by another vehicle was thrown into the path of a Cruise robotaxi, which dragged her for twenty feet as the autonomous vehicle tried to pull off the road after initially stopping. Both NHTSA and California regulators investigated the incident, with Cruise voluntarily issuing a recall and halting its operations nationwide.¹⁸ California regulators revoked Cruise's operational license after they found that Cruise withheld information about the incident and misled state regulators.¹⁹ Yet this revocation applied only in California; the same Cruise cars could continue to transport passengers in other states where Cruise operated, including Arizona, Texas, and Tennessee. In fact, Cruise recently announced it will resume testing its ADS-equipped vehicles on public roads in some states.²⁰ Additionally, separate investigative reporting found that Cruise was aware that its ADS did not effectively recognize children.²¹ As all this information emerges, NHTSA continues to investigate Cruise's ADS for unsafe treatment of pedestrians.²²

¹⁷ Matthew Wansley, *Regulating Automated Driving*, 73 Emory L. J. 505 (2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4190688.

¹⁸ Michael Liedtke, *California regulators suspend recently approved San Francisco robotaxi service for safety reasons*, AP (Oct. 24, 2023), <https://apnews.com/article/driverless-cars-cruise-california-robotaxis-8aa872f6b87bbff59e9c86471e87b0e7>.

¹⁹ *Id.*

²⁰ William Gavin, *GM will resume testing its Cruise self-driving cars on public roads, report says*, Quarts, (Feb. 23, 2024), <https://qz.com/cruise-gm-driverless-car-resume-testing-1851281400>.

²¹ Sam Biddle, *Cruise knew its self-driving cars had problems recognizing children – and it kept them on the streets*, The Intercept (Nov. 6, 2023), <https://theintercept.com/2023/11/06/cruise-self-driving-cars-children/>.

²² Investigation PE23018, Office of Defects Investigation (ODI) Resume, Dep't of Transp., Nat'l Highway Traffic Safety Admin. (Oct. 16, 2023), <https://static.nhtsa.gov/odi/inv/2023/INOA-PE23018-11587.pdf>.

Concerning incidents like the collision involving Cruise's ADS necessitate action. We understand that regulating emerging technology is a challenge, and we commend NHTSA's investigations into these incidents. However, as additional risks emerge related to ADS, some experts and advocates have suggested that additional ADS-specific FMVSS or performance standards are necessary. For example, many safety advocates have called for ADS to undergo a "vision test" to ensure the system can properly detect and respond to other vehicles, people, and objects in the operating environment.²³ While ADS and partially automated driving systems present unique safety issues, we urge NHTSA to use its expertise and problem-solving capabilities to find proactive, effective solutions that prevent tragedies before investigations and recalls are necessary.

Commercial ADS present an additional safety risk due to their reliance on remote assistance operators (RAOs). RAOs are individuals in remote operator centers who monitor the ADS-operated vehicle, suggest an action to the ADS, or take over the vehicle during certain incidents. Because autonomous vehicles must quickly transmit video and data to an RAO, the speed of transmission is critical to the operator's ability to respond safely. The federal government, however, has not established any standards for RAOs regarding maximum latency for communication between the vehicle and RAOs or even where the RAOs must be located.²⁴ Right now, an RAO could be located in a different state or country than the vehicle with which it is communicating, potentially leading to delayed data transmission and a misunderstanding of road contexts.²⁵ Additionally, RAOs are not required to have the certifications that would be required if they were inside the vehicle, an especially concerning issue for commercial trucking.²⁶ This regulatory gap also impacted the recent Cruise incident. A recent third-party investigation found that Cruise's RAOs were not able to intervene during that October incident, despite being aware of the collision.²⁷ This incident raises broader questions about the lack of regulation of remote assistance operators.

Even with this regulatory permissiveness, NHTSA is considering an autonomous vehicle pilot program. Last year, NHTSA publicly indicated plans to create an ADS-Equipped Vehicle Safety, Transparency, and Evaluation Program (AV STEP).²⁸ Currently, federal law allows manufacturers to sell up to 2,500 vehicles within a 12-month period that are out-of-compliance with an FMVSS, if granted an exemption by NHTSA.²⁹ Early reports about the AV STEP program indicate the program would allow for additional vehicle commercial deployments above the 2,500-vehicle cap. In exchange, the manufacturers will provide data on the safety and

²³ Autonomous Vehicle (AV) Tenets (Nov. 30, 2020), <https://t7eb80.p3cdn1.secureserver.net/wp-content/uploads/2020/11/AV-Tenets-11-24-20-1.pdf>.

²⁴ Missy Cummings, *Commentary on the January 24, 2024 Quinn Emanuel report* (2024), https://www.researchgate.net/publication/377808930_Commentary_on_the_January_24_2024_Quinn_Emanuel_report?channel=doi&linkId=65b93fe379007454974f3328&showFulltext=true.

²⁵ *Id.*

²⁶ *New type of vehicle developed by Einride gets NHTSA approval to operate on US public road*, Einride (June 23, 2022), <https://einride.tech/press/einride-gets-nhtsa-approval/>.

²⁷ Missy Cummings, *Commentary on the January 24, 2024 Quinn Emanuel report* (2024), https://www.researchgate.net/publication/377808930_Commentary_on_the_January_24_2024_Quinn_Emanuel_report?channel=doi&linkId=65b93fe379007454974f3328&showFulltext=true.

²⁸ Jaelyn Campbell, *NHTSA suggests a new regulatory path for self-driving vehicles*, CBT News (July 13, 2023), <https://www.cbtnews.com/nhtsa-suggests-a-new-regulatory-path-for-self-driving-vehicles/>.

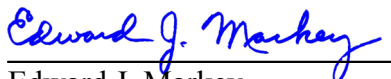
²⁹ 49 U.S.C. § 30113.


performance of their ADS.³⁰ With the rash of road safety incidents in the past year involving driving automation technology, NHTSA should be wary of launching any pilot program that will expand the number of FMVSS non-compliant vehicles on the road.³¹ Public roads are not a sandbox for manufacturers or operators to play in, and regulatory agencies like NHTSA should be highly cautious about providing lax pathways onto the road for dangerous vehicles.


Given these safety risks, we urge NHTSA to take all necessary steps to protect the public from vehicles equipped with partially automated driving systems or automated driving systems. Although these systems may have the potential to reduce traffic deaths, without comprehensive regulations prioritizing safety, we risk veering off course and endangering drivers, passengers, and other road users. We therefore urge NHTSA to act with more urgency on partially automated driving systems and Automated Driving Systems.


Thank you for your attention to this critical issue.

Sincerely,


Edward J. Markey
United States Senator


Richard Blumenthal
United States Senator

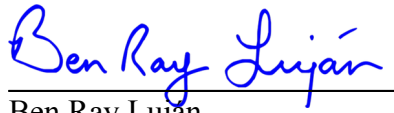

Peter Welch
United States Senator


Elizabeth Warren
United States Senator

³⁰ Suzanne McElligott, *NHTSA Announces New Autonomous Driving Regulations*, U.S. News and World Report (July 13, 2023), <https://cars.usnews.com/cars-trucks/features/nhtsa-announces-new-autonomous-driving-regulations>.

³¹ Matthew Wansley, *Regulating Automated Driving*, 73 Emory L. J. 505 (2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4190688.

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Bernard Sanders
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