



DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA-2018-0018]

RIN 2127-AL84

Federal Motor Vehicle Safety Standard No. 141, Minimum Sound Requirements for Hybrid and Electric Vehicles

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Final rule; response to petitions for reconsideration.

SUMMARY: This document responds to petitions for reconsideration regarding NHTSA's December 2016 final rule which established new Federal motor vehicle safety standard (FMVSS) No. 141, "Minimum sound for hybrid and electric vehicles." The agency received submissions from three petitioners requesting six discrete changes to the final rule, and also received technical questions from the petitioners. After consideration of the petitions and all supporting information, NHTSA has decided to grant the petitions for four of the discrete changes, deny one, and request comment in a separate document for the sixth proposed change.

DATES: *Effective* **[INSERT DATE 60 DAYS AFTER PUBLICATION]**.

Compliance dates: Compliance with FMVSS No. 141 and related regulations, as amended in this rule, is required for all hybrid and electric vehicles to which these regulations are applicable beginning on September 1, 2020. The initial compliance date for newly manufactured vehicles under the 50-percent phase-in as specified in FMVSS No. 141 is delayed by one year to September 1, 2019.

Petitions for reconsideration of this final action must be received not later than **[INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Correspondence related to this rule including petitions for reconsideration and comments should refer to the docket number in the heading of this document and be submitted to: Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, S.E., West Building, Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: You may contact Mr. Thomas Healy in NHTSA's Office of the Chief Counsel regarding legal issues at (202) 366-2992 or FAX: 202-366-3820. For non-legal issues, you may contact Mr. Michael Pyne, NHTSA Office of Crash Avoidance Standards, at (202) 366-4171 or FAX: 202-493-2990.

SUPPLEMENTARY INFORMATION: Of the six requested changes contained in the petitions, NHTSA is granting the petition request to postpone the compliance phase-in schedule by one year. NHTSA also is granting two petition requests relating to the "Sameness" requirements in the final rule to further allow variations in alert sound across different vehicle types, and to reduce the number of compliance criteria to meet the sameness standards. In addition, NHTSA is granting a petition request to modify the regulatory language to permit the alteration of the alert sound as originally equipped on a vehicle for repairs and recall remedies. NHTSA has decided to deny one petition request to change the crossover speed, which is the speed above which the pedestrian alert sound is allowed to turn off, from 30 kilometers per hour (km/h) to 20 km/h. The agency has determined that the available information on lowering the crossover speed does not warrant making that change.

Furthermore, regarding a petition request to allow vehicles to be manufactured with a suite of driver-selectable pedestrian alert sounds, the agency is neither granting nor denying that request in this document. Instead, NHTSA intends to issue a separate document at a later date to seek comment on the issue of driver-selectable sounds.

Additionally, this document addresses a few requests for technical changes and provides a few clarifications of final rule technical requirements raised in the petitions. Lastly, this document responds to a comment on the final rule about the availability of industry technical standards incorporated by reference in the final rule.

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I. Executive Summary

Pursuant to the Pedestrian Safety Enhancement Act of 2010 (PSEA),¹ NHTSA issued a final rule on December 14, 2016, to create a new FMVSS setting minimum sound level requirements for low-speed operation of hybrid and electric light vehicles. The minimum sound requirements provide a means for blind and other pedestrians as well as bicyclists and other road users to detect the presence of these so-called quiet vehicles and thereby reduce the risk that these vehicles will be involved in low-speed pedestrian crashes.

After the final rule was published, NHTSA received timely petitions for reconsideration² from three sources: The Auto Alliance in conjunction with Global Automakers (Alliance/Global); American Honda Motor Company, Inc. (Honda); and Nissan North America, Inc. (Nissan). These petitions requested several changes covering several aspects of the final rule. Of the various issues covered in these petitions, NHTSA identified the following six discrete requests for specific changes to requirements in the final rule (listed here in the order they appear in the Alliance/Global, Honda, and Nissan petitions):

1. To delay by one year both the compliance phase-in schedule and the date by which all vehicle production must comply with the rule (section S9);
2. To limit the compliance criteria for the Sameness requirement (section S5.5.2) to only the digital sound file and digital processing algorithm;

¹ Pedestrian Safety Enhancement Act of 2010, Public Law 111-373, 124 Stat. 4086 (2011).

² The final rule allowed 45 days for submitting petitions for reconsideration, resulting in a deadline of January 30, 2017.

3. To modify the Sameness requirement (S5.5.1) to allow alert sounds to vary by trim level or model series rather than just by make/model;
4. To modify section S8, which prohibits altering the factory-equipped alert sound, to allow recall remedies and vehicle repairs when components of the alert system are shared with other vehicle systems;
5. To lower the crossover speed from 30 km/h (18.6 mph) to 20 km/h (12.4 mph);
6. To modify the Sameness requirement so that a vehicle can be equipped with a suite of up to five driver-selectable alert sounds.

To facilitate the agency's response to the petitions, we are treating each of these six issues as separate petition requests and addressing them individually in this document.

As fully discussed later in this rule, the agency is granting several of these petition requests, specifically the first four issues listed above. We believe the corresponding adjustments to the final rule will clarify requirements, provide more flexibility to vehicle manufacturers, and remove potential barriers to achieving compliance, while having no foreseeable impact on the safety benefits estimated in the December 2016 final rule, as this rule simply corrects an error in the original final rule related to the phase-in schedule and does not make changes that affect the substance of the required alert sound. The agency is denying the fifth item above, relating to cross-over speed, because no new data or analyses have been presented that would justify reversing the agency's previous conclusion on cross-over speed as presented in the final rule preamble. As for the last item, on driver-selectable sounds, the agency has decided to request public comment before deciding how to respond to that request, and NHTSA intends to issue a notice of proposed rulemaking (NPRM) or other Federal Register document on that issue.

