



May 29, 2020

Office of the Administrator  
c/o James C. Owens, Deputy Administrator

National Highway Traffic Safety Administration  
Docket Management Facility  
U.S. Department of Transportation  
1200 New Jersey Avenue SE  
West Building, Ground Floor, Room W12-140  
Washington, DC 20590-0001

Submitted electronically via [www.regulations.gov](http://www.regulations.gov)

**RE: Notice of Proposed Rulemaking, Occupant Protection for Automated Driving Systems,  
Docket No. NHTSA–2020–0014**

Dear Deputy Administrator Owens,

The Center for Auto Safety (“the Center”) appreciates the opportunity to provide reply comments on the notice of proposed rulemaking (NPRM) regarding Occupant Protection for Automated Driving Systems. The Center, founded in 1970, is an independent, member supported, non-profit consumer advocacy organization dedicated to improving vehicle safety, quality, and fuel economy, celebrating 50 years of advocacy for consumer automotive safety and informed choice.

It is a misallocation of limited government resources to engage in rulemaking on fully autonomous driving system-equipped vehicles, which do not exist at this time, when so many nearer-term technology improvements with immediate impact on the safety of occupants of conventional vehicles, pedestrians, and other vulnerable road users now languish due to NHTSA inaction. Indeed, NHTSA’s enthusiasm for adapting regulations for fully ADS-equipped vehicles is a dangerous and unnecessary diversion from the immediate needs of mandating existing life-saving automotive technology.

The Center has long advocated mandating requirements for automatic emergency braking, V2X deployment, pedestrian protection, updated NHTSA crash test standards, and updated seat back standards, all of which inexplicably continue to suffer. These failures on NHTSA’s part to

undertake the work on performance standards which could be applied to vehicles rolling off assembly lines by the millions in the coming years suggest a lack of a proper focus on the agency’s statutory mission to maximize safety for all drivers, passengers, and pedestrians. Instead, by issuing this NPRM, NHTSA is once again diverting resources to adapting rules for potential, but perhaps never realized, ADS technology; this is a tragic mistake that unnecessarily costs far too many lives each year in pursuit of an illusory goal.

### **Direct Responses**

The NPRM states (page 17264), “This notice seeks to clarify the ambiguities in applying current crashworthiness standards to ADS-equipped vehicles without traditional manual controls. ...” To date, it has not been established that any vehicle without traditional manual controls is at least as safe as a conventional vehicle. The Center believes that until at least equivalent safety is proven, all vehicles should be equipped with traditional manual controls as a backup safety feature. To be clear, such controls need not be an impediment to AV development. They might be deployable only as needed, but are an absolute necessity for the many conceivable foreseen and unforeseen safety-critical situations that ADS-equipped vehicles will encounter: situations that either exceed the ADS capabilities, are caused by mechanical/electrical/computer system faults or cyber-attacks, or are encountered outside of the designed operational design domain (ODD). Until the safety of ADS-equipped vehicles is unambiguously proven, there are no unnecessary FMVSS requirements.

On page 17633, V. New and Current Definitions in Part 571.3, b. New, Modified and Relocated Definitions, NHTSA proposes, “Driver’s designated seating position means a designated seating position providing immediate access to manually-operated driving controls.” This definition should be further delimited to instead read, “Driver’s designated seating position means a designated seating position providing immediate access to manually-operated conventional driving controls.” The rationale for this proposed change is that “manually-operated controls” could include electronic controls such as joysticks, computers, or tablet computers that could be located at any seating position. It might even include wireless remote controls that are located outside of the vehicle. Even if our interpretation of the proposed definition is incorrect NHTSA needs to further refine the scope of “manually-operated controls” to avoid misunderstanding.

