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Office of the Administrator
c/o Deputy Administrator Steve Cliff

National Highway Traffic Safety Administration
Docket Management Facility
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West Building, Ground Floor, Room W12-140
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RE: Framework for Automated Driving System Safety, 49 CFR Part 571, [Docket No. NHTSA-2020-0106]

The Center for Auto Safety (“the Center”) appreciates the opportunity to provide comments on the Advance Notice of Proposed Rulemaking regarding a Framework for Automated Driving System Safety. The Center, founded in 1970, is an independent, member supported, non-profit consumer advocacy organization dedicated to improving vehicle safety, quality, and fuel economy for all drivers, passengers, and pedestrians.

The Center fully endorses the National Highway Traffic Safety Administration’s (NHTSA) recognition of the need to formulate a plan to address oversight of the exciting technological developments brought on by Automated Driving Systems (ADS), and the need do so in a manner that ensures the safety of all road users. The timing is right for developing such a plan, not only due to the arrival of new leadership at the Department of Transportation (DOT) and at NHTSA, but because right now “ADS-equipped vehicles are likely to remain in the pre-deployment testing and development stage for at least the next several years.”¹ By acting in this pre-deployment moment, NHTSA has the generational opportunity to foster an environment encouraging the deployment of this transformational technology while giving the public assurance of safety as testing and development continue.

In keeping with its mission statement, any NHTSA Framework for ADS must save lives, prevent injuries, and reduce economic costs due to road traffic crashes. Further, by taking full advantage of the variety of tools NHTSA has at its disposal, the agency can move from its current role as a bystander to an active participant in shaping the future of transportation, both in the United

¹ NHTSA, *Framework for Automated Driving System Safety*, ANPRM, Docket No. NHTSA-2020-0106, RIN 2127-AM15, Published in the Fed. Reg. December 1, 2020. <https://www.federalregister.gov/documents/2020/12/03/2020-25930/framework-for-automated-driving-system-safety> (hereinafter “Framework” or “NHTSA Framework.”)

States and around the world. In order for vehicles to someday meet the lofty marketing claims of ADS manufacturers² and proponents,³ who predict immense safety and societal benefits, the ADS framework must provide basic safety standards for ADS developers, while assuring that consumers have the tools to differentiate between protection and puffery.⁴ However, based on the current lack of oversight in the marketplace, if the Framework for ADS required a demonstration that ADS would do no harm by employing objective safety measures, that might be a realistic place to start. Yet, instead of aiming for the minimum, by using historical precedent and currently available research, NHTSA should establish measurable safety targets for the ADS manufacturing community to reach, resulting in a reduction of the public health crisis of car crash deaths on public roads.

I. Data Collection is Overdue

It has been widely claimed, including by NHTSA, that ADS technology has the potential to “prevent, reduce, or mitigate crashes involving human error or poor choices. This potential stems from the substantial role that human factors . . . play in contributing to crashes.”⁵ Of late, it has become commonplace for the overwhelming majority of crashes to be blamed on operator error, where the actual cause of the crash is either unknown or a result of a combination of overlapping conditions including, but not limited to, infrastructure.⁶ Tragically, crashes involving motor vehicles claim more than 40,000 lives and cost as much as one trillion dollars every year in the U.S. Early indications are that 2020 was amongst the deadliest years in recent times and may have produced the single greatest increase in the year-over-year motor vehicle crash death rate since data has been kept on the subject.⁷ The early data for pedestrian fatalities in 2020 is even more alarming, with crash deaths increasing as much as 20% over previous years.⁸ Accordingly, technology with the potential to limit these tragedies must be taken seriously. Unfortunately, there is no meaningful data available to the public about the on-road experiences of ADS⁹ to reach any conclusions as to whether they will mitigate crashes or, as compared to the status quo, even at a minimum do no harm.