In this document, the agency also responds to two issues raised by Nissan relating to acoustic specifications in the final rule. In addition, in response to technical questions in the Honda petition, we are providing several clarifications of some requirements.

Lastly, in this document, NHTSA is responding to two comments submitted to the docket, one from Ford regarding the legality of equipping certain vehicles used for security purposes with a means of turning off the required pedestrian alert sound, and the other from PublicResource.org regarding the availability to the general public of technical documents, including industry standards from SAE, ISO, and ANSI, incorporated by reference in the final rule.

Phase-In Schedule and Lead Time

The Alliance/Global and Honda petitions along with a supplemental submission from Alliance/Global and a supporting comment from General Motors Corporation discussed several reasons related to vehicle design, development, and manufacturing that will make it very difficult if not impossible for manufacturers to meet the final rule's compliance phase-in schedule. The petitions and supporting comments pointed out that there are significant differences between the final rule requirements and those in the NPRM, as well as differences between the final rule and a European regulation on minimum vehicle sound, that will force manufacturers to make changes to prospective vehicle designs. Even if a manufacturer had already incorporated NPRM specifications into future vehicle designs, more design lead time still is needed to accommodate final rule requirements. They also discussed the specific language used in the PSEA regarding phase-in of compliance and indicated they believe the PSEA requires NHTSA to provide

an additional year of lead time before manufacturers must achieve full compliance with the standard.

In consideration of these petitions and supporting documents, the agency recognizes that hybrid and electric vehicle product cycles that are in process for model years 2019 and 2020 may already be beyond the point where they could fully meet the final rule's compliance phase-in schedule.

Thus, the agency has decided to grant the petitions from Alliance/Global and Honda with respect to extending the lead-time for compliance with the final rule. In this document, we are specifying new compliance dates which delay by one full year the date in the final rule by which a fifty percent phase-in must be achieved (revised to September 1, 2019) and the deadline date for full compliance of all vehicles subject to the requirements of the safety standard (revised to September 1, 2020). We also are making conforming changes to the dates in the Part 585 Phase-in Reporting requirements as amended by the December 14, 2016, final rule.

Changes to Sameness Requirements

The automakers that petitioned NHTSA stated that vehicles of the same model can have significant differences that might affect their sound output. For example, Honda pointed out that a two-door and four-door car can have the same make/model designation. Vehicles of the same model designation also might have different powertrains and bodywork such as grille design and body cladding, which have the potential to influence both the emitted sound and the air-generated sound when the vehicle is in motion. The agency recognizes that, because of these differences, it is not

accurate in all instances to consider all vehicles of the same make/model to be the same for the purposes of the FMVSS No. 141 requirement.

Where the PSEA required “the same sound or set of sounds for all vehicles of the same make and model,” it was left up to NHTSA to interpret how “model” should be defined for the purpose of regulating similarity of the pedestrian alert sound. The agency therefore has decided to grant the Alliance/Global and Honda petitions with respect to this part of the “Sameness” requirement. We are amending the final rule so that alert sounds can vary across different vehicle trim levels in addition to varying by make, model, and model year as provided in the final rule.

We note that the term “trim level” was suggested in the Alliance/Global petition as the criterion that should be used to distinguish vehicles for the purpose of the FMVSS No. 141 Sameness requirements. Honda meanwhile suggested using the term “series.” “Trim level” is not a term that is defined in NHTSA regulations, while the term “series” is defined in Part 565.12. However, according to another definition in Part 565.12, specifically the definition of “model,” a series is not considered a subset of a model, as it would appear Honda assumed it is. Therefore, we believe that the term “series” is not appropriate to use in this instance. We thus are modifying the regulatory text to account for different trim levels, but not “series.” We believe amending the requirement in this way is the best approach for identifying groups of vehicles that are required to have the same pedestrian alert sound. This also will provide the added flexibility in the Sameness requirement that manufacturers are seeking, and it is responsive to both the Alliance/Global and Honda requests on this issue.

The second change we are making to the Sameness requirements is to limit the criteria listed in paragraph S5.1.2 for verifying compliance. As requested by Alliance/Global, we are simplifying the listed criteria so that the digital sound file and the sound processing algorithms will be the only specific criteria that are required to be the same from one specimen test vehicle to another. The automakers stated that other Sameness criteria listed in the final rule, such as component part numbers, are hardware-based criteria that should be excluded. One reason is that the PSEA statutory language allowed for “reasonable manufacturing tolerances.” They also stated that requiring hardware-based Sameness would unnecessarily impede competitive sourcing of components, a practice by which automakers source components from different suppliers such that the components may have dissimilar part numbers even though they are built to the same OEM specification and have the same performance. Alliance/Global also cited a legal precedent under which NHTSA regulations generally must avoid being design-restrictive except when there is a valid safety justification.

Modify Requirement for Alteration of OEM Alert Sound

NHTSA has decided to grant Alliance/Global’s request to amend the language in paragraph S8 of the final rule prohibiting the alteration of the alert sound originally equipped on a vehicle at the time of production. Alliance/Global and Honda state that this prohibition is unnecessarily restrictive and does not allow for “reasonable manufacturing tolerance” as required by the PSEA. Furthermore, they are concerned the final rule could prohibit vehicle repairs and recall remedies when hardware components

such as an electronic control unit or body control module, which may by design be shared between the alert system and other vehicle systems, needs to be replaced.

Although the agency is uncertain that the existing final rule language which prohibits altering the alert sound originally equipped on a production vehicle would impede any vehicle repairs or remedies, we are adopting this change to clarify the existing language because it was not the agency's intention to hinder vehicle repairs or recall remedies.

Reduce the Crossover Speed to 20 Km/h

NHTSA is denying Nissan's request to reduce the crossover speed from 30 km/h (18.6 mph) to 20 km/h (12.4 mph). Nissan's petition stated that NHTSA had not specifically addressed their NPRM comment regarding this issue. The Nissan petition did not provide new information or data on crossover speed that NHTSA had not considered when developing the final rule.