On page 17636, 3. The Treatment of Outboard Versus Center Seating Positions in the Front Row of Light Vehicles NHTSA, “...request comment on whether the final rule should require air bag (including OOP protection) and lap/shoulder seat belt protection to these inboard seating positions, if outboard positions are removed. We also seek comment on implications of such designs upon the statutory obligation for frontal air bags.” The Center believes that both lap/shoulder belts and air bags should be required for inboard seating positions in ADS-equipped vehicles. The fact that they are not required for current vehicles is a regulatory defect that should be corrected, and not a rationale for needlessly endangering ADS-equipped vehicle occupants. All front row occupants (as well as rear row occupants) are exposed to substantial risk of injury in frontal and side collisions. The risk can best be mitigated by use of the best available protective technology, including lap/shoulder belts and air bags.

On page 17636, 4. Treatment of Advanced Air Bags, “NHTSA seeks comment on whether it is necessary to apply passenger (child and adult) advanced air bag requirements to both front outboard seats in an ADS-equipped vehicle without manual controls because both of those seats would be available for child occupants.” The Center believes that all front seat passengers regardless of age are at substantial risk of injury or death from frontal or side impact. Existing recommendations for child transport safety should not be relaxed simply because a vehicle includes ADS technology. The risk of injury or death for front seat occupants can best be mitigated by use of the best available protective technology, including lap/shoulder belts and air bags, and appropriate restraints for children who might not be old enough for safe use of adult restraints.

Also, on page 17636, 4. Treatment of Advanced Air Bags, “NHTSA seeks comment on alternative techniques to ensure children receive existing protection.” Is NHTSA soliciting ideas for alternative techniques? If so, it would be prudent to detail the techniques under consideration to allow for useful public comment on the various ideas presented. In the interim, any child protection technology considered must be proven to be at least as effective as currently available technology under all foreseeable operational conditions, and to not present an unacceptable usage burden to children or their parents or guardians.

On page 17636, 4. Treatment of Advanced Air Bags, “NHTSA seeks comment on whether it is necessary to apply passenger (child and adult) advanced air bag requirements to both front outboard seats in an ADS-equipped vehicle without manual controls because both of those seats would be available for child occupants.” The Center believes that the wording of this request for comment is unnecessarily conclusive when it states, “... because both of those seats would be available for child occupants.” We believe that an improved question would read, “... if either or both of those seats would be available for child occupants.” Assuming that correction, the Center believes that it is important that children in any seating position be protected with the best available safety technology, and in particular that in addition to appropriately sized lap/shoulder belts, it would be necessary to apply advanced air bag requirements to any front seat position that might be occupied by a child. Such protections are not and cannot be a substitute for prescribed use of infant and child protection technologies such as car seats and booster seats, which should always be used for transporting children

On page 17636, 5. Advanced Air Bag Suppression Telltale for Passenger Air Bags, “NHTSA seeks comment on requiring each front outboard passenger seat with a suppression-based advanced air bag system to have a unique telltale, so that occupants know which air bag is suppressed.” The Center believes that it is important for occupants to verify the operational capability of safety-critical equipment in vehicles they occupy, including telltales for suppression-based advanced air bag systems. In particular, anticipating the possibility of children occupying any seat position in ADS-equipped vehicles, verification of safe inflation energetic propellant level to avoid air bag-induced injury becomes critical to their safety.

On page 17637, 6. Treatment of ADS Vehicles With Driving Controls When Children Are in the Driver’s Seat, “To minimize the risk that a child could ride in a front designated seating position (DSP) without the protections afforded by advanced air bags, NHTSA seeks comment on

whether ADS-equipped vehicles that have manual controls should not be capable of motion if a child is detected in the driver’s seat.” The way the comment request is posed glosses over the need for appropriate use of child seats and booster seats, neither of which should be currently deployed in the front seating area of vehicles with advanced air bags. NHTSA should clarify that constraint.