Surprisingly, this lack of data has not prevented NHTSA from claiming “the major factor in 94 percent of all fatal crashes is human error. So ADSs have the potential to significantly reduce

² See, e.g., GM Path to Autonomous, at: <https://www.gm.com/commitments/path-to-autonomous.html>

³ See, e.g., Gary Shapiro, *Self-Driving Vehicles Will Change The World In Some Unexpected Ways*, Forbes, Feb. 8, 2019, at: <https://www.forbes.com/sites/quora/2019/02/08/self-driving-vehicles-will-change-the-world-in-some-unexpected-ways/?sh=6354d2a60305>

⁴ See, e.g., Waymo, “There’s a clear theme to the vast majority of these incidents: human error and inattention. 94% of crashes involve human choice or error in the US.” <https://waymo.com/>

⁵ *Id.*

⁶ See Casualty Actuarial Society Automated Vehicles Task Force, *Restating the National Highway Transportation Safety Administration’s National Motor Vehicle Crash Causation Survey for Automated Vehicles*, Fall 2014, at: https://www.casact.org/sites/default/files/database/forum_14fforum_completefall2014.pdf

⁷ National Safety Council, *Motor Vehicle Deaths in 2020 Estimated to be Highest in 13 Years, Despite Dramatic Drops in Miles Driven*, Mar. 4, 2021, at: <https://www.nsc.org/newsroom/motor-vehicle-deaths-2020-estimated-to-be-highest>

⁸ Governors Highway Safety Association, *Pedestrian Traffic Fatalities by State: 2020 Preliminary Data*, March 2021, at: <https://www.ghsa.org/resources/Pedestrians21>

⁹ FN 1 – page 17

highway fatalities by addressing the root cause of these tragic crashes.”¹⁰ When others have examined a similar data set, however, they have drawn conclusions suggesting that, while still significant, only 34% of serious crashes could be preventable by use of autonomous vehicles.¹¹ These conflicting conclusions should lead serious researchers and policy makers to desire more precise data and analysis. Yet to this point NHTSA has not appeared interested in acquiring sufficient data to guide its policy approach to ADS. NHTSA has failed to even take the least intrusive step available to a public safety agency: to wit, actively collect data from ADS developers testing on public roads to learn more about how the technology works outside of a simulated or test track setting.

For example, in November 2019, the National Transportation Safety Board (NTSB) recommended¹² NHTSA require the collection of safety data for companies testing self-driving technology on public roads. This recommendation was made following NTSB’s conclusion that Uber had “an inadequate safety culture,” which led to a pedestrian being killed by an Uber AV test vehicle in Arizona. Uber¹³ has resumed testing AV technology on public roads, yet NTSB’s recommendation remains open and ignored, leading to a renewed call by the Board for NHTSA to engage in active data collection in response to this ANPRM.¹⁴

One year before that, in October 2018, the Center petitioned¹⁵ the agency to begin a rulemaking mandating all companies testing self-driving technology on public roads submit safety information about their vehicles to the federal government, including:

- Data Recording and Sharing
- Privacy
- System Safety
- Vehicle Cybersecurity
- Human Machine Interface

¹⁰ Automated Driving Systems 2.0, A Vision For Safety, <https://www.nhtsa.gov/document/automated-driving-systems-20-voluntary-guidance>. Further, the NHTSA study upon which such a statistic is based explicitly noted that it was not attempting to assign “cause” or “blame” for crashes: “However, in none of these cases was the assignment intended to blame the driver for causing the crash.” S. Singh, *Critical Reasons for Crashes Investigated in the National Motor Vehicle Crash Causation Survey*, National Highway Traffic Safety Administration, DOT HS 812 115, February 2015, at: <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812115>

¹¹ Casualty Actuarial Society Automated Vehicles Task Force, *Restating the National Highway Transportation Safety Administration’s National Motor Vehicle Crash Causation Survey for Automated Vehicles*, Fall 2014, at: https://www.casact.org/pubs/forum/14fforum/CAS%20AVTF_Restated_NMVCCS.pdf

¹² <https://www.nts.gov/investigations/AccidentReports/Reports/HAR1903.pdf>

¹³ Now operated by Aurora after a corporate buyout, see: NY Times, *Uber, After Years of Trying, Is Handing Off Its Self-Driving Car Project*, Dec. 7, 2020, at: <https://www.nytimes.com/2020/12/07/technology/uber-self-driving-car-project.html>

¹⁴ Comment from National Transportation Safety Board to *Framework for Automated Driving System Safety*, ANPRM, Docket No. NHTSA-2020-0106, RIN 2127-AM15, Feb. 1, 2021 at: <https://www.regulations.gov/comment/NHTSA-2020-0106-0617>, see also:

National Society of Professional Engineers – Comments, <https://www.regulations.gov/comment/NHTSA-2020-0106-0002>