NHTSA notes that the final rule did specifically address a JASIC study and test data which was the basis of the Nissan NPRM comment. More importantly, NHTSA included a new analysis in the final rule to address comments, including Nissan's, about the need to evaluate crossover speed using detectability criteria rather than by other methods. The new analysis in the final rule used the Volpe detection model which previously had been used to develop the final rule's acoustic specifications. In this new analysis, data from a selection of internal combustion engine (ICE) vehicles in coast down mode (engine off to simulate an EV or HV in electric mode) was analyzed using the Volpe model to determine whether the vehicle noise at each test speed (10, 20, and

30 km/h) had reached a detectable level. NHTSA's conclusion about this new detection-based analysis was that it did not support lowering the crossover speed to 20 km/h. Since this analysis was based on detection rather than comparisons to other vehicles, we believe it was responsive to the Nissan NPRM comments on crossover speed. Given that fact and the absence of new data in Nissan's petition, NHTSA has no basis to revise our previous conclusion about crossover speed.

The agency also notes that the final rule contained other concessions that indirectly address manufacturer concerns about crossover speed. In the final rule, in addition to reducing the required number of bands from the proposed number of eight bands, all required minimum sound levels for each operating speed were reduced by 4 dB to offset potential measurement variation. By virtue of this across-the-board reduction, the required sound levels at 30 km/h in the final rule are close to the proposed levels for 20 km/h in the NPRM for this rulemaking.

Lastly, we note that safety organizations, particularly the National Federation of the Blind, have expressed their support of the 30 km/h crossover speed and have not agreed that lowering it to 20 km/h is acceptable.

The agency's position continues to be that lowering the crossover speed from the 30 km/h level, contained in both the NPRM and final rule, is not warranted by the available information, and we are denying the Nissan petition request on this issue.

Allow Driver-Selectable Alert Sounds

NHTSA has decided to seek comment on Alliance/Global's request to allow hybrid and electric vehicles to be equipped with multiple, driver-selectable alert sounds

before granting or denying this request. Amending the requirements to allow multiple sounds per vehicle would be a substantial change to the final rule. Because NHTSA did not solicit or receive comment on the number of driver-selectable sounds that should be allowed if NHTSA were to allow them, we believe it is appropriate to seek public comment before determining whether to grant this request. Therefore, in accordance with normal rulemaking administrative procedures, NHTSA tentatively plans to issue a separate document, which would provide an opportunity for public comment on this particular issue.

Technical Issues and Clarifications in the Honda and Nissan Petitions

In addition to requesting specific changes to requirements in the final rule, the petitions raised technical issues relating to the acoustic specifications and test procedures and also asked for clarification on specific language in the final rule. These technical issues are summarized here and fully addressed later in this document.

Technical issues raised in Nissan's petition included two items: first was a request to allow the use of adjacent instead of only non-adjacent one-third octave bands for compliance; and second was a request to set the minimum band sum requirements for the 2-band compliance option to be equal to the corresponding overall SPLs of the 4-band compliance option. We note that, while Nissan phrased these two issues as petition requests, we are treating them as technical clarifications because the final rule preamble included substantial explanation of the agency's rationale for specifying non-adjacent bands for compliance as well as the agency's methodology for selecting the band sum levels for the 2-band compliance option, and we do not believe that the information

presented in Nissan's petition invalidates the agency's previous analysis, as explained later in this document. After giving these two technical requests from Nissan due consideration, the agency is not making any changes to the acoustic specifications in response to these requests.

Honda's petition requested the following technical clarifications: whether a vehicle can switch between 2-band and 4-band compliance at the different test speeds; which bands should be selected for compliance when the highest band levels above and below 1000 Hz are in adjacent rather than non-adjacent bands; and how to calculate the average of overall SPL values (section S7.1.4). Also, Honda requested that indoor testing be an option available for manufacturer certification in addition to outdoor testing.

In reviewing the regulatory text of the December 2016 final rule to address Honda's petition, NHTSA identified several inconsistencies and minor errors in section S7 of the regulatory text. Because the agency already was making a number of text changes to S7 to respond to Honda, NHTSA has taken this opportunity to correct and clarify the text as needed to resolve those inconsistencies and errors.

Comment About Availability of Documents Incorporated by Reference

A submission to the docket from Publicresource.org was concerned with the public availability of technical documents that were incorporated by reference into the final rule. The documents in question are industry technical standards including an SAE recommended practice (in two versions), an ISO standard (in three versions), and an ANSI standard. Publicresource.org stated that various parties and members of the public that may have some interest in the rule would not have adequate access to these reference

documents. This might include consumer protection groups, small manufacturers, hobbyists, and students. Publicresource.org did not specify why they believe availability would be limited or lacking, whether that would be due to cost of the documents or some other reason. The agency's position is that the subject reference documents for FMVSS No. 141 are available in the same manner as reference documents for any other FMVSS. For this rulemaking, the agency followed the same practice for handling reference documents as it always follows, as set forth in Section VI, Regulatory Notices and Analyses, in the final rule, as well as in the corresponding section at the end of this document.

II. Background

NHTSA's involvement with the safety of quiet hybrid and electric vehicles and their impact on pedestrian safety goes back at least a decade to when the agency began monitoring efforts by various outside groups on this issue. In 2008 the agency held a public meeting on the safety of quiet vehicles and, the following year, initiated a statistical study of relevant pedestrian crashes and began researching the acoustical aspects of the safety problem.

In January 2011, the U.S. Congress enacted legislation, the Pedestrian Safety Enhancement Act of 2010 (PSEA), which directed NHTSA to undertake rulemaking to create a new safety standard to require hybrid and electric vehicles to have a minimum sound level in order to help pedestrians, especially those with impaired eyesight, to detect those vehicles.