Second, as discussed previously, the currently proposed definition of ‘driver’s seat’ is inadequate to cover the full range of manual controls possible. Assuming that NHTSA resolves that ambiguity by specifying driver seat alignment with conventional driver controls, then the Center believes that the vehicle should be immovable if any child – not just an infant – is detected in the driver’s seat while the vehicle is stationary, and should revert to a safe stop if a child is detected in the driver’s seat while underway. Because of their proximity to controls it is not safe for any occupant if a child is located in the driver’s seat. Because of the energy in a steering wheel-mounted air bag and lap/shoulder belt design for adults only in that position it is never safe for a child to be located in the driver’s seat. On page 17637, Table VI-5 After Change, S19.5/ S19.5.1, the Center believes that “...12-month-old CRABI dummy...” should be replaced with reference to a “Hybrid III 10-year-old child test dummy...” Motion suppression, whether the vehicle is stationary or underway, should be implemented whenever any child, who may be much older than 6 months, is evidently in the driver’s seating position, assuming that the driver’s position is associated with controls that might be accessible to the child.

On page 17637, 7. Driver’s Seat Used as a Spatial Reference, i. Buses, NHTSA, “... seek comment on whether modifying the text below to reference only the front row, even in cases where a school bus has a driver’s DSP, is a viable option without any significant negative effect.” The Center believes that it is inappropriate to consider ADS for school buses within the stated NPRM scope of, “... vehicles equipped with Automated Driving Systems (ADS) that lack the traditional manual controls necessary for human drivers, but that are otherwise traditional vehicles with typical seating configurations.”<sup>1</sup> To deem school buses as “otherwise traditional vehicles” raises concerns about the analysis underlying the proposed rule. School buses are uniquely reliant upon human drivers for (typically minor child) passenger safety during ingress and egress, for discipline while underway, and for emergency evacuation in a variety of life-endangering situations. We do not believe that displacing the human driver of a school bus renders it an “otherwise traditional vehicle” in any meaningful sense of the phrase. To be clear, the Center believes that any proposed rule on occupant protection for driverless school buses should be withdrawn unless and until all safety aspects of such operation are considered.

On page 17637, 7. Driver’s Seat Used as a Spatial Reference, i. Buses, NHTSA seeks comment “on whether it would be more appropriate to require seat belts at only one (bus front seat) DSP, rather than at all front passenger seating position.” There are so many safety issues associated with a bus driver’s responsibilities that the Center believes it is inappropriate to treat the question of front seat passenger safety for ADS-equipped buses in isolation. It is not meaningful to contemplate the seating arrangement of a driverless school bus without considering the safety implications of operating a bus without an (adult) driver who provides supervision over the

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<sup>1</sup> NPRM, page 17624, ‘Summary’

passengers, including children, handicapped persons, and every other passenger who might be endangered in a collision, fire, or other life-threatening event. The Center believes that the best available proven safety technology should be provided to all passengers in a vehicle, including buses. If this comprises a combination of lap/shoulder belts and air bags, then there should be no relaxation of this requirement unless some other solution is proven to be both readily usable and safer. But, to be clear, the Center believes that any proposed rule on occupant protection for driverless buses, particularly school buses, should be withdrawn unless and until all safety aspects of driverless operation are considered. The Center’s position on seat belts on school buses has been clear since at least 2010.<sup>2</sup> Seat belts on all seating positions on school buses was a good idea ten years ago and remains an important safety measure that NHTSA could undertake if child safety was paramount to this proposed rule.

On page 17638, 7. Driver’s Seat Used as a Spatial Reference, ii. Dummy Placement in Bench Seats, NHTSA writes, “In light vehicles, the driver’s seat and the dummy placed there also provides a spatial reference point for the lateral positioning of the dummy in the outboard passenger seat on the other side of the vehicle. ... (NHTSA) are proposing to position both outboard passenger dummies by using the seating reference point of the DSP where they are located.” The Center agrees with this proposal for testing of bench seat safety where the driver position is undefined or irrelevant.

