



November 6, 2023

Ms. Ann Carlson
Acting Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

RE: Notice of Proposed Rulemaking (NPRM); Federal Motor Vehicle Safety Standards; Occupant Crash Protection, Seat Belt Reminder Systems.

Dear Acting Administrator Carlson,

The Alliance for Automotive Innovation (Auto Innovators) appreciates the opportunity to provide comments in response to the September 7, 2023, Notice of Proposed Rulemaking (NPRM) to amend Federal Motor Vehicle Safety Standard (FMVSS) No. 208, "Occupant crash protection," to require a seat belt use warning system for rear seats and update certain existing front seat belt warning requirements.^{1,2} As NHTSA acknowledged in the NPRM, several Auto Innovators members have been proactive in advancing rear seat belt reminder systems.

When used properly, seat belts have been demonstrated to provide enhanced crash protection by limiting the potential for occupant ejection and helping to manage occupant kinematics and related crash forces during a collision. Based on NHTSA's latest analysis of *Seat Belt Use in 2022*, over 90 percent of occupants were observed using a seatbelt while seated in a vehicle during daylight hours.³ However, despite the significant progress made over the last several decades in improving belt use rates, nearly half of all passenger vehicle occupants that died in a passenger vehicle were not wearing one.⁴

While we recognize the role of technology in reminding vehicle occupants to use their seat belts, we also support the Department of Transportation's National Roadway Safety Strategy (NRSS), which recognizes the importance of complimentary policies to ensure a more comprehensive Safe System approach to traffic safety. More specifically, we urge NHTSA and the Department to continue the effort to increase public education on the risks of being unbelted during a collision and promote the adoption of effective laws and enforcement to incentivize increased belt use.

¹ From the manufacturers producing most vehicles sold in the U.S. to autonomous vehicle innovators to equipment suppliers, battery producers and semiconductor makers – Alliance for Automotive Innovation represents the full auto industry, a sector supporting 10 million American jobs and five percent of the economy. Active in Washington, D.C. and all 50 states, the association is committed to a cleaner, safer, and smarter personal transportation future. www.autosinnovate.org.

² 88 FR 61674

³ DOT HS 813 487

⁴ <https://www.nhtsa.gov/press-releases/click-it-ticket-seat-belts>

In general, Auto Innovators supports NHTSA efforts to harmonize the proposed regulations with UNECE R16 for designated seat positions. Harmonization with UNECE R16 provides the agency with the greatest opportunity to ensure an objective and practical approach that meets the need for safety, while also minimizing regulatory burden and corresponding delays associated with developing region-specific countermeasures for the US market. We also support agency efforts to provide a technology neutral approach for the implementation of potential countermeasures; this provides the foundation for further innovation by providing manufacturers with flexibility to implement different types of warning system as a means for satisfying the objectives of the regulation.

However, we have concerns with several areas where the agency has proposed alternatives to the requirements of UNECE R16, which have already been widely adopted and successfully implemented in other global markets. We also strongly disagree with the agency's tentative conclusion that "the proposed warning system would be acceptable to consumers in light of the specific characteristics of the proposed warning signals, real-world experience with seat belt reminder systems, and research and consumer surveys by NHTSA and others." There are several fundamental aspects of the proposal that differ from the systems that consumers may have experienced in both previous and current model year vehicles, and, in our view, this will result in significant negative pushback from the public if the final rule is adopted without change. More specifically, these concerns stem from differences in the triggering conditions for providing alerts to consumers, as well as the duration of warnings. It is critical that the agency address these issues and amend the current proposal. It is noteworthy that many changes can easily be made through closer alignment with UNECE R16, as described in more detail below. The following sections address the proposed requirements for both rear and front seating positions, respectively.

1 Proposed Requirements for Rear Seats

1.1 Applicability

In addition to the exemption for school buses and law enforcement vehicles, Auto Innovators recommends NHTSA also exempt vehicles with more than six (6) rear seats (or more than two (2) rear rows). Based on the proposed requirements, there are challenges in providing the driver with the status information on all seating positions via the instrument panel (or other in-vehicle display) due to the number of seats that may need to be displayed and equipped with sensors to discern seat belt use (or change of status at a particular seating location).⁵

In the NPRM, there also are several instances in the proposed regulatory text where the agency specifies that certain vehicles or designated seating positions shall comply with the requirements of a newly created S7.5 requirement.⁶ More specifically, these proposed sections include S4.1.5.7.1, S4.1.5.8.1., S4.2.8.1. S4.2.9.1., S4.4.3.4.1, and S4.4.3.4.1. While we recognize the need to specify the vehicles that the proposed requirements of the NPRM are applicable to, the suggested regulatory text is ambiguous on the continued applicability of other existing requirements and how these may or may not apply after the final rule is in effect. For example, it is not possible for a vehicle to comply with the requirements of S7.3 and S7.5 simultaneously as each section establishes different warning system requirements. Similarly, the current proposed regulatory text is silent on the continued applicability of S7.1 and S7.2, the status of which has typically been clarified in previous updates to the rule as reflected in various

⁵ For high occupancy vehicles with removeable seats, an ECU is needed along with other hardware components for occupant detection; this inevitably increases the cost burden on customers.

