



**GENERAL MOTORS LLC**  
Global Vehicle Safety

May 29, 2020  
USG 4939

Mr. James C. Owens  
Acting Administrator  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue, SE  
Washington, D.C. 20590

**RE: Occupant Protection for Automated Driving Systems, Notice of Proposed Rulemaking, NHTSA Docket 2020-0014, 85 Fed. Reg. 17624 (March 30, 2020)**

Dear Acting Administrator Owens:

General Motors LLC and Cruise LLC (“GM”) appreciate the opportunity to provide comments addressing NHTSA’s Notice of Proposed Rulemaking (“NPRM”) on the topic of Removing Regulatory Barriers For Vehicles With Automated Driving Systems.<sup>1</sup>

**Introduction**

GM applauds NHTSA’s leadership in proposing these changes to accommodate vehicles equipped with Automated Driving Systems (ADS) without traditional manual controls.

This NPRM is a significant step forward in NHTSA’s effort to modernize the Federal Motor Vehicle Safety Standards (FMVSSs). As the NPRM notes, the current FMVSSs were written at a time long before vehicles equipped with ADS were contemplated. They are written with assumptions about human drivers and about the protections that conventionally seated occupants would need in a crash. GM supports NHTSA’s work to modify the current FMVSSs in a way that maintains current occupant protection levels while also clearing the way for manufacturers of ADS-equipped vehicles to certify compliance.

It is imperative that NHTSA continue to drive this critical dialogue with a sense of urgency so that the necessary regulatory evolution keeps pace with advancing technology. Ultimately, the foundational regulatory changes forged through this NPRM and NHTSA’s subsequent rulemaking activities will encourage critical AV investment and development, provide much-needed regulatory certainty for manufacturers, and enable AV deployments that will be the key to allowing the safety benefits of autonomous vehicles to be realized on a nationwide scale.

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<sup>1</sup> GM is also a member of the Alliance for Automotive Innovation (“Auto Innovators”) and supports the Auto Innovators comments insofar as they do not conflict with GM’s comments below.

## **NHTSA is Taking the Correct Approach with this NPRM**

GM supports the approach that NHTSA sets forth in the NPRM. GM agrees with the primary goal of the NPRM as articulated by the agency: to maintain current levels of occupant protection provided by the 200-series of FMVSSs while clearing barriers or ambiguities to the application of those FMVSSs to ADS-equipped vehicles. While it may be necessary in the future to overhaul the FMVSSs to account for unique performance issues associated with ADS-equipped vehicles, GM agrees that this first step of technically translating the substantive requirements and test procedures to accommodate ADS-equipped vehicles is the right one.

GM commends the agency for preparing the color-coded redline of the full regulatory text for reference purposes. The redline was very helpful in understanding the proposal as it would be executed in the Code of Federal Regulations. GM urges NHTSA to prepare a similar color-coded redline for the Final Rule when it is issued.

GM has been a core participant on the Virginia Tech Transportation Institute (VTTI) research project “FMVSS Considerations for Automated Driving Systems,” and is pleased that NHTSA is building upon the translations proposed in the VTTI report. GM believes that the VTTI work was well done and provides substantial technical support for the NPRM.

GM supports the decision to not redefine “driver” at this time. That was VTTI’s approach, and GM supports that, recognizing that there may be a time in the future when the definition of the term “driver” should be reviewed holistically in the context of all of the FMVSSs. GM also generally supports the approach of mirroring front right passenger protection at the location of the traditional driver’s (left front) seat, but will address a particular concern regarding the proposed new motion suppression requirement for the driver’s seating position later on in these comments.

GM agrees that several of the 200-series standards are simply not relevant for occupant-less vehicles, such as delivery robots with no designated seating positions. GM supports the proposal to amend the application section in those standards to make the standard applicable only to trucks with at least one designated seating position. GM also supports the concept of a new separate classification for certain delivery vehicles, including occupant-less ones.

One of NHTSA’s “guiding principles” for this NPRM was to ensure that the proposed changes will have “no effect on vehicles without ADS functionality” and that the safety intent and level of performance of existing FMVSSs was retained. GM agrees that the NPRM successfully achieves these goals.

GM also agrees that the NPRM, when finalized into a final rule, will provide needed regulatory certainty for certification, reduce certification costs and minimize (but not completely eliminate) the need for future NHTSA interpretation or exemption requests related to ADS-equipped vehicles. GM has additional comments with respect to the need for future exemptions later in these comments.

With respect to the proposal to maintain the current regulatory text structure, GM supports NHTSA's proposal to do so, even at the price of some redundancy or complexity in the regulatory text. However, GM will make some specific recommendations regarding specific regulatory text later in these comments.

Finally, GM commends the agency's efforts to remain technology neutral in this proposal. GM believes that the agency's efforts to do so were successful.

### **Comments on Specific Issues**

#### 1. New, Modified and Relocated Definitions.

GM supports NHTSA's approach with respect to definitions. Specifically, GM agrees that the new definitions should be added to Part 571.3. GM also supports moving the definition for "steering control system" to Part 571.3.