In accordance with the PSEA, NHTSA issued an NPRM³ on January 14, 2013, and a final rule⁴ on December 14, 2016, establishing FMVSS No. 141, “Minimum Sound Requirements for Hybrid and Electric Vehicles.”

NHTSA’s conducted a statistical crash data study, as cited in the final rule,⁵ which found that the pedestrian crash rate of hybrid vehicles was 1.18 times greater than that of conventional ICE vehicles. The agency’s Final Regulatory Impact Assessment is available in the docket⁶ with some proprietary information redacted. Also, the benefits of the final rule are summarized in section V-A⁷ of the final rule preamble, and the costs are summarized in section V-B.⁸

NHTSA also completed an Environmental Assessment⁹ of the potential for increase in ambient noise levels in urban and non-urban environments in the U.S. which would result from a federal regulation setting minimum sound levels for hybrid and electric vehicles. The Environmental Assessment estimated that there will be only minimal impact in one type of non-urban scenario, and the overall environmental noise increase from the safety standard for HVs and EVs was found to be negligible.

³ 78 FR 2797

⁴ 81 FR 90416.

⁵ NHTSA Traffic Safety Facts – Research Note, Wu, J., Feb. 2017, “Updated Analysis of Pedestrian and Pedalcyclist Crashes with Hybrid Vehicles” available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812371>

⁶ See docket NHTSA-2016-0125-0011 at www.regulations.gov

⁷ 81 FR 90505

⁸ 81 FR 90507

⁹ See docket NHTSA-2016-0125-0009 at www.regulations.gov

A. Notice of Proposed Rulemaking

Pursuant to the Pedestrian Safety Enhancement Act, NHTSA issued a Notice of Proposed Rulemaking (NPRM)¹⁰ in January 2013 to create a new FMVSS setting minimum sound level requirements for low-speed operation of hybrid and electric light vehicles.

The NPRM proposed a crossover speed of 30 km/h (18.6 mph) because at that speed, based on NHTSA tests that used a “peer vehicle” comparison methodology, tire noise, wind resistance, and other noises from the vehicle eliminated the need for added alert sounds. In the agency’s tests, the sound levels of a selection of electric and hybrid vehicles were evaluated and compared to the sound levels of vehicles having the same or similar make, model, and body type but operating with internal combustion engines (ICEs). For example, the sound level of a hybrid Toyota Camry in electric mode in a pass-by test at 20 km/h was directly compared to the sound level of a conventional gas-engine Toyota Camry of the same model year at the same pass-by speed of 20 km/h.

The NPRM specified an outdoor compliance test procedure based on the September 2011 version of SAE J2889-1. The compliance procedure included tests for stationary, reverse, and pass-by measurements conducted at 10 km/h (6.2 mph), 20 km/h (12.4 mph), and 30 km/h (18.6 mph). We explained in the NPRM that NHTSA believed that outdoor pass-by testing is preferable to indoor testing in hemi-anechoic chambers using chassis dynamometers because outdoor testing is more representative of the real-world interactions between pedestrians and vehicles. We also expressed concern that

¹⁰ 78 FR 2798

specifications for indoor testing were not fully developed and did not have a known level of objectivity, repeatability, and reproducibility for testing minimum vehicle sound at low speeds.

The NPRM proposed a Sameness requirement in order to ensure that hybrid and electric vehicles of the same make and model emit the same sound, as directed by the PSEA. The NPRM proposed that vehicles of the same make, model, and model year must emit the same level of sound within 3 dB(A) in each one-third octave band from 160 Hz to 5000 Hz.

B. Final Rule

As noted, the final rule was published on December 14, 2016, and established FMVSS No. 141 which applies to electric and hybrid-electric passenger cars, MPVs, light trucks, and buses with a GVWR of 10,000 pounds or less and to low speed vehicles (LSVs). The standard applies to these vehicles if they can be operated in an electric mode in the test conditions covered by the standard, without an any internal combustion engine (ICE) operation. The final rule requires hybrid and electric vehicles to emit sound at minimum levels while the vehicle is stationary (although not when the vehicle is parked, i.e., when the transmission is in “park”), while in reverse, and while the vehicle is in forward motion up to 30 km/h. It also adopted the agency’s proposal to conduct compliance testing outdoors.

In the final rule, the agency reduced the number of one-third octave bands for which vehicles must meet minimum sound pressure level requirements. The NPRM proposed that vehicles would have to emit sound meeting minimum requirements in eight

one-third octave bands. In the final rule, hybrid and electric vehicles will instead have to meet a requirement based on sound level in either two or four one-third octave bands at the vehicle manufacturer's option, and a vehicle may alternate between meeting the 2-band and 4-band specifications depending on test speed. Vehicles complying with the 4-band option must meet minimum sound pressure levels in any four non-adjacent one-third octave bands between 315 Hz and 5000 Hz, including the one-third octave bands between 630 Hz and 1600 Hz (these bands were excluded in the NPRM). Vehicles complying with the 2-band option must meet minimum sound pressure levels in two non-adjacent one-third octave bands between 315 Hz and 3150 Hz, with one band below 1000 Hz and the other band at or above 1000 Hz. The two bands used to meet the 2-band option also must meet a minimum band sum level.

Under the 4-band compliance option, the minimum sound levels for each band are slightly lower than the values proposed in the NPRM, and the overall sound pressure of sounds meeting the 4-band option will be similar to those meeting the proposed eight-band requirements in the NPRM. Under the 2-band compliance option, the minimum sound requirements for each band are lower than those of the proposed eight-band requirements for the low and mid frequency bands (315 Hz through 3,150 Hz; the 4,000 Hz and 5,000 Hz bands are not included for the purpose of determining compliance with the 2-band requirement.) Neither the 4-band compliance option nor the 2-band compliance option include requirements for tones or broadband content that were contained in the NPRM.