⁶ <https://www.federalregister.gov/d/2023-18413/p-918>

subsection additions to S4.1.5 as the rule has been updated over time. We therefore request that NHTSA update the aforementioned sections (i.e., S4.1.5.7.1, S4.1.5.8.1., S4.2.8.1. S4.2.9.1., S4.4.3.4.1, and S4.4.3.4.1.) to more clearly state which aspects of the rule continue to apply to vehicles after the proposed effective date, or alternatively which aspects of the rule no longer apply.

1.2 Rear Seat Requirements

1.2.1 *Visual Warning on Vehicle Start-up*

Compliance Options for the Type of Information Conveyed

Auto Innovators supports NHTSA providing a range of compliance options for meeting the requirements of the proposed rule. However, we are concerned with the agency's decision and its underlying rationale for not providing an option to provide the driver with information on the belt status of all seating positions in the absence of occupant detection.

The agency states in the NPRM that:

While the ECE rear seat belt warning regulations allow a warning for an unfastened seat belt at an unoccupied seat, this proposal would not allow this, because we tentatively believe that the resulting "false" warning would potentially annoy drivers and lead to behaviors that would decrease system effectiveness.⁷

We strongly disagree with this statement. Displaying information on the status of a seating position should not be considered a "false" warning, and instead should be viewed as providing the driver with relevant contextual information related to both the belt status across all seating positions regardless of occupancy. The driver then has the ability to readily discern which belts are buckled when compared to the location where known occupants are seated in the rear row as it is reasonable to conclude that a driver is aware of the rear row occupancy of their vehicle. Therefore, there is no additional safety benefit by requiring an occupant detection system to a rear seat belt reminder system that already provides information for every seating position, as is the case with the "negative-only" systems.

Auto Innovators is not aware of any data that would support NHTSA's claim that a visual indication of an unfastened seat belt at an unoccupied seat would annoy drivers. Rather, the aspect of current seat belt warnings that consumers most complain about is the required audible alert at start up, as further discussed in section 2.1, below.

NHTSA should prioritize the inclusion of an additional compliance option to enable manufacturers to convey information on either positive belt status information (i.e., when belt is in use) or negative belt status information (i.e., when the belt is not in use) regardless of seat occupancy in the absence of occupant detection. This approach is consistent with UNECE R16 and would support the introduction of systems that are already in widespread use and, in our view, already well understood by drivers in both the US and other international markets. The introduction of an occupant detection could actually lead to "true" false-positives if, for example, objects/cargo, pets, or children restrained in LATCH-utilized CRSs are misclassified as occupants.

This approach is also consistent with IIHS. Mandating a new approach would introduce unnecessary software complexity and cost. It will also increase the time required to develop and deploy a new approach. If the main concern with this approach is driver annoyance, NHTSA should consider allowing a

⁷ 88 FR 61674

dismissible initial warning, as is the case with both IIHS and R16. It would be very helpful for NHTSA to offer an example of an acceptable warning system of this type that NHTSA does not find annoying to drivers. It would also be helpful for NHTSA to provide examples for all three means of compliance (positive-only, negative-only, and full status).

In addition, we disagree with the agency's decision not to permit the use of grey (or other neutral color) in addition to red and green as specified in the NPRM. Given the prevalence of red-green color vision deficiency among the US population, we do not recommend establishing a requirement that limits the ability of manufacturers to implement approaches that may be more easily understood or recognized by consumers. This should include allowances for providing a visual diagram of all seating positions whereby belt use can either be communicated through the presence or absence of the belted symbol OR through the use of the bi- or tri-color scheme consisting of green and red symbols to indicate belt status, and either grey or white symbols to denote either unoccupied seats (*for systems with occupant detection*) or unbelted seats (*for systems without occupant detection*) at the manufacturers discretion.⁸

Triggering conditions

NHTSA proposes the rear seat belt visual warning begin when the vehicle's ignition switch is moved to the "on" or "start" position. While we generally support the agency harmonizing with UNECE R16, the agency should maintain flexibility for when these warnings are displayed on startup and allow for a brief delay for when the alert is provided. As further detailed below in the section entitled *Interaction with other Vehicle Warnings*, for example, we urge the Agency to permit the visual warning when presented via a larger visual seating diagram, to be displayed according to the common display space requirements currently in FMVSS No. 101 Section 5.5. Preserving this approach would accommodate the advanced systems already deployed in the U.S., align with UN R16 requirements, and maintain the ability for manufacturers to initiate warnings consistent with the Insurance Institute for Highway Safety's (IIHS) rear seat belt reminder assessment. Our recommendation would provide necessary flexibility for manufacturers in displaying other relevant vehicle status information to the driver upon startup, including maintenance relevant information (e.g., check engine light), which may be otherwise limited by the space available on the instrument cluster.