¹⁵ Center petition for Rulemaking, Oct. 19, 2018, at: <https://www.autosafety.org/center-for-auto-safety-petitions-nhtsa-to-begin-rulemaking-to-immediately-mandate-submission-of-safety-information-by-companies-testing-self-driving-technology-on-public-road/>

- Crashworthiness
- Consumer Education and Training
- Registration and Certification
- Post-Crash Behavior
- Federal, State, and Local Laws
- Ethical Considerations
- Operational Design Domain
- Object and Event Detection and Response
- Fall Back (Minimal Risk Condition)
- Validation Methods

Our petition, which was signed by hundreds of members of the public, continues to be ignored by NHTSA, in violation of the agency’s own policies. One can only hope it will not require a public outcry over multiple tragedies for NHTSA and DOT to realize they are supposed to play an active role in AV and ADS safety and not just go along for the ride.

NHTSA’s resistance to collect ADS data stands in contrast to the agency’s acknowledgement in this very ANPRM that it needs data to do the work of ensuring the safety of the technology:

NHTSA analyzes real-world crash data and other available information in order to identify safety issues, quantify the size of the safety problems, researches potential solutions or countermeasures to the safety issues that have been identified, and then develops practicable performance or related requirements intended to either resolve or mitigate the crash risk identified.¹⁶

Moreover, the agency admits, seemingly without any intended irony that “[a]ny regulatory approach must have well-founded supporting data indicating safety needs.”¹⁷ Yet, the closest NHTSA has come to collecting such ADS data is the completely voluntary and ill-defined AV TEST initiative.¹⁸ NHTSA must recalibrate the AV TEST initiative to require the collection of meaningful and uniform data from all ADS companies testing on public roads in the interest of allowing the agency to better determine how to set appropriate safety levels as well as allowing consumers to compare and contrast the success of public ADS testing for themselves.¹⁹

¹⁶ FN 1

¹⁷ FN 1

¹⁸ Center comment on AV TEST, Aug. 30, 2020, at: <https://www.autosafety.org/wp-content/uploads/2020/08/CAS-Comment-on-AV-TEST-Data-Collection-NHTSA-2020-FINAL-8-30-20.pdf>

¹⁹ There has been no more successful consumer education program in the history of the auto industry, or perhaps the entire federal government as the New Car Assessment Program (NCAP). As the agency notes, the “information NCAP provides empowers consumers to compare the relative safety of new vehicles and to make informed vehicle-purchasing decisions.” FN 1. Yet, NCAP’s ability to drive industry behavior and thus consumer demand is based on stretch goals for safety driven by performance tests that go beyond minimum safety standards. As has been well documented, NHTSA for 10 years has been either unable or unwilling to update NCAP. There is little evidence it can effectively replace the need for minimum ADS safety standards. See: Aaron Gordon, *The US Invented Life Saving Car Safety Ratings, Now They’re Useless*, Mar. 4, 2021, Vice, at: <https://www.vice.com/en/article/4ade9p/the-us-invented-life-saving-car-safety-ratings-now-theyre-useless>

II. Safety Standards for ADS Operation

It is unacceptable that the only entity within the federal government in a position to engage in active oversight of the nascent self-driving vehicle technology industry is reduced to using phrases such as: “NHTSA’s understanding is that there are generally different states of safety risk management during the on-road testing of prototype ADS.”²⁰ NHTSA’s role is not to express a passing interest what may, or may not, be happening with respect to the potentially most transformational transportation technology since the invention of the internal combustion engine. NHTSA is statutorily charged with looking out for the safety of the 330 million individuals who live in the United States when it comes to passenger motor vehicles. With crash rates rising, deaths of pedestrians becoming a public health crisis, and motor vehicle crashes remaining the leading killer of individuals under 25 years of age, NHTSA must act.

The appropriate role for the federal agency charged with maintaining the safety of vehicles on our roads is to set and enforce comprehensive objective safety standards. NHTSA must establish minimum overall safety performance requirements for ADS so that both industry and auditors will have an appropriate reference base for safety evaluation.