For both the 2-band and 4-band compliance options, the final rule expands the range of acceptable one-third octave bands to include those between 630 Hz and 1600 Hz

(these bands were excluded in the NPRM). It also reflects an across-the-board reduction in the minimum levels of 4 dB(A) to account for measurement variability which the agency's development of test procedures indicated was needed.

Reducing the number and minimum levels of required one-third octave bands while expanding the number of useable bands in the final rule provided additional flexibility to manufacturers for designing pedestrian alert systems while preserving the goal of pedestrian alert sounds that are detectable in various ambient environments.

Regarding Sameness, NHTSA revised the criteria for determining that the sound produced by two HVs or EVs of the same make, model, and model year is the same. The agency determined that the NPRM requirement for the sound produced by two specimen vehicles to be within three dB(A) in every one-third octave band between 315 Hz and 5000 Hz was technically not feasible. The final rule instead requires that HVs and EVs of the same make, model, and model year emit the same sound by specifying that those vehicles use the same alert system hardware and software, including specific items such as the same digital sound file to produce sound used to meet the minimum sound requirements. The final rule listed several other criteria including part numbers of alert system components that may be evaluated to verify compliance with the Sameness requirement.

The final rule made numerous improvements to the proposed test procedures in response to comments that were received on the NPRM.

With regard to the phase-in schedule for the safety standard, the NPRM proposed a phase-in schedule for manufacturers of HVs and EVs, with 30 percent of the HVs and EVs they produce required to comply three years before the date for full compliance

established in the PSEA, 60 percent required to comply two years before the full-compliance date, and 90 percent required to comply one year before the full-compliance date. To respond to comments on that proposal, the final rule simplified the phase-in schedule by shortening it to include a single year of phase-in, rather than three years. This simplification provides somewhat more lead-time and responds to vehicle manufacturers' comments that the proposed phase-in was unnecessarily complex.

Under the final rule, half of each manufacturer's HV and EV production would have been required to comply with the final rule by September 1, 2018, and 100 percent by September 1, 2019. The phase-in does not apply to multi-stage and small volume manufacturers; all of their HV and EV production would have been required to comply with the final rule by September 1, 2019.

III. Petitions for Reconsideration Received by NHTSA

In response to the published final rule on Minimum Sound Requirements for Hybrid and Electric Vehicles, NHTSA received timely petitions for reconsideration (submitted by the January 30, 2017, deadline) from three sources: The Auto Alliance in conjunction with Global Automakers¹¹ (Alliance/Global); Nissan North America, Inc.¹² (Nissan); and American Honda Motor Company, Inc.¹³ (Honda). Alliance/Global¹⁴ also submitted a supplemental letter in support of their petition. In addition, General Motors Corp, Inc., submitted a letter providing support on one of the issues raised by

¹¹ See docket NHTSA-2016-0125-0012

¹² See docket NHTSA-2016-0125-0013

¹³ See docket NHTSA-2016-0125-0014

¹⁴ See docket NHTSA-2016-0125-0016

Alliance/Global and Honda. (The GM letter contained proprietary information, so it has not been released to the docket.)

These petitions requested several changes covering several aspects of the final rule. NHTSA identified the following six discrete requests for changes to specific requirements (listed here in the approximate order they appear in the Alliance/Global, Honda, and Nissan petitions):

1. To delay by one year both the compliance phase-in date and the date by which all vehicle production must comply with the rule (section S9);
2. To consolidate the compliance criteria for the Sameness requirement (section S5.5.2) to include only the digital sound file and digital processing algorithm;
3. To modify the Sameness requirement (S5.5.1) to allow alert sounds to vary by trim level or model series rather than just by make/model;
4. To modify section S8, which prohibits altering the factory-equipped alert sound, so as not to impede vehicle repairs when components of the alert system are shared with other vehicle systems;
5. To lower the crossover speed from 30 km/h (18.6 mph) to 20 km/h (12.4 mph);
6. To modify the Sameness requirement so that a vehicle can be equipped with a suite of up to five driver-selectable alert sounds.

In addition to these specific requests for amendments to the final rule, some of the petitions included requests for technical clarifications. Nissan's submission included two such requests, one concerning the minimum sound levels for 2-band and 4-band specifications, and the other regarding allowing adjacent bands for compliance.

Similarly, Honda's submission pointed out a few technical clarifications they believe are

needed, involving the intended use of 2-band and 4-band compliance options, the correct method of data selection and calculation for certain steps in the sound evaluation process, and the option of using indoor testing.

Lastly, NHTSA received one additional docket comment, from PublicResourse.org,¹⁵ that the agency has decided to address in this document. This comment was in regard to the availability to the public of technical reference documents, specifically several industry standards from SAE, ISO, and ANSI, that were incorporated by reference in the final rule. This docket submission is discussed in more detail below.

A. Alliance/Global Petition for Reconsideration and Letters of Support

The Alliance/Global petition addressed requirements for: compliance phase-in schedule; equipping HVs and EVs with driver-selectable sounds; applying Sameness to each “trim level” rather than each model; limiting the Sameness compliance criteria to the digital sound file and digital algorithm; and removing any prohibition on altering vehicle components that may be shared between the alert system and other vehicle systems.

Regarding the phase-in schedule, in addition to discussing design and manufacturing considerations that would make the final rule schedule unfeasible, Alliance/Global’s petition pointed out that NHTSA’s interpretation of the PSEA language regarding compliance dates appeared to have changed between the NPRM and the final rule. The petition argued that the earlier interpretation was the correct one and that,

¹⁵ See docket NHTSA-2016-0125-0004

under that interpretation, the agency is required to provide an additional year of lead-time before full compliance is required.

Alliance/Global submitted a supplementary letter which provided further detail on the phase-in schedule and the issue of driver-selectable sounds. On the phase-in, the supplemental submission discussed specific final rule requirements that had changed since the NPRM. It also noted several areas where the final rule is different from the UN Regulation No. 138. In their supplementary submission, Alliance/Global also indicated that, if a set of driver-selectable sounds was permitted, manufacturers would limit the number to no more than five different sounds per make, model, model year, and trim level of vehicle.