On page 17638, 7. Driver’s Seat Used as a Spatial Reference, ii. Dummy Placement in Bench Seats, NHTSA, “... ask for comment on whether the text associated with a driver’s DSP could be deleted without any significant effect.” This proposal is only workable if there is truly no significance to a potential driver’s position relative to vehicle controls. It is important to note that this proposal should not pertain to vehicles that include fixed or deployable human-accessible primary or backup (potentially deployable on demand or need) controls. Safety is paramount, and the driver’s position should be unambiguous if any potential exists for need of human vehicle controls at any point in the vehicle life cycle.

On page 17638, 7. Driver’s Seat Used as a Spatial Reference, iii. Left Versus Right Vehicle Side In reference to 49 CFR § 571.208 - Standard No. 208; Occupant crash protection, S13.3, NHTSA, “... requests comment on whether stakeholders agree that this option will result in the same performance outcome.” The Center agrees that removing reference to ‘left side’ in favor of leveling the sill without regard to driver position for ADS-equipped vehicles is sufficient for purposes of setting up a crash test.

On page 17639, 9. Minor Editorial Revisions, b. FMVSS No. 201; Occupant Protection in Interior Impacts, 1. Application Section, NHTSA, “... proposes to modify the application section (S2) so that the standard would apply to trucks only if they have at least one DSP.” The Center believes that the standard should apply if any seating position includes an optional or deployable

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<sup>2</sup> Center for Auto Safety, et al., *Petition for Rulemaking mandating seatbelts on school buses*, March 9, 2010, at: <https://www.autosafety.org/wp-content/uploads/import/SchoolBusSeatBeltPetition.pdf>

set of human controls that could be used in any situation during the vehicle life cycle, as would be expected for operations outside of the ODD due to geographic, environmental, mechanical/electrical/software fault, servicing, business, or other vehicle life cycle events. It is not appropriate to remove the standard merely because a DSP is included. Such removal would be appropriate only if there is no potential for human control.

On page 17639, b. FMVSS No. 201; Occupant Protection in Interior Impacts, 3. Driver’s Seat Used as Spatial Reference, NHTSA, “... seek comment on whether the excluded area should be more or less inclusive for multistage vehicles and the means to achieve any suggested recommendation.” The Center believes that the excluded area should be less inclusive, based on the rear-most front facing position.

On page 17639, b. FMVSS No. 201; Occupant Protection in Interior Impacts, 4. Steering Control Used as a Spatial Reference NHTSA, “... proposes to modify Section S5.1.1(d), which states that S5.1 does not apply to certain areas of the instrument panel that are bounded by the inboard edge of the steering control, so that it would apply only if a steering wheel is present.” The Center believes that the standard is applicable and should be unmodified if an ADS-equipped vehicle includes optional manual controls usable at any point within the vehicle life cycle that are either fixed or deployable and associated with a defined position within the vehicle.

On page 17640, c. FMVSS No. 203; Impact Protection for the Drivers From the Steering Control System, and FMVSS No. 204; Steering Control Rearward Displacement, NHTSA, “... proposes modifying the Application section (S2) of FMVSS No. 203 and the Application section (S2) of FMVSS No. 204 to state that the standards do not apply to vehicles without steering controls.” The Center believes that the standard is applicable and should be unmodified if an ADS-equipped vehicle includes optional manual controls usable at any point within the vehicle life cycle that are either fixed or deployable and associated with a defined position within the vehicle.

On page 17640 d. FMVSS No. 205; Glazing Materials, NHTSA, “... proposes modifying the Application Section (S3) so that the standard would apply to trucks only if they have at least one DSP for the reasons discussed in previous sections of this notice.” The Center believes that the standard is applicable and should be unmodified if an ADS-equipped vehicle includes optional manual controls usable at any point within the vehicle life cycle that are either fixed or deployable and associated with a defined position within the vehicle.