Seat occupancy criteria and interaction with child restraint systems

Auto Innovators requests that NHTSA reconsider its proposal to define seat occupancy criteria based on the height and weight characteristics of a Hybrid III 6-year-old child (about 52lbs).⁹ Instead, Auto Innovators recommends that the agency harmonize with UNECE R16 which establishes occupancy criteria on the 5th percentile female ATD. This is important for avoiding potential misclassification – particularly when considering the combined weight of certain convertible CRS, some of which weigh in excess of 25lbs and permit children up to 40lbs to be seated using the LATCH system independently of the 3-point belt system.¹⁰ In these cases, rear seat belt systems designed to meet the requirements based on either the "negative only" and "full status" compliance options, particularly those that use weight based sensors for occupant, would likely register a false positive alert to the driver (i.e., an occupied unbelted seat position) if the CRS were occupied and/or cargo greater than 25lb were placed in

⁸ In a bi- or tri-color scheme, green could be used to convey belted status for a particular seat, whereas grey or red could be used to represent unbuckled conditions at a given seating position.

⁹ <https://www.federalregister.gov/d/2023-18413/p-351>

¹⁰ For example, the Britax Grow With You Click Tight Plus Harness-2-Booster Car Seat weighs 25lbs and includes instruction that the harness configuration can be used with the LATCH configuration for children not weighing more than 40lbs. <https://us.britax.com/downloads/bspkztzszpoddprawfmbtrpjhzhuttdjphfq>

the child seat. Harmonization with the UNECE requirements would avoid introducing unnecessary complexity and reduce the need for additional lead time to develop US-specific design countermeasures.

Additionally, the contact area between a booster seat and a seat cushion can vary, causing some of occupant weight to be distributed to the seat itself or to the LATCH system, rather than to the weight sensor. Child occupants are also more likely to be out-of-position compared to an adult, further contributing to uneven weight transfer. If the weight of a child in a booster seat is not transferred to the weight sensor, the proposed system could misclassify the seat as empty. If this case occurs coupled with the requirement to prohibit a visual warning for an unfastened seat belt at an unoccupied seat, there would be no visual warning for cases where an age-appropriate child is sitting in a booster seat and not wearing a seat belt.

To account for gains in technology, we recommend that NHTSA ensure a technology neutral approach that includes consideration of compliance options that permit the use of camera or vision-based sensors, or other technologies that may be adopted in lieu of weight-based sensors, as a means for determining occupant presence at a given designated seating position. This should also include consideration of relevant test procedures.

Minimum duration

Auto Innovators supports NHTSA aligning the duration requirements for a visual warning with UNECE R16. However, we request that the agency consider allowing for deactivation of the audible warning, again consistent with the requirements listed under UNECE R16.¹¹ This is to minimize potential consumer acceptance issue in circumstances where there may be a frequent change in the status of rear row occupancy and movement of occupants between seating positions (e.g., rideshare). We request that NHTSA also consider allowing for required visual warnings to be suppressed if all rear row seating positions are belted or determined to be empty based on occupant detection.

In response to the agency's question on "whether the proposed limited duration [for the audible] change-of-status warning for the rear seats should also be required to last indefinitely until the rear seat belt is refastened," we agree that such an approach is unnecessary, and that harmonizing with the current UNECE R16 requirements, as currently proposed in the NPRM, should be deemed to be sufficient.¹²

1.2.2 Audio-Visual Change-Of-Status Warning

The agency proposes that an audio-visual warning be provided when a rear seat belt is unbuckled during a trip. More specifically, an alert is required "*when the vehicle's ignition switch is in the "on" or "start" position, the vehicle's transmission selector is in a forward or reverse gear, and a rear seat belt in use changes to not being in use.*"

We are concerned with this proposal because the requirements for providing an audible alert may result in widespread consumer acceptance issues. More specifically, establishing a trigger threshold based

¹¹ UNECE R16 8.4.5 specifies the conditions whereby short- and long-term deactivation are permitted. Short-term deactivation "hall be significantly more difficult to deactivate the safety-belt reminder than buckling the safety-belt on and off (i.e. it shall consist of an operation of specific controls that are not integrated in the safety-belt buckle) and this operation shall only be possible when the vehicle is stationary." Long term deactivation requires "a sequence of operations to deactivate, that are detailed only in the manufacturer's technical manual and/or which requires the use of tools (mechanical, electrical, digital, etc.) that are not provided with the vehicle." Neither approach permits deactivation of the visual warning.

¹² <https://www.federalregister.gov/d/2023-18413/p-420>

solely on ignition on, absent vehicle motion, will result in scenarios where an unbelted condition that may otherwise be viewed as reasonably acceptable, would result in an audible alarm, including those where the vehicle is either stopped (and in drive) or slowing in anticipation of an upcoming stop (e.g., in a rideshare scenario, school drop-off). As a result, we recommend that NHTSA again harmonize with UNECE R16, which requires the audio-visual warning to be provided only when there is a change in seat belt status when the vehicle is traveling above 25km/h or below 25km/h for a period of 60 seconds.¹³ This approach minimizes the potential for the audible alert to sound in situations where the belt is unbuckled in anticipation of exiting the vehicle (prior to opening the door) while also ensuring the belt cannot remain unbuckled without warning for an extended period of time. At present, the audible alert would be required to be provided even when the vehicle is at a complete stop until the door is opened. We are not opposed to a visual alert being required outside of the above mentioned conditions. We contest that NHTSA's proposed change of status audible alert would be a nuisance in common instances when stopped or slowing moving vehicles are preparing to drop off passengers, as the passengers unbuckle to collect their belongings, or pay their fare, say their goodbyes, etc.