A letter in support of the Alliance/Global petition submitted by GM (submitted under a request for confidentiality) addressed the issue of phase-in schedule. This letter stated, “While GM supports NHTSA’s effort to create minimum sound requirements for electric and hybrid vehicles, the final rule contains a number of additional technical challenges that will require substantial redesigns to GM’s existing systems.” GM’s letter also stated, “The twenty-month phase-in provided by the final rule is far less than the normal timing required to develop, validate, and certify new systems.” GM cited the final rule’s volume shift requirement, different frequency range, and several design changes that will be needed in the sound generating systems that GM already has been installing in its electric and hybrid production vehicles. The GM letter cited specific hardware changes, upgrades, and replacements that their current alert systems need to be compliant with FMVSS No. 141.

Most recently, on August 4, 2017, the Alliance of Automobile Manufacturers (the Alliance), the Association of Global Automakers (Global) and the National Federation of the Blind (NFB) wrote the Deputy Secretary of the Department of Transportation requesting that the December 2016 final rule be permitted to come into effect on September 5, 2017. The letter also requested that by September 5, 2017, NHTSA amend the compliance date of the December 2016 final rule to delay the phase-in and full compliance dates by one year and by November 6, 2017, respond to the remaining technical issues in the pending petitions for reconsideration.

B. Honda Petition for Reconsideration

Honda's petition included two specific petition requests, one regarding the phase-in schedule, and the other regarding allowance for alert sounds to vary from vehicle to vehicle according to model "series" as well as make, model, and model year. The remainder of Honda's submission was concerned with technical clarifications and comments on the rule. Honda asked if it is acceptable under the 2-band and 4-band compliance specifications for a vehicle to switch back and forth between the two specifications at the different speed conditions of the test procedure. Honda also asked NHTSA to clarify section S7.1.6(e)(i) of the test procedure, noting that there could be a conflict when choosing the two highest band levels while also choosing only non-adjacent bands for the compliance evaluation. In addition, Honda asked NHTSA to clarify the calculation method for averaging overall SPLs in section 7.1.4(c) of the test procedure.

Lastly, Honda stated that indoor testing should be optional for FMVSS No. 141 compliance evaluations and is preferable because of the better stability and the efficiency of indoor sound measurements, and also because, from a harmonization standpoint, that would better align the safety standard with UN Regulation No. 138 which permits indoor measurements.

C. Nissan Petition for Reconsideration

Nissan submitted a cover letter and technical slides in which they requested that NHTSA reconsider its decision in the final rule on the crossover speed, which the agency set at 30 km/h (18.6 mph). Nissan stated that they believe the crossover speed should be set at 20 km/h, and cited a previous comment¹⁶ that Nissan had submitted to the docket in May 2014 in response to the agency's NPRM and which summarized a JASIC study related to crossover speed. Nissan stated that NHTSA did not address this comment in the final rule.

Nissan's petition also raised two technical issues. The first was a request that NHTSA allow the use of adjacent instead of only non-adjacent one-third octave bands for compliance. The second issue was a request to set the minimum band sum requirements for the 2-band compliance option to be equal to the minimum overall SPLs for the 4-band compliance option. Although these two issues raised by Nissan ask the agency to reconsider specific requirements of the final rule and request specific changes, we believe these two issues were addressed in the discussion of NHTSA's acoustic research in the

¹⁶ See docket NHTSA-2011-0148-0326

final rule preamble. Thus, we have decided it is appropriate to treat these issues as technical clarifications.

D. Other Issues

A comment from Publicresource.org expressed concern with public availability of technical documents that were incorporated by reference into the final rule. The documents in question are industry technical standards including an SAE recommended practice (in two versions), an ISO standard (in three versions), and an ANSI standard. Publicresource.org stated that various parties such as consumer protection groups, small manufacturers, hobbyists, and students would not have adequate access to these reference documents. Publicresource.org did not specify why that would be the case, i.e., whether it is due to the cost of the documents when purchased from their respective technical organizations, or some other reason.

IV. Agency Response and Decision

As outlined in the previous section of this document, the petitions requested a number of changes covering several aspects of the final rule. NHTSA identified six discrete requests for changes to specific requirements. As stated previously, to facilitate responding to the petitions, the agency is treating each of the six issues as separate requests and addressing each request individually below.

After considering all information provided by petitioners, NHTSA is granting four of the requested actions, denying one request (on crossover speed), and for the last item (on driver-selectable sounds), the agency has decided that it will be necessary to

request public comment before deciding how to respond to that request, and NHTSA intends to issue a notice of proposed rulemaking (NPRM) or other Federal Register document on that issue.

In regard to the four petition requests that the agency is granting, we are amending the final rule to implement the following changes:

- Amend Section S9, *Phase-In Schedule*, to add exactly one year to each of the dates listed in subsections S9.1, S9.1(a), S9.1(b), and S9.2.
- Amend Section S5.5, *Sameness requirement*, subsection S5.5.1, to allow alert sounds to vary across different trim levels, and also amend Section S4, *Definitions*, to add a new definition for “trim level.”
- Amend Section S5.5, *Sameness requirement*, subsection S5.5.2, to limit the criteria listed in the final rule to be used for verifying compliance with the Sameness requirement so that the digital sound file and the sound processing algorithm are the only criteria that are required to be the same. Other criteria, particularly part numbers of hardware components, would not be listed in the regulatory text.
- Amend Section S8, *Prohibition on altering the sound of a vehicle subject to this standard*, to clarify that the rule does not prohibit vehicle repairs unrelated to the alert system in the case of replacement of hardware components shared between the alert system and other vehicle systems, i.e., a body control module.