Instead of additional non-binding guidance, NHTSA should focus on gathering structured ADS-equipped vehicle operational and design data in order to develop minimum ADS safety standards. At this point in the development of ADS, it is not clear what safety benefit is delivered to the public by NHTSA expending resources on further voluntary guidance. The crashes associated with ADS operation on public roads, combined with purported self-driving vehicles being used in commerce - all under the specter of existing voluntary guidance and no other oversight - erode public confidence in ADS and in investor support for continued ADS development.²¹ ADS development has advanced to the point where NHTSA should begin the mandatory safety standard process for ADS operation to assure that ADS in aggregate will not only do no harm, but also continue to produce safety benefits as the technology evolves.²² As noted above, the Center has been urging NHTSA since 2018 to collect individual test data from every manufacturer testing ADS on public roads.²³ Evaluating safety with high confidence based solely on aggregated on-road testing of whole ADS-equipped vehicles on any reasonable time scale is not possible.²⁴ However, such data analyzed in combination with records of motor vehicle law violations, collisions, and near-misses would at least provide a starting point (not the end point) for determining the scope of needed ADS certification criteria and tests. NHTSA should immediately grant the Center’s petition and begin collecting ADS safety data.

²⁰ FN 1

²¹ NY Times, *Uber, After Years of Trying, Is Handing Off Its Self-Driving Car Project*, Dec. 7, 2020, at: <https://www.nytimes.com/2020/12/07/technology/uber-self-driving-car-project.html>

²² FN 1: “... the Court of Appeals for the Ninth Circuit ... also explained that NHTSA must “ascertain, with all reasonable probability, that its safety regulations do not produce a more dangerous highway environment than that which existed prior to governmental intervention.”

²³ See *supra* at Center petition for Rulemaking, Oct. 19, 2018

²⁴ Nidhi Kalra, Susan M. Paddock, *Driving to Safety - How Many Miles of Driving Would It Take to Demonstrate Autonomous Vehicle Reliability?*, 2016, Rand Corporation, at https://www.rand.org/pubs/research_reports/RR1478.html

At the same time, the agency can oversee a gated certification process²⁵ to assist in initial and ongoing conformance to those requirements, while Federal Motor Vehicle Safety Standard (FMVSS) tests and procedures are being developed to validate vehicle conformance.

NHTSA should also develop test standards and protocols for certain safety-critical maneuvers that all ADS equipped vehicles must perform successfully before they can be considered acceptable for any use on public roads. There are requirements that must be initially established to which all ADS must conform. For example, all ADS should conform to a ‘vision test.’ Additional universally applicable criteria have been documented by a coalition of highway safety advocates and may also be used to establish FMVSS requirements to support public safety.²⁶ These include:

- performance of collision avoidance systems,
- evaluation of the human machine interface for driver engagement,
- evaluation of cybersecurity performance,
- demonstration of a safe fallback procedure,
- all ADS-equipped vehicles must accelerate to their design speed and decelerate to a stop in a straight line on both wet and dry pavement,
- all ADS vehicles must automatically navigate curves of various radii at design speeds in wet and dry weather,
- all ADS vehicles must be able to automatically differentiate between road surfaces and non-road surfaces,
- all ADS vehicles must be able to identify their ODD and restrict operation outside of the ODD.
- all ADS vehicles must recognize and avoid contact with pedestrians and other vulnerable road users,
- all ADS vehicles must respond appropriately to emergency vehicles, warning lights, railroad crossing warnings and gates, toll barriers, hand signals of police officers directing traffic, etc.

These basic performance tests could be incorporated into FMVSS without any need to appreciate the design details of individual vehicles or even the current state of ADS development. It is incumbent on NHTSA to promulgate standards for evaluating and certifying performance within the environment in which an individual or class of ADS will be allowed to operate, and to develop FMVSS to assure safe operation within that environment. Existing consensus standards alone are inadequate to define the safe operating envelope of the many types of proposed ADS. NHTSA has defined multiple classes of conventional vehicles and developed FMVSS appropriate for each.