The NPRM fails to consider occupants switching seats mid-trip without opening the door. We recommend NHTSA permit the change of status warning to be deactivated if a different belt is buckled, to provide the driver with information that a rear occupant refastened their seat belt. NHTSA should also consider Euro NCAP S3.4.1.5 allowance for not requiring a change of status warning when all doors remain closed, and the number of buckled positions remains the same.

Proposed requirements of S7.5(c)(1)(ii) which requires a visual and audible change of status warning and S7.5(c)(2)(ii) which requires a visual warning must not indicate a seat belt not in use for an unoccupied seat are inconsistent. If both requirements remain, clarification is needed about which requirement has priority.

In addition, the agency does not articulate why it has proposed that an audible alert occur when the vehicle is in reverse. Such maneuvers are typically low-speed events, and the agency has not provided clear justification for why an audible alert is needed in these scenarios. Consistent with the above comments, harmonizing with UNECE would address these concerns and avoid the need for US specific requirements, which again may have a negative impact on consumer acceptance.

1.2.3 Telltale Location

Auto Innovators supports the NHTSA proposal to provide flexibility for manufacturers to specify the location of any necessary telltales related to rear row seat belt use, provided they are visible to the driver. We also agree with the agency's conclusion that requiring the warning be visible to unbelted occupants in the rear row would lead to "increased cost, complexity, and re-design."¹⁴

1.2.4 Telltale Characteristics

We support the agency harmonizing the telltale symbol with R16. However, while we generally agree that the use of green and red is sufficient to indicate whether a seat is buckled or unbuckled, we request that the agency also permit the use of a neutral color (e.g., grey) that could be used to display either an unoccupied seat or, for positive only systems, a seat that remained in the unbuckled condition. For negative only and full-status systems, the symbol would be required to be red to indicate occupancy in an unbelted condition. This approach is being widely adopted in the US and other markets and, in our

¹³ See *UNECE R16 8.4.5 [Section 8.4.2.4.1.2 and 8.4.2.4.1.3]*.

¹⁴ <https://www.federalregister.gov/d/2023-18413/p-428>

view, is clearly understood by consumers. We therefore request that the agency align the color requirements with UNECE R16 to ensure greater harmonization. This color scheme also supports the implementation of our prior recommendation and request for the agency to permit negative seatbelt use information for positive only systems that do not rely on occupant detection (i.e., where grey could be used in lieu of red, for example).

In addition to issues related to the symbol, standardizing the text to say “Rear belt(s) in use” or “rear belt(s) not in use” may be difficult to package on the instrument cluster. We request that the agency permit the use of either the word “Rear” or a corresponding seat number next to the seatbelt icon as an acceptable alternative. This is similar to the number 2 notation used next to the airbag symbol for specifying the icon is relevant to the passenger-side airbag.

It is also important to note that no text may be necessary if showing the status of all seating positions (consistent with our recommendation to provide non-belted status information for positive only systems). This adds further support for adopting this approach as a straightforward and easily recognized alternative to a positive only system that prohibits certain seat status information from being communicated.

1.2.5 Belt Use Criteria

Auto Innovators generally agrees with the agency’s proposal to enable compliance with the regulation through the use of seat belt latch sensors. This is consistent with UNECE R16 and avoids introducing unnecessary complexity in redesigning rear belt reminder systems for the US market. However, we request that NHTSA update the definitions for S7.5 to ensure the regulation supports additional compliance options for classifying seat belt use, including systems that rely on camera-based sensors (or other advanced sensor technology). At present, these options would not be permitted unless the belt use reminder system also included a belt latch mechanism. We therefore request that NHTSA revise the proposed requirements and corresponding test procedures to both specify and ensure that the regulation is not intended to preclude the use of spool out sensors or other technologies that may complement belt-latch sensors.

1.2.6 Owner’s Manual Instructions

NHTSA seeks comment on whether the agency should require manufacturers to include guidance on how to avoid potential false warning activations when a CRS is installed with a LATCH system. While we understand the issues highlighted in the NPRM, the extent to which guidance may need to be included in the owner’s manual is a function of how the system is designed to limit or prevent false activations in such circumstances. If there are certain aspects of the system design that may require additional instruction, this information should be provided at the discretion of the manufacturer that will likely be incentivized to include relevant vehicle-specific guidance to avoid potential consumer satisfaction issues.

We are therefore opposed to the agency developing any specific requirements on this matter, particularly if the required language is not relevant or applicable to all vehicles. This adds unnecessary cost and burden to manufacturers with no added safety benefit.

1.2.7 Interaction with Other Vehicle Warnings

Auto Innovators disagrees with the agency’s proposal that the rear seat belt reminder telltale must not be overridden by other visual warnings for the required duration. Although we recognize the proposal is intended to be consistent with the current requirements of FMVSS No. 101, the duration of the required

alert increases the likelihood that the driver could encounter driving scenarios that may require additional critical safety warnings to be communicated. These could include forward collision warning, cross traffic alert, automatic emergency braking (AEB) and pedestrian AEB etc. The requirements should therefore ensure that manufacturers are not limited in their ability to provide relevant safety warnings in these types of safety critical situations, and that the rule does not conflict with any current or future requirements related to the prioritization of driver warnings. We support the agency adopting a flexible approach that provides the manufacturer with the ability to prioritize safety alerts for the duration that other safety critical warnings may be required. The belt reminder warning could then resume once these other warnings had expired.