On page 17640, e. FMVSS No. 206; Door Locks and Door Retention Components, NHTSA, “... NHTSA proposes modifying the Application Section (S2) so that the standard would apply to trucks only if they have at least one DSP for the reasons discussed in previous sections of this notice.” The Center believes that the standard is applicable and should be unmodified if an ADS-equipped vehicle includes optional manual controls usable at any point within the vehicle life cycle that are either fixed or deployable and associated with a defined position within the vehicle.

On page 17640, FMVSS No. 207; Seating Systems, NHTSA, “...proposes to modify the requirement that a vehicle have a driver’s seat (S4.1) to specify that a driver’s seat would be

required only for vehicles with manually-operated driving controls.” The Center believes that the standard is applicable and should be unmodified if an ADS-equipped vehicle includes optional manual controls usable at any point within the vehicle life cycle that are either fixed or deployable and associated with a defined position within the vehicle.

On page 17640, g. FMVSS No. 214; Side Impact Protection, NHTSA, “... proposes clarifying that there may be multiple front outboard passengers by using the phrase ‘any front outboard passenger’.” The Center agrees with this clarification.

On page 17640, g. FMVSS No. 214; Side Impact Protection, NHTSA, “... proposes clarifying that the ‘driver’s side’ now means the vehicle left side for spatial reference purposes.” Some vehicles position the driver on the right side of the vehicle. ADS-equipped vehicles may also include optional manual controls that are associated with a defined driver position, potentially on the right side of the vehicle. Consequently, the Center does not agree with this recommendation.

On page 17641, i. FMVSS No. 225; Child Restraint Anchorage Systems, NHTSA, “proposes to modify the definition of “shuttle bus” (for Child Restraint Anchorage System) to clarify that if the bus does not have a driver’s seat, it meets the definition of a shuttle bus if it has only one row of forward-facing seating positions rearward of the front row, rather than only one row of forward-facing seating positions rearward of the driver’s seat.” The Center believes that it is inappropriate to consider ADS for buses within the stated NPRM scope of, “... vehicles equipped with Automated Driving Systems (ADS) that lack the traditional manual controls necessary for human drivers, but that are otherwise traditional vehicles with typical seating configurations.” The best available proven safety technology should be provided to all passengers in a vehicle, including buses. If this comprises a combination of lap/shoulder belts and air bags, then there should be no relaxation of this requirement unless some other solution is proven to be both readily usable and safer.<sup>3</sup>

On page 17641, j. FMVSS No. 226; Ejection Mitigation, NHTSA, “... proposes (in reference to S6.1(d) and (f)) to simply change those references to “left front door sill,” similar to what was explained in VI.a.7.iii.” The Center does not agree with this proposal since certain vehicles have only doors and seating on the right side of the vehicle.

On page 17641, k. Regulatory Text Related to Parking Brake and Transmission Position, as related to no proposed regulatory text changes related to interfacing with ADS-equipped vehicles

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<sup>3</sup> Further, there are many safety issues associated with a bus driver’s responsibilities that will be required to be addressed which makes it inappropriate to treat the question of front seat passenger safety for ADS-equipped buses in isolation. This is an excellent example of why the Center believes that any proposed rule on occupant protection for any driverless vehicle, including, but not limited to buses, shuttle buses, or any passenger motor vehicle, should be withdrawn unless and until all safety aspects of driverless operation are considered.

on pretest brake and transmission status NHTSA, “... seek comment on the validity or(sic) our assumption and the proposed approach.” The Center agrees with the NHTSA position.

On page 17634, b. New, Modified and Relocated Definitions, Manually Operated Driving Controls, (2) NHTSA proposes a definition of manually-operated driving controls“(2) That are positioned such that they can be used by an occupant, regardless of whether the occupant is actively using the system to manipulate the vehicle’s motion.” This proposed definition does not seem to anticipate that such controls could be electronic and possibly connected wirelessly, rendering any position reference irrelevant. Presuming that the intent of the statement is referencing conventional controls, we believe the definition should be amended to instead read,“(2) That are permanently attached to the vehicle in a fixed location and positioned such that they can be used by an occupant, regardless of whether the occupant is actively using the system to manipulate the vehicle’s motion.”