NHTSA should similarly define classes of ADS and appropriate regulations for each because consensus standards have not established those ADS classes. In addition, requirements and technology solutions for low-speed automated systems confined to operation on specially

²⁵ See Center for Auto Safety response to *ANPRM; Pilot program for collaborative research on motor vehicles with high or full driving automations*, Dec. 10, 2018 for description of gated certification program, at: <https://www.autosafety.org/wp-content/uploads/2018/12/AV-Pilot-Program-Comment-Final.pdf>

²⁶ *Autonomous Vehicle Tenets*, November 30, 2020, at <https://saferoads.org/wp-content/uploads/2020/11/AV-Tenets-11-24-20-1.pdf> (The Center is a signatory to these Tenets.)

designed road networks will be quite different from those for high-speed passenger vehicles intended to be used for extended periods across a variety of roadways. For example, ADS classes such as:

- low-speed automated systems with no seating capacity confined to operate within specially designed road networks,
- high-speed automobiles used for extended periods on all roads without any geographic limitations,
- school buses, and
- long-haul heavy trucks operating primarily on interstate highways -

would each have distinct certification requirements and regulations.

Accordingly, rather than equating all ADS and attempting to provide a single uniform set of appropriate regulations that apply to all, NHTSA should define appropriate ADS classes based on their designed speed, gross weight, ODD, and intended use, with appropriate FMVSS and licensing standards for each.

In addition to those areas listed above, ADS-specific regulations must address:

- the identity of the ADS ‘driver’ for purposes of licensing and liability,
- define minimum equipment and processing such as on-board data recorders and data formatting to allow forensic investigation of incidents,
- Cybersecurity

Definition of ‘driver.’ There must be a means to ensure ADS equipped vehicles engaged in interstate commerce will comply with the rules and responsibilities on the road, just as rules exist to require compliance from a human driver. Thus, fundamental to any framework of minimum vehicle safety standards is a definition of “driver” for liability, motor vehicle law enforcement, and functional considerations. Although, the definition of driver has traditionally been left to states, the possibility of automated driving heightens the need for a clearly understood entity ‘who’ is responsible for complying with the law. Currently, the entire sensory, logical, and control actuation system responsible for vehicle operation is considered the driver, and thus the driver must be progressively examined, performance reviewed, and licensed. In fact, all motor vehicle laws and insurance regulations are based on the existence of an ability to readily identify a motor vehicle’s driver.

If automated systems are to replace the human driver, they must also be identified as the driver for these same law enforcement, insurance, and liability purposes. And, like a human driver, an automated driver’s operation history must be a consideration in granting the ADS certification to “drive.” As with human drivers, unapproved operation endangers everyone on the road, yet unlike a human driver, automated drivers can be designed uniformly and evaluated as such. The proposed ADS Framework must include a mechanism for defining a ‘driver’ in the context of ADS, must assure proper certification²⁷ of the capabilities of the ADS, and must assure that ADS which do not meet the minimum standards for such certification are prohibited from driving on public roads.

²⁷ See Section III below for explanation of “gated certification.”

Vehicle data recorders: To assure continually improving safety, NHTSA should also establish standards for data recorders, potentially both on-board and remote, that will enable forensic investigations of incidents involving the injury or death of either vehicle occupants or other persons, or damage to the vehicle or other property. Currently, new vehicles are recording vastly more information than is collected by traditional Event Data Recorders. ADS developers are currently recording an even wider range of vehicle operational and video data than the NTSB, or any other crash investigator, has historically had available for use in forensic analysis of crashes. Selected data should be mandated to assure forensic crash analysis capability. NTSB recommendations to the DOT and NHTSA for ADS vehicle data recorders H-17-37, H-17-39, and H-17-40 have not been implemented.²⁸ To begin with, DOT and NHTSA should implement those recommendations immediately, but that should be the beginning not the end of the update to the elements required to be captured by ADS vehicle data recorders. Using the results of forensic investigations, as part of NHTSA’s ongoing commitment to ADS safety, lessons learned should be applied industry-wide and confirmed as part of the periodic ADS gated certification process renewal, and ongoing continuous improvement of ADS safety.

Cybersecurity: NHTSA should develop cybersecurity rules, validation means, and remediation distribution requirements for connected vehicles, including today’s ADS with a long-term view towards an AV-focused Federal Motor Vehicle Safety Standard for cybersecurity validation. Reliance on safety recalls to accomplish equivalent results is not commensurate with the need to provide an immediate response in the face of cyberattacks of any size.²⁹

We note, NHTSA’s suggested focus on the establishment of four (or any other number) core requirements is a diversion from the highest AV safety priority. NHTSA should instead prioritize establishment of safety reliability requirements for ADS developers. As discussed above, safety reliability requirements can be derived from existing NHTSA databases to establish a fundamental criterion that at a minimum would require ADS implementations to do no harm and would be a metric against which ADS safety can be measured and tracked over time to confirm their safety benefits. These safety reliability requirements can be allocated by developers among components and subsystems to support the overall safety requirement, not necessarily among the proposed four canonical core functions. While it is clear that some contribution of each of the core functions articulated by NHTSA is required for ADS operation, it is not clear that focus on that distribution will either accelerate or enhance ADS safety or development. NHTSA should instead focus on developing safety reliability requirements and procedures that include FMVSS and other performance tests and also establish criteria to prove ongoing conformity to safety standards.