These amendments to the final rule and the agency’s reasons for adopting them are further discussed below. In general, we believe these changes to the final rule are

worthwhile refinements that will clarify the requirements, provide more flexibility to vehicle manufacturers, and remove potential barriers to achieving compliance, while having no foreseeable impact on the safety benefits estimated in the December 2016 final rule, as this rule simply corrects an error in the original final rule related to the phase-in schedule and does not make changes that affect the substance of the required alert sound.

Our decision to deny one request, as well as the agency's intent to seek comment on one issue, also are discussed in detail below. In addition, we address some technical issues raised and other comments relating to the final rule.

A. Phase-in Schedule, Compliance Dates, and Lead Time

The agency has decided to grant the petitions from Alliance/Global and Honda with respect to extending the lead-time for compliance by extending the phase-in date and the full compliance date by one year. NHTSA is also addressing supplemental submissions from Alliance/Global and General Motors Corporation (GM) that provided information on the lead time issue.

After further consideration, we agree with the petitioners that the interpretation of the PSEA phase-in requirements provided by the agency in the NPRM is the correct interpretation and that delaying the full compliance date until September 1, 2020 is required by that interpretation. The PSEA states that, "The motor vehicle safety standard . . . shall establish a phase-in period for compliance, as determined by the Secretary, and shall require full compliance . . . on or after September 1 of the calendar year that begins 3 years after the date on which the final rule is issued." In the NPRM, the agency had stated that the appropriate timeframe should be the calendar year beginning 36 months

after the rule was issued, such that, if a rule were issued anytime in 2016, the 36-month period after the date of publication of the final rule would end sometime in 2019. Thus, the first calendar year that would begin after that date in 2019 would be calendar year 2020, meaning that full compliance should be by September 1, 2020. The agency believes that its interpretation from the NPRM continues to be the correct interpretation of the PSEA. In fact, upon review, the agency did not actually change this interpretation in the Final Rule, as the phase-in schedule and economic analysis were based on the assumption that the rule would be published in 2015, rather than 2016, which is what actually occurred. The agency now corrects this error.

Further, NHTSA agrees that, because of vehicle product cycles, it would be difficult for manufacturers to make the design modifications necessary for vehicles subject to FMVSS No. 141 to meet the current final rule phase-in schedule and full compliance date, especially in light of the significant changes from the NPRM and the uncertainty surrounding the issues raised in the petitions for reconsideration.

In the Final Rule, the agency estimated that the economic impact of the rule for MY 2020 vehicles was \$42M to \$41.5M in costs and \$320M to \$247.5M in benefits at the 3 percent and 7 percent discount rates. However, in light of the issues raised in the petitions and the more recent letter from the Alliance, Global, and NFB, the agency believes that the analysis in the final rule may likely have understated the initial costs to comply with the rule. More specifically, the analysis was based on a less aggressive phase-in schedule and as such, does not support a 100 percent compliance date of September 1, 2019. In fact, comments received indicate that the more accelerated phase-in schedule than what the agency had intended is not technically possible, which calls in

to question the relationship between benefits and costs presented in the Final Rule. By delaying the compliance date by one year, the economic impacts of the rule will more closely mirror those presented in support of the Final Rule.

In this document, we are specifying new compliance dates which delay by one full year both corresponding dates in the final rule, i.e., the date by which a fifty percent phase-in must be achieved and also the deadline date for full compliance of all vehicles subject to the requirements of the safety standard. Under the amended one-year phase-in, half of vehicles produced in model year 2020 must be compliant, as follows:

- Fifty percent of each manufacturer's total production of hybrid and electric vehicles, subject to the applicability of FMVSS No. 141 and produced on and after September 1, 2019, and before September 1, 2020, shall comply with the safety standard;

OR, at the manufacturer's option: 50 percent of each manufacturer's average annual production of hybrid and electric vehicles subject to the applicability of FMVSS No. 141 and produced on and after September 1, 2016, and before September 1, 2019, shall comply with the safety standard.

Immediately following the one-year phase-in, starting with model year 2021, all hybrid and electric vehicles are required to comply, as follows:

- 100 percent of each manufacturer's production of hybrid and electric vehicles subject to the applicability of FMVSS No. 141 and produced on and after September 1, 2020, shall comply with the safety standard.

In making these changes to the compliance schedule, we believe this will afford manufacturers the additional flexibility and lead time needed to accommodate customary vehicle design cycles, thus addressing the schedule concerns expressed in their petitions.

As a consequence of the revised phase-in schedule, it is necessary to make conforming adjustments to the Part 585 reporting requirements in order to align them with the new phase-in period. The conforming changes to Part 585 are detailed below.

Phase-in Reporting

When a new safety regulation is phased in over a period of time, NHTSA requires manufacturers to submit production data so the agency can track and verify adherence to the phase-in schedule. Part 585 of Title 49 of the CFR contains the requirements for Phase-in Reporting for various FMVSS. To implement the one-year, 50-percent phase-in for FMVSS No. 141, the December 2016 final rule included amendments to Part 585, appending new Subpart N, to provide for tracking of production data so that the agency can verify that the requisite minimum percentage of vehicles are in compliance during the phase-in.

As a result of the amended phase-in schedule contained in this document, we are making corresponding adjustments to the phase-in reporting dates of Part 585, Subpart N, as amended in the December 14, 2016, final rule. This entails adding one year to the due dates in the following paragraphs of Part 585, Subpart N: §585.130 ‘Applicability’; §585.132 ‘Response to Inquiries’; §585.133 ‘Reporting Requirements’; and §585.130 ‘Records.’ These revisions appear in the regulatory text at the end of this document.

B. Sameness Requirement for Same Make, Model, Model Year Vehicles

The petitions from Alliance/Global and Honda requested that NHTSA amend section S5.5.1 of the Sameness requirement in the final rule regulatory text. That section required all vehicles of the same make, model, and model year to use the same pedestrian alert sound system and be designed to have the same sound. This requirement originated from the PSEA which stipulated that the safety standard “shall require manufacturers to provide, within reasonable manufacturing tolerances, the same sound or set of sounds for all vehicles of the same make and model...”