Several automakers have already implemented rear seat belt warning systems (inc. front outboard passenger warning) that utilize a contextual display diagram to provide the driver with information on the status of passenger belt use. This approach can quickly convey seat belt use information to the driver for all seating positions. However, these displays can be relatively large and are only made possible through the use of sharing limited display space in the vehicle instrument panel that may need to be temporarily overridden to convey other safety urgent warnings like AEB. While we urge the Agency to allow override for such approaches, we also emphasize that manufacturers should be able to continue to use the existing FMVSS No. 101 icon as a single baseline telltale associated with all seats that is persistent and cannot be overridden (i.e., if any seat is red in the visual diagram, the single FMVSS telltale is also red, even if the visual diagram is temporarily overridden). This approach balances the need to convey a large amount of information quickly, while also ensuring that a seat belt warning remains regardless of other urgent safety warnings. We also note that this is consistent with the current requirements in FMVSS No. 101 for using a common space to display multiple messages that may supplement other critical telltales that must not be overridden (see S5.5).

Additionally, if it is not possible to override the warning in order to provide the driver with other urgent or safety relevant information, this proposal will likely result in the agency requiring, by default, a dedicated display for displaying belt status information to ensure belt reminders cannot be impacted by other vehicle warnings. While it doesn't appear to be the intent of the agency, the NPRM's wording may make it unavoidable. Such a proposal is both unreasonable and impractical, and conflicts with other potential safety needs given the diverse nature and volume of information that is often necessary to communicate to the driver. NHTSA should instead harmonize with UNECE R16 and remove the override requirements for both front and rear row seating positions to provide flexibility for manufacturers to implement in-vehicle displays such that important information can temporarily override the reminder alert on an as needed basis. We therefore request that NHTSA remove the proposed override requirements, or provide a general exception that manufacturers have discretion to prioritize other safety relevant warnings as needed.¹⁵ If NHTSA does not remove the proposed override requirements, we request additional clarification on the applicability of the override prohibition and whether it applies to suppression of the visual warning, audible warning, or both -- it is unclear as currently proposed. Manufacturers should be permitted to override the audible warning and visual warnings for other safety urgent warnings like AEB.

¹⁵ NOTE: In this NPRM the requirement for visual and audible warning will last for at least 30 seconds if another warning were to occur (for a brief period) there would be ample time for the driver to be alerted by the seat belt reminder system.

1.3 Alternative Warning Signals

Auto Innovators agrees that an alternative warning is not necessary in addition to the audio-visual warnings proposed. However, manufacturers should not be prohibited from using alternate warnings (in addition to the required alerts) if they choose to do so.

1.4 Resistance to Intentional and Inadvertent Defeat and Deactivation

Auto Innovators agrees with the agency's decision not to require additional hardening features due to the added technical complexity and implementation cost that would be required to reduce the potential for intentional and inadvertent defeat and activation.

1.5 Consumer Acceptance

We generally agree that the rear seat visual and audible durations would be acceptable; however, we reiterate concerns with respect to the triggering conditions (which should be aligned with UNECE R16). Although the agency has based the proposed requirements on examples of what it deems consumers view as *acceptable*, the nuanced differences in the NPRM versus systems in the market today (including those with enhanced reminder characteristics) will likely result in significant negative consumer experience and adversely impact acceptance.

While the agency seeks to base the triggering of alerts based on the status of the belt after the ignition is moved to the on position, this does not adequately account for the potential use cases that consumers may reasonably expect a belt reminder to be provided. As a result, it may increase the likelihood of decreasing consumer acceptance of these systems, despite the years of progress in increasing belt use rates to where they are today. We recommend that the agency revise its approach and base the requirements, particularly for audible warnings, on vehicle forward motion (above 25km/h). This will help ensure that regular belt users are not affected by excessive or punitive alerts, while further reinforcing the need for belt use by those that may require more enhanced reminders.

1.6 Technological and Economic Feasibility

Auto Innovators generally agrees the agency's conclusion that the proposed requirements is technologically feasible; however, there are several aspects of the NPRM that are not economically practical in that they will require costly redesign due to misalignment with UNECE R16. This adds unnecessary cost without sufficient analysis to demonstrate whether there is any substantial safety benefit. The agency should update its regulatory impact analysis to include an evaluation of the opportunity cost in harmonizing with existing requirements that have been well established and implemented in other markets. A previously noted, vehicles with more than three rows should be excluded due to practicability concerns in providing alerts within the instrument panel. In addition, as previously noted, if the alert cannot be overridden, this will likely result in the need for a dedicated display to be provided, which could require comprehensive redesign of the instrument panel in order to accommodate this requirement. Such a requirements is neither reasonable or practical and would add significant unnecessary cost for no added safety benefit.