GM has specific comments on the following definitions.

- New proposed definition of "passenger seating position"

NHTSA proposed to define "passenger seating position" as follows:

Passenger seating position means any designated seating position other than the driver's designated seating position. As used in this part, the term "passenger seat" shall have the same meaning as "passenger seating position." As used in this part, "passenger seating position" means a driver's designated seating position with stowed manual controls.

GM believes that the last sentence of this proposed definition is confusing because it is inconsistent with the first sentence. GM believes that the definition would be clearer if it read as follows (with suggested new text in italics):

Passenger seating position means any designated seating position other than the driver's designated seating position, *except as noted below*. As used in this part, the term "passenger seat" shall have the same meaning as "passenger seating position." As used in this part, "passenger seating position" includes a driver's designated seating position *if manual controls are present but have been stowed*.

- Relocation of definition of "row"

NHTSA proposed to relocate the definition of "row" from FMVSS 226 to Part 571.3. GM supports this move. Row means a set of one or more seats whose seat outlines do not overlap with the seat outline of any other seats, when all seats are adjusted to their rearmost normal riding or driving position, when viewed from the side.

GM notes that this definition, which currently resides in FMVSS 226, includes the term “seat outline,” which is also a defined term in FMVSS 226. GM recommends that the definition of “seat outline” also be moved from FMVSS 226 to Part 571.3 for consistency.

## 2. FMVSSs that are Not Being Changed at this Time.

NHTSA requested comments on whether changes are needed in several 200-series standards that are not included in the standards that NHTSA flagged for modification.

GM believes that some additional amendments are needed to ensure that the standards do not inadvertently pose a barrier to passenger-less trucks. In particular, GM recommends amending the following standards to add the phrase “with at least one designated seating position” following the word “trucks” in the application section of each FMVSS: FMVSS 202a (S2), FMVSS 210 (S2), FMVSS 212 (S3), FMVSS 219 (S3), FMVSS 225 (S2), and FMVSS 302 (S3).

GM also supports the following changes to FMVSS 500:

- **S5(b)(6)** – The references to “driver’s” and “passenger’s” side should be changed to “left” and “right,” respectively. LSVs with no manual driving controls should be exempt from mirror requirements.
- **S5(b)(8)** – LSV trucks with no designated seating position should be exempt from the requirement to have a windshield.
- **S5(b)(11)** – LSVs with no manual driving controls should be exempt from the requirement to meet rear visibility requirements in S6.2 of FMVSS 111.
- **S6.3.1** – Replace “driver” with “one occupant.”

## 3. Test Procedures that NHTSA May Not Be Able to Perform Without Controls (i.e., Park Brake and Transmission State)

NHTSA has not proposed any changes related to interfacing with ADS-equipped vehicles with respect to a pre-compliance test parking brake or transmission status. NHTSA acknowledged that it might not be immediately obvious how to prepare an ADS-equipped vehicle that is lacking a driver-accessible parking brake or a driver-accessible transmission selector for a compliance test when the regulatory text dictates a particular parking brake or transmission status. NHTSA also commented that this circumstance is not unique to ADS-equipped vehicles and that it has successfully worked in other instances for NHTSA and its test laboratories to work with the vehicle manufacturer to determine how to set the parking brake or select a given transmission position.

GM agrees with NHTSA’s approach and commits to working with NHTSA and its test labs, should the need for such consultation arise.

#### 4. Issues with Specific FMVSS Proposals.

##### a. FMVSS 207

NHTSA has proposed to revise S4.1 – *Driver's seat* – to provide that each vehicle with “a manually-operated driving control” must have a “driver’s designated seating position.” But there is no definition for a singular “manually-operated driving control.”

Rather, NHTSA proposed this new definition (in the plural):

*Manually-operated driving controls means a system of controls:*

*(1) That are used by an occupant for real-time, sustained, manual manipulation of the motor vehicle's heading (steering) and/or speed (accelerator and brake); and*

*(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.*

GM recommends that the proposed revision to S4.1 also refer to “manually-operated driving controls” to conform to the proposed definition. Moreover, it is likely that a manufacturer of ADS-equipped vehicles will choose to install a single manually operated control (not a system of controls) for use by a technician or for fleet management to move the vehicle across a lot, for example. Such a single control would not be intended for use by an occupant for real-time, sustained manual manipulation of steering or acceleration or braking. Rather, it would be a short-term, temporary activation of the vehicle for fleet management purposes. If the vehicle does not otherwise have a system of controls intended to be used by an occupant for real-time steering and/or acceleration on public roads, that single manual control should not trigger the requirement to have a driver’s designated seating position.

##### b. FMVSS 208

###### *i. Motion Suppression*

NHTSA has proposed to add a new requirement in S19.5 that would require motion suppression for vehicles with manually-operated driving controls that do not require a driver, with companion changes to S21 and S23. GM thinks the focus of this NPRM should be, as NHTSA stated, to modernize *existing* crashworthiness standards necessary to accommodate ADS vehicles without human controls, rather than create new requirements. However, GM is aligned with the need to address child occupant safety in dual-mode ADS-equipped vehicles and would support applying existing air bag suppression requirements (and/or low risk deployment) to accomplish this.