The automakers stated that vehicles of the same model can have significant differences unrelated to the alert sound system that might affect their sound output. For example, Honda pointed out that a two-door and four-door car can have the same model designation. Vehicles of the same model designation also might have different powertrains and bodywork such as grille design and body cladding, which have the potential to influence both emitted sound and the air-generated sound when the vehicle is in motion.

Alliance/Global requested that NHTSA add the term “trim level” to “make, model, and model year” in S5.5.1 so that vehicles of the same make/model would be required to have the same sound only if the vehicles also have the same trim level designation. This would give manufacturers flexibility to allow the alert sound to vary among vehicles that, while having the same make/model designation, may nevertheless be physically different in significant ways. Honda made a similar request but, instead of the term “trim level,” Honda requested using the term “series.”

The agency recognizes that, because of the possibility of physically significant differences between vehicles within a model line, it is not practical to consider all vehicles of the same make/model to be the same for the purposes of the pedestrian alert sound. The agency therefore has decided to grant the Alliance/Global and Honda petitions with respect to this aspect of the “Sameness” requirement. We are amending the final rule so that alert sounds can vary across different vehicle trim levels and also by vehicle body type, in addition to varying by make, model, and model year as provided in the final rule.

For the revised requirement, “body type” is added and is used as defined in 49 CFR 565.12(b) which states, “*Body type* means the general configuration or shape of a vehicle distinguished by such characteristics as the number of doors or windows, cargo-carrying features and the roofline (e.g., sedan, fastback, hatchback).”

The request on this issue in Alliance/Global petition used the term “trim level” as the designation criterion that would distinguish vehicles for the purpose of Sameness requirements in FMVSS No. 141, while Honda suggested using the term “series.” We note that “trim level” is not a term that is defined anywhere in NHTSA regulations, while the term “series” is defined in Part 565.12.¹⁷ However, it also should be noted that, per the definition of “model” also included in Part 565.12, a “series” would not be considered a subset of a model. On the contrary, a “model” as defined in Part 565.12 is a subset of a “series.” Therefore, the agency believes based on the existing definitions that “series” does not reflect a subdivision of a model line, as Honda seems to have intended. On the

¹⁷ See 49 CFR 565.12, Definitions.

other hand, we believe the term “trim level” is widely understood to denote a subset of a model, which is what the petitioners seek to achieve according to the information they provided on this issue. Therefore, we are modifying the regulatory text to account for different trim level designations, without reference to or use of the term “series.”

For this revised requirement, “trim level” is defined to mean a subset of vehicles within the same model designation and with the same body type which are alike in their general level of standard equipment, such as a “base” trim level of a vehicle model. Other trim levels within a model might include a “sport” version or “luxury” version. These depend on the trim designations that are used by different manufacturers. Generally, different trim levels comprise no more than a few different versions of a given model. For the purposes of FMVSS No. 141, minor differences including different wheel rim styles or merely being equipped with a sunroof should not be considered to constitute different trim levels. Trim levels should be considered to be different only if they represent vehicle differences that are likely to alter vehicle-emitted sound. We are including a definition of “trim level” in section S4 of the regulatory text to reflect this.

We believe relaxing the final rule in this manner will adequately distinguish between groups of vehicles that, based on their physical similarity, can reasonably be required to have the same pedestrian alert sound. This change will provide the added flexibility in meeting the Sameness requirement that the manufacturers are seeking. At the same time, this change is acceptable from a regulatory standpoint given that the agency’s understanding of the PSEA language was to allow for variation of alert sounds across different groups of vehicles so long as vehicles that are the same in most other respects would have the same alert sound. As pointed out by petitioners, vehicles of the

same model might not be the same in many respects, but vehicles of the same trim level would be the same.

The regulatory text of sections S4 and S5.5.1 amended per the above discussion appears at the end of this document.

C. Criteria for Sameness of Production Vehicles

The petitions from Alliance/Global and Honda raised concerns about the wording in S5.5.2 of the Sameness requirement. Paragraph S5.5.2 states that a “pedestrian alert system” includes all hardware and software components that are used to generate the alert sound. That section goes on to specifically list the types of vehicle components, including both hardware and software, that comprise a pedestrian alert system and that must be the same on any two vehicles of the same make, model, and model year. Among the listed items that must be the same are “alert system hardware components including speakers, speaker modules, and control modules, as evidenced by specific details such as part numbers and technical illustrations.”

The petitioners believe that this requirement is overly design-restrictive. In particular, they are concerned that requiring part numbers to be the same is not feasible. Alliance/Global stated, “The regulatory text as written places part-number specific restrictions on a vast number of components and as a result creates a major impediment for manufacturing.” They also state, “OEMs may choose to source components from more than one vendor, and requiring the use of the ‘same’ hardware and software may preclude that competitive process.” They go on to say that the final rule is inconsistent with the Vehicle Safety Act stipulation that each FMVSS must permit a manufacturer to select any technology that can meet the performance requirements. Similarly, Honda’s

petition stated that, in cases where a shared component such as an ECU that serves multiple vehicle functions is modified during a model year due to changes in vehicle systems other than the alert system, “the ECU part number would change, thus causing a violation of the Sameness requirement.”

The agency has decided to amend the Sameness requirements as requested to limit the criteria listed in the final rule for verifying compliance so that the digital sound file and the sound processing algorithm will be the only criteria that are required to be the same from one specimen test vehicle to another. The petitioners stated that other Sameness criteria listed in the final rule are hardware-based criteria, such as component part numbers, and should not be included because it appears to disregard the statutory requirement to allow “reasonable manufacturing tolerances.” Also, requiring hardware-based Sameness would