2 Requirements for Front Outboard Seats

2.1 Triggering conditions – Front Outboard Seats

Auto Innovators has concerns that the proposed triggering conditions will result in significant consumer acceptance issues. More specifically, in the NPRM, the agency's "activation and duration" requirements specify that a *"audio-visual warning must activate when the ignition switch is placed in the "on" or*

“start” position if the seat is occupied and the seat belt is not in use” and that “[t]he audio-visual warning must continue until the seat belt that triggered the warning is in use.”¹⁶ In our view this is an unreasonable requirement as it ignores situations whereby a driver may choose to sit in an idling or parked vehicle without the intention of commencing a trip (e.g., while waiting for other passengers to arrive). Requiring that the driver or passenger seated in parked vehicle be subjected to an indefinite audible warning until the belt is buckled will create significant annoyance and should be considered outside the scope of regulation as it not necessary, nor does it meet the safety need of the proposed rule, which is predicated on reducing death and injury in crashes.

As evidence of this, the current audible warning required for the driver’s position at start up is a common source of customer complaints. The sentiment received in such complaints includes things like the seat belt warning occurs immediately when the vehicle is started, without having any time to get situated or even put the belt on, is aggressive and annoying. Customers assert that the alerts should not happen when the vehicle is in “park” and not moving. Customers additionally cite the need to take care of everyday tasks in their vehicles in today’s increasingly mobile and virtual world and wish not to be subjected to repetitive seat belt alerts during these infrequent moments of quiet time. We welcome further agency dialogue on this issue.

We therefore propose that the agency instead more closely align with the requirements of UNECE R16 which requires a *first level* visual warning on start-up but does not require an audible alert to be provided until the vehicle travels 500m, the vehicle speed exceeds 25 km/h (15.5 mph), and/or the duration time is more than 60 seconds (*second level warning*).¹⁷ While this minimizes the potential for consumer annoyance under idling conditions, we recognize that NHTSA may want to maintain a warning for drivers that start the vehicle for the purposes of commencing a trip. For these reasons, we are not opposed to NHTSA maintaining the current 8-second requirements as part of *first level* visual-only warning.¹⁸ This approach is also consistent with the IIHS requirements for front-row seating positions which also predicate second level audible alerts based on forward motion of the vehicle.

The absence of a duration limit could be unnecessary and annoying to consumers with negative impacts on the safety for use case where the seat is occupied by cargo or pets that exceed the weight limit proposed in the NPRM. Moreover, a safety disbenefit could arise if a consumer has exceeded a threshold of tolerance for the reminder system and then attempts to defeat or circumvent the system, for example with a counterfeit seat belt latch plate. In this example case, not only will the occupant not receive the safety benefits of a seat belt but could potentially be subjected to an air bag deployment algorithm that is tuned for a belted occupant, an outcome that could be detrimental to safety.

For the front outboard passenger seat, the triggering conditions should provide for a delay to require a visual warning (consistent with our recommendations on triggering conditions listed in section 1.2.1 of these comments). This Auto Innovators proposal is consistent with the NHTSA proposal to allow for a similar delay for rear row occupants.¹⁹ This is to address challenges in detecting seat occupancy instantaneously upon ignition on.

¹⁶ <https://www.federalregister.gov/d/2023-18413/p-944>

¹⁷ UNECE R16 8.4.2.4 [version 27.4.2018]

¹⁸ 49 CFR 571.208 S7.3(a)(1)

¹⁹ See section 1.2.1

2.2 Seat Belt Warning for Front Outboard Passenger Seat

Auto Innovators agrees with the agency's assessment that most vehicles already provide a seat belt warning for the front outboard seating position. However, we have several concerns with the agency's proposal to standardize the audio-visual warning because it will likely require extensive redesign of existing systems and introduce consumer acceptance issues.

2.3 C. Amendments to the Current Warning Signal Requirements

2.3.1 *Increasing the Duration of the Audio-visual Warning on Vehicle Start-up*

Auto Innovators is concerned with the agency's proposal to update the front seat warning requirements to require an audio-visual warning that remains active until the seat belt at any occupied front outboard seat is fastened. We urge the agency to instead harmonize with UNECE R16, which requires that the visual and audible signal be activated for at least 30 seconds with consideration for vehicle movement at or above 25km/h.

More specifically, requiring a persistent audible warning be provided has potential to distract the driver from the driving task and other relevant safety warnings, and it may also result in consumer acceptance issues where vehicle owners seek to circumvent use of the system. The proposal is also inconsistent with the agency's assertions with respect to the rear seat where a 60-second visual warning would be effective and that "60 seconds is sufficient to capture the driver's attention, and that a longer warning would have the potential to become distracting or a nuisance."^{20,21}

Also, an increased risk of desensitization may occur due to never ending seat belt reminder warning in cases where a driver/occupant does not want to buckle up. In this case of a never-ending audible warning, it is more difficult for the driver to recognize other warnings.

2.3.2 *Requiring an Audio-Visual Change-of-Status Warning*

We are not opposed to the agency proposing to require a change-of status warning for front row seating positions. However, the agency should harmonize with UNECE R16 when defining both the trigger conditions for providing a warning, as well as the duration of the alert. This is critical for addressing issues of consumer acceptance.