*ii. Center Seating Positions*

As NHTSA notes, there is no existing FMVSS requirement for an air bag in the center front seat. For current conventional seating arrangements, this is appropriate because there are technical challenges, such as providing air bag coverage and OOP performance for all three seating positions in such close proximity. GM believes that this NPRM should be focused on removing existing regulatory barriers for ADS vehicles without manual controls. However, where there is only a single forward-facing front row center seat, GM supports applying current right front outboard passenger side FMVSS 208 crash performance requirements.

*iii. Air Bag Suppression Telltale*

NHTSA suggested that each front outboard passenger seat, which offers a suppression-based advanced air bag system, have a unique telltale. GM agrees that occupants should be aware of which air bag is suppressed. GM supports providing a unique telltale for each front outboard passenger seat to indicate air bag suppression. GM urges that any such requirement remain design neutral, so that the manufacturer may elect to display the information in one location or two locations, but each outboard seating position would have a unique telltale.

*iv. Occupant Protection – Air Bag Suppression*

With respect to NHTSA's proposed changes to FMVSS 208, sections 20.2, 20.3, 22.2, 22.3, 24.2, and 24.3, GM recommends adding the language proposed below to clarify that the air bag suppression applies only to the seats where the detected child is sitting. Specifically, GM proposes adding "associated with that designated seating position" as shown below. NHTSA's proposed change could be read to require suppression of any front outboard passenger air bag, even one where no child is detected, if a child is detected in another front outboard seating position.

NHTSA's proposed language:

Static tests of automatic suppression feature which shall result in deactivation of ~~the~~ **any front outboard** passenger air bag.

GM's proposed clarifying text in italics:

Static tests of automatic suppression feature which shall result in deactivation of ~~the~~ **any front outboard** passenger air bag, *associated with that designated seating position*.

*c. FMVSS 226 Readiness Indicator*

GM agrees that if there is no driver's seating position, or if it is not occupied, then the indicator shall be clearly visible to the front passenger-seat occupants. However, the change NHTSA proposes does not do that and expands this requirement such that it now be visible from *any* designated seating position when there is no driver's seating position occupied or present. We

think NHTSA intended to make this indicator visible from only the front DSPs and not the back DSPs.

NHTSA's proposed rule reads (proposed changes italicized):

S4.2.2 Vehicles that have an ejection mitigation countermeasure that deploys in the event of a rollover must have a monitoring system with a readiness indicator. The indicator shall monitor its own readiness and must be clearly visible from the driver's designated seating position *and clearly visible from any designated seating position if no driver's seating position is occupied or present.*

GM proposes that this change read (GM's proposed addition underlined):

S4.2.2 Vehicles that have an ejection mitigation countermeasure that deploys in the event of a rollover must have a monitoring system with a readiness indicator. The indicator shall monitor its own readiness and must be clearly visible from the driver's designated seating position *and clearly visible from any front outboard designated seating position if no driver's seating position is occupied or present.*

#### 5. Impact of this NPRM on Current/Future Exemptions.

As noted above, GM agrees with NHTSA's conclusion that the changes proposed in this NPRM could make the exemption process under 49 U.S.C. §30113 more efficient by reducing the number of standards from which manufacturers of ADS-equipped vehicles must seek exemption. Specifically, GM agrees that it would not have needed to seek some of the exemptions it sought in its petition for a Zero-Emission Autonomous Vehicle, had the changes proposed in this NPRM been in effect when that petition was prepared.

GM notes that NHTSA also has authority to grant exemptions under 49 U.S.C §30114. NHTSA previously sought public comment through an ANPRM in October 2018 on a possible pilot program to encourage testing and deployment of ADS-equipped vehicles while providing NHTSA with data and information that could be used to inform the development of standards and a future safety assurance framework for such vehicles. (NHTSA Docket 2018-0092, 83 Fed. Reg. 50872, October 10, 2018). GM supported the establishment of the proposed pilot program and continues to encourage NHTSA to explore this creative use of its authority under §30114 to expedite the deployment of ADS-equipped vehicles.

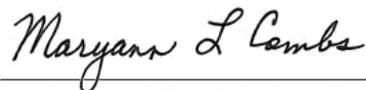
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GM's Comments to Docket No. NHTSA 2020-0014  
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As the description above makes clear, timing will be critical as NHTSA decides how this important aspect of regulatory reform takes shape.

We close by reiterating our deep appreciation for providing GM the opportunity to share its thoughts on these important issues. As always, GM remains willing to meet with you and/or your staff to discuss in greater detail the contents of this letter or any of the topics raised in the NPRM. Please contact Matthew Jerinsky of our Washington, D.C. office at (202) 775-5061 with any questions you might have.

Sincerely,

A handwritten signature in cursive script that reads "Maryann L. Combs". The signature is written in black ink and is positioned above a horizontal line.

Maryann L. Combs  
Vice President  
Global Vehicle Safety