²⁸ NTSB: *Collision Between a Sport Utility Vehicle Operating With Partial Driving Automation and a Crash Attenuator Mountain View, California*, March 23, 2018, at: <https://www.nts.gov/investigations/AccidentReports/Reports/HAR2001.pdf>

²⁹ See Center for Auto Safety comment on *Cybersecurity Best Practices for the Safety of Modern Vehicles*, March 15, 2021, <https://www.autosafety.org/wp-content/uploads/2021/03/CAS-Comment-on-Cyber-Best-Practices-RFC-NHTSA-2020-0087.pdf>

III. ADS Compliance and Certification

While such standards are in the process of development, the agency must provide mechanisms to confirm conformance with minimum safety conditions by developers who wish to commercially deploy their vehicles on public roads.

One way to do that would be by the establishment of standards for, and endorsement of, a gated certification program for ADS developers. A gated certification process is one in which ADS operational approval is evaluated and approved in incremental stages. Approval for deployment on public roads, which would be premised upon passing through each gate outlined by NHTSA, should be conditioned on competent third-party review of ADS conformance to performance-based vehicle safety standards. Independent third-party safety review has been endorsed by both the NTSB and the National Society of Professional Engineers in their responsive comments.³⁰ Approval to test and deploy on roads within the jurisdiction of the certifying authority should be provided for a limited time only and should be appropriate for the demonstrated operational history and proven confidence in vehicle safety standard conformance. The validity and utility of this approach is borne out by real world experience.³¹

NHTSA could establish the parameters for such ‘gates’ which provide progressively more expansive operational design domains (ODDs) in a manner analogous to the universally accepted practice of licensing human drivers with learner’s permit, conditional license, full license, and special license for particular vehicle classes, and could be readily extended to ADS classes. Additional details on such a process may be found in previous Center filings.³²

To create the metrics for such gates, NHTSA could look to “safety cases” as written by individual ADS developers.³³ Instead of simply suggesting each manufacturer write a case for their ADS prior to using public roads to test their multi-ton equipment at high-speed, NHTSA could require submission of such plans. These plans could, along with parameters established by consensus standards, create a framework for each ‘gate’ through which ADS developers would look to pass to be certified to move on to their next operational level.

Fundamentally, developers need to establish that their choice of logic and included components support overall safety criterion that allow the ADS-equipped vehicle to operate on public roads. A sample of methodologies for establishing compatibility, to be confirmed by objective third-parties may be found in standards established by, e.g., SAE, ISO, UN, UL, IEEE, MIL-STD-882, and others. NHTSA must establish the safety reliability standards. Developers could then allocate reliability requirements to various components to enable safety validation by the developers themselves and by independent reviewers at the component level using the applicable industry standards. Given the absence of applicable mandatory safety requirements, existing

³⁰ *Supra* FN 17.

³¹ World Economic Forum, Safe Drive Initiative: Creating safe autonomous vehicle policy, October 2020, at: <https://link.autonews.com/click/22195881.7350/aHR0cDovL3d3dzMud2Vmb3J1bS5vcmcvZG9jcy9XRUZfU2FmZURJX2NyZWFOaW5nX3NhZmVfQVZfcG9saWN5XzlwMjAucGRm/5f7a9026756427613a3dc7b5Be32dd03c>

³² Center for Auto Safety response to ANPRM; *Pilot program for collaborative research on motor vehicles with high or full driving automations*, Dec, 11, 2018, at: <https://www.regulations.gov/document?D=NHTSA-2018-0092-0040>

³³ FN 1 – page 35

industry standards can be used by competent review boards to assess the safety of ADS offerings safety as part of a gated certification procedure with periodic examination and relicensing.³⁴

Such certifications, even if based in part upon the individual ADS developer’s safety case, should be undertaken by independent third-party certifiers. Third party review of design, simulation, test, and test driving with human supervisory drivers can provide a reasonable assessment of safety before ADS are deployed and prior to new standards taking effect. NHTSA should not and is not required to wait for preventable injuries and fatalities prior to acting.