As proposed, the only exception for providing a warning is when the front door is open to account for an occupant unfastening the seatbelt to exit the vehicle. However, this approach may result in consumer satisfaction issues in cases where the passenger decides to unbuckle the belt first and thereby triggering the warning reminder prior to opening the door. The alternative UNECE R16 approach utilizes occupant detection and allows for suppression of the alert when driving below 25km/h for up to 60 seconds, both of which in our view are more representative of conditions where a passenger may be exiting the vehicle. Consistent with UNECE R16, the required audio warning should only be required for 60 seconds.

2.3.3 *Audible Warning Characteristics*

Auto Innovators requests that NHTSA harmonize with UNECE R16, which provides increased flexibility for manufacturers determining the characteristics of both front and rear row belt reminder alerts. The characteristics described in Section XI.C.3 of the NPRM could potentially limit the ability of manufacturers to develop escalating warnings that may also be effective in increasing belt use while also

²⁰ <https://www.federalregister.gov/d/2023-18413/p-386>

²¹ <https://www.federalregister.gov/d/2023-18413/p-743>

managing consumer acceptance. We recommend that the agency avoid defining characteristics (such as the warning and duty cycles) that would prevent a manufacturer from implementing such an approach.

The proposal increases the complexity of evaluating vehicle compliance and may require specialized equipment or similar measurement devices to verify the characteristics of the audible warning as proposed in the notice. The agency has not yet proposed a specific test procedure to be used for measuring compliance, so we are unable to comment on the specific test burdens that may be introduced. We urge NHTSA to simplify the requirements to be more consistent with UNECE R16, which specifies that the “audible warning shall be easily recognized by the driver.”²²

We also have concerns that NHTSA has proposed unnecessary restrictions on when an audio-visual warning for a front outboard seat belt warning system is permitted to activate. As noted in the proposed regulatory text, “The audio-visual warning is otherwise not permitted to activate except to comply with S7.5(b)(1)(ii).”²³ However, there may be other circumstances, including those currently unforeseen by the agency, where a manufacturer may seek to provide a similar audible-visual warning. It is also unclear whether this restriction prevents standardization of the audible alert used for both front and rear rows, as a means to consistently communicate the need for the driver to confirm the seat-belt status of occupants in the vehicle. We therefore request that NHTSA remove the aforementioned restriction.

2.3.4 Visual Warning Characteristics

Auto Innovators is opposed to the requirement that visual warning for front row belt use be visible to both the driver and passenger. The driver has primary responsibility to notify and ensure occupants fasten seat belts, and the occupant in the front passenger seat will be alerted by audible warning if the seat belt is not fastened. Requiring that a warning also be visible to the front outboard passenger would likely require either (1) all visual warnings be located in a central position (outside of the instrument cluster) so that they are visible to both the driver and right front passenger or (2) a second visual warning located in a central position to solely communicate the status of the passenger seat belt. The requirement creates unnecessary burden for manufacturers that may choose to consolidate all relevant information related to the SBRS in the instrument cluster because these types of design configurations would essentially require a second, redundant visual warning for the front outboard passenger. This type of requirement adds longer lead time because it will likely require mid-cycle redesign of the vehicle center console to accommodate this seemingly redundant warning.

Such a requirement is unnecessary and conflicts with the rationale for why a similar warning signal was deemed unnecessary for rear seat passengers due to the added cost, complexity and redesign that would not be justified. Providing the driver with the necessary information on the status of the front outboard seating position, combined with the required audible alert, is sufficient for ensuring that the driver can relay the visual warning to the passenger located in that position to fasten their seat belt similar to what would be expected when a driver encounters an alert for a rear row passenger. Since the driver will know his or her own seat belt wearing status, it is reasonable for the driver to observe the seat belt reminder visual indicator for the front row and notify the passenger if the passenger’s seat belt is not buckled. Therefore, there is no safety benefit to a separate visual indicator for the passenger. It should also be noted that the reference to the Euro NCAP test procedure used to support the agency’s decision has also been removed since the v8.0 of the assessment protocol.²⁴

²² See S7.5(b)(1) - <https://www.federalregister.gov/d/2023-18413/p-944>

²³ <https://www.federalregister.gov/d/2023-18413/p-944>

²⁴ <https://cdn.euroncap.com/media/32283/euro-ncap-assessment-protocol-sa-v802.pdf>

In addition, while FMVSS 208 specifies requirements for a telltale to indicate the status of the passenger airbag for those seated in front outboard seat, this does not create a precedent or support the need for, a similar front outboard passenger belt reminder telltale. With respect to seat belt use, the passenger can verify based on a visual or manual check, determine whether the seatbelt is buckled. That is not the case for the passenger airbag where this information may be more relevant to the occupant seated in the relevant seating position.

Moving the visual warning for the front outboard passenger may improve visibility to that passenger, but at the potential expense of visibility to the driver, which should remain the primary audience. Maintaining visibility primarily to the driver is consistent with the seat belt warning requirements currently in place in FMVSS 101, UN-R16 and EuroNCAP. Regardless of the location of the visual warning, the audible warning would still provide information to all occupants on seat belt status.