On 17634, b. New, Modified and Relocated Definitions, Manually Operated Driving Controls, (2), NHTSA proposes a definition of, “Steering control system means the manually-operated driving control ...” This proposed definition does not seem to anticipate that such controls could be electronic and possibly connected wirelessly, rendering any position reference irrelevant. Presuming that the intent of the statement is referencing conventional controls, we believe the definition should be amended to instead read, “Steering control system means the permanently attached manually-operated driving control ...”

On page 17652, Standard No. 208;Occupant crash protection, S21.6.1, NHTSA proposes a new regulatory text, “S21.6.1 Motion suppression shall be assessed under the test procedures specified in S22.1 through S22.2, except that the 3-year-old dummy is placed in the driver’s seating position and the result shall be an inability of engage vehicle motion.” This conflicts with the language in table VI-5 that specifies a 12-month-old CRABI dummy. In any event, the Center believes that the 3-year-old reference should be replaced with reference to a Hybrid III 10-year-old child test dummy, as in our previous comment on the contents of table VI-5. Motion suppression, whether the vehicle is stationary or underway, should be implemented whenever a child (which may be much older than 3 years) is evidently in the driver’s seating position, assuming that the driver’s position is associated with controls that might be accessible to the child.

## **CONCLUSION**

NHTSA should be developing and proliferating rules and regulations for the safe testing of ADS-equipped vehicles on public roads based on current rules and vehicle configurations as amended only for the addition of ADS. Once the safety and efficacy of experimental ADS-equipped vehicles has been assured, amending regulations for occupant safety of ADS-equipped vehicles might be appropriate.

Other than ADS testing regulations, it is a misallocation of NHTSA’s scarce resources to propose a rulemaking for Occupant Protection for Automated Driving Systems when ADS deployment is still a distant vision. Moreover, at a moment when so many pressing safety considerations for conventional vehicles remain unresolved, when so many existing occupant

protection rules are hopelessly out of date, when so few Americans seem to trust the concept of the technology, and when even the safety of the existing test versions of ADS-equipped vehicles is under serious doubt, one can only wonder who sets NHTSA’s rulemaking agenda. Further, without consideration of the totality of safety issues associated with ADS-equipped vehicles, including heavy trucks and buses, it is not likely that all implications of amending long-standing safety regulations can currently be appreciated.

Tellingly, NHTSA has not mandated the collection of any data from current tests of ADS-equipped vehicles. If the agency had, it would have on hand the type of data which might assist in this very rulemaking. Since the agency failed to take up the idea on its own, the Center petitioned NHTSA in October 2018,<sup>4</sup> to initiate rulemaking to collect data that would be useful for any similar rulemaking and to assist in the potential safe deployment of ADS in the future. That the petition remains unanswered twenty months later – and more importantly that the data remains uncollected – speaks volumes about NHTSA’s interest in data-driven rulemaking.

Thank you for the opportunity to present our views on the NPRM for Occupant Protection for Automated Driving Systems, and for your recognition of the importance of occupant protection in motor vehicles.

Sincerely yours,



Jason Levine  
Executive Director

cc: Secretary Elaine Chao, U.S. Department of Transportation

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<sup>4</sup> Center for Auto Safety *Petition for Rulemaking requiring companies testing automated vehicle systems on public roads to provide information to NHTSA and the public regarding the safety of their systems*, October 19, 2018, at: <https://www.autosafety.org/wp-content/uploads/2018/10/Center-for-Auto-Safety-Petition-for-Rulemaking-to-mandate-Safety-Assessment-Letter.pdf>. NHTSA’s rules require a response to such a petition 120 days after receipt. See 49 CFR 552.15.