By demonstrating conformance to safety standards at periodic certification renewals, developers may introduce new safety innovations within the context of a comprehensive gated certification process. This recommended approach is consistent with the criteria laid out in the ANPRM Section E. - Critical Factors Considered in Designing, Assessing, and Selecting Administrative Mechanisms.

IV. Reactive Enforcement is Insufficient

Recalls are not regulations, nor are they sufficient substitutes for compliance testing and certification. NHTSA continues to cite its defect enforcement authority as a backstop to avoid negative ADS safety impacts, despite the agency’s troublesome history getting defective vehicles off the road in a timely manner. Furthermore, defect enforcement occurs after failures occur in the field and is a reactive rather than preventative measure.

In this we concur with the stated position of the NTSB, “[t]his approach (identifying safety-related trends in design or performance defects) is misguided because it relies on waiting for problems to occur rather than addressing safety issues proactively.”³⁵

The solution to the inadequacy of sole reliance on the agency’s defect authority is proactive and timely compliance investigation and enforcement. Safety standards underscored by proactive and timely compliance enforcement would allow NHTSA to evaluate new vehicles equipped with ADS to ensure they meet minimum safety standards. In order to prevent the agency from relying solely on retrospective safety enforcement there must be an emphasis on standards and compliance to ensure NHTSA continues to wield both enforcement arms in the ADS field.

NHTSA can use both defect and compliance enforcement as complementary forces to ensure that the vehicles reaching the nation’s roads meet minimum safety standards at the time of sale, operate safely as they are used, and are withdrawn from service if they cannot be used safely. NHTSA’s compliance program for conventional vehicles provides unambiguous standards and processes with which certifying manufacturers’ vehicles must align prior to vehicle sale, thus prospectively preventing dangers from reaching our roads. NHTSA must extend that same approach to ADS-equipped vehicles to mitigate their dangers to the public prior to sale to the greatest extent possible.

³⁴ Clearly, such a lack of existing requirements only highlights the need for NHTSA to act expeditiously.

³⁵ Supra FN 17.

V. Conclusion

The Center agrees with NHTSA that a properly structured regulatory Framework for ADS development will benefit the public by creating a pathway to utilize in commerce the most beneficial safety elements of the technology. Moreover, a properly conceived federal framework can benefit developers by accelerating engineering development and reducing financial risk exposure, thus incentivizing those actors who wish to play by the rules. The bedrock element of that Framework should be a safety requirement assuring that compliant vehicles will, as a minimum, do no harm to the public. Without such an assurance, the promise of ADS may not be realized. Such a standard does not prescribe or require a design solution and could be developed by NHTSA and required of ADS developers. Compliance by AV developers with appropriate FMVSS for the ADS class and confirmation by third party review at certification intervals would assure public safety and preserve developer design freedom and versatility.

Our country, and world, stand on the precipice of a revolutionary moment in transportation history. The rest of the world is moving ahead with common sense regulations and requirements for ADS, while US industry lags behind.³⁶ NHTSA's inaction is forcing U.S. auto industry to back the desperate gamble that its scattershot approach to ADS development will overtake international coordinated developments. NHTSA should embrace the moment and enable the U.S. to regain the lead by asserting its role for promoting ADS safety standards and regulations, ensuring the safety of ADS-equipped vehicles on public roads for all drivers, passengers, and pedestrians. In order to reach that goal, NHTSA must start by requiring the submission of uniform, useful safety and technical information from everyone testing this technology on public roads, while it develops safety standards. Regulatory agencies are established and funded to protect the public, not merely cheerlead for industry. At a minimum, the public deserves the information to understand what is happening in our communities until regulations have been promulgated and public confidence has surged.

Thank you for the opportunity to present our views on the Framework for Automated Driving System Safety.

cc: Secretary Pete Buttigieg, U.S. Department of Transportation

³⁶ See e.g.: UNECE *Three landmark UN vehicle regulations enter into force*, , <https://unece.org/sustainable-development/press/three-landmark-un-vehicle-regulations-enter-force>