3 Other issues

3.1 Test Procedures

Auto Innovators requests that NHTSA publish the proposed test procedures used to evaluate vehicle compliance prior to the issuance of the final rule. This is particularly relevant given the differences in the requirements in the NPRM when compared to the current requirements of UNECE R16, and it is important that stakeholders have the opportunity to address any technical concerns prior to the rule or test procedure being finalized. For example, at present the NPRM requires that front row alerts be provided indefinitely, however, it is not reasonable or practical to assess whether the alert continues for an excessive period of time. Additional information is needed to understand how the agency intends to evaluate performance based on these requirements.

As noted previously, we recommend that the agency more closely align its requirements with those defined in UNECE R16, including the test procedures specified in Annex 18, as these clearly establish the process for evaluating the conditions for when belt reminder warnings should be provided. Increased harmonization would also help reduce testing burden and minimize the additional resources and underlying cost to consumers in developing safety features specifically for the US market.

4 Regulatory Alternatives

4.1 ECE R16 and Euro NCAP

Auto Innovators fully supports the agency more closely aligning with UNECE R16. There are several areas where the agency has not exhaustively considered the costs of misalignment and the extent to which this adds additional cost in terms of the design and implementation of belt reminder systems. The agency also has not fully considered the impact of misalignment on consumer acceptance, and we have concerns that this will result in negative consumer acceptance similar to that experienced in the early 1970s (as referenced in the NPRM).²⁵ As previously stated, Auto Innovators recommendations to align with UNECE R16 are intended to address many of the trigger condition and warning duration concerns identified in the NPRM, and will help ensure that the rulemaking supports meaningful progress in improving seat belt use. This is also consistent with the Bipartisan Infrastructure Law which highlighted the importance of harmonization.²⁶

²⁵ <https://www.federalregister.gov/d/2023-18413/p-179>

²⁶ *Infrastructure, Investment, and Jobs Act (Section 24211)*

4.2 Occupant Detection and Enhanced Warning Signals for the rear seat belt warning

Auto Innovators supports the agency's decision not to require occupant detection in rear row seating positions for the reasons stated in the NPRM. We also agree that this should not preclude manufacturers from choosing to use occupant detection and support the inclusion of compliance options that support the use of technologies that can be used to identify the presence of an occupant should a manufacturer choose to develop a *negative only* or *full status* based reminder system. We support NHTSA harmonizing with UNECE R16 to ensure that the regulation and corresponding test procedures enable compliance verification for systems that leverage occupant detection (based on the presence of a 5th percentile female ATD) when placed in a specific seat position. We have concerns that if the agency were to adopt the 6-year old ATD for assessing compliance that this would potentially discourage manufacturers from implementing occupant detection systems due to the potential for false warnings due to the presence of cargo, CRS, or other objects. In addition, we support a technology neutral approach for occupant detection systems, including systems that utilize cameras (as opposed to weight based sensors) that may rely on different profile characteristics to determine the presence of an occupant.

5 Additional Considerations

5.1 Benefits and costs of the proposed requirements

The agency's Preliminary Regulatory Impact Analysis did not consider the opportunity costs and benefits of simply harmonizing with other established requirements and regulatory alternatives. It also only considers the cost of hardware, failing to include a discussion on costs of the software changes needed to modify existing systems (available in the US as well as other markets) to meet new requirements.

5.2 Lead time and effective date

Auto Innovators contends that the proposed lead time is not reasonable or practical for implementing the proposed changes to the rule – particularly given the notable differences between the requirements proposed in the NPRM and those established in UNECE R16. As proposed, the rule could result in manufacturers having to implement design changes for vehicles that are in the final stages of pre-production, and potentially require extensive hardware procurement and software changes to vehicle safety systems.²⁷ Additionally, in some cases, manufacturers may no longer be able to leverage hardware and software already being deployed in other markets due to the lack of harmonization. Therefore, one year does not provide sufficient lead time. We also disagree with the agency's suggested approach that establishes a different lead time schedule for front row versus rear row seating positions. There is no benefit or regulatory relief provided by such an approach because it is both highly impractical and unlikely that manufacturers will be able to adjust production schedules to account for changes to the front row and rear row seating positions independently of each other, and only one year apart.

We therefore request that the agency amend the lead time and effective date to support a synchronized **two (2) year phase-in** for both the front and rear row seating position requirements, **beginning on the first September 1st that is three (3) years after publication of the final rule.** In other words, a set percentage of vehicles would be required to meet the requirements of the rule beginning September 1st, 3 years after publication of the final rule; a higher percentage by September 1st of the fourth year; with full compliance by September 1st, five years after publication of the final rule.

²⁷ If the final rule were published on August 31, 2024, this would only provide manufacturers with one year to ensure production vehicles sold on September 1, 2025, were compliant with the new regulations.

We do note that this recommended alternative lead time could potentially be reduced if the agency were to align more closely with UNECE R16, as outlined above.

We urge the agency to announce whether the lead time will be changed through the docket, other such notice, or second NPRM within one year of its original filing. This public notification will help ensure that manufacturers do not waste time, money, and effort to develop products that align with this NPRM, that are not acceptable to customers, and that then need to be changed to suit new requirements. We also support optional early compliance for manufacturers that may be able to implement changes for certain make/model vehicles sooner depending on product development cycles. Additionally, if the rule is not amended to allow for the reminder to be overridden, this will likely result in the need for significant changes to the instrument cluster that will require additional time and resources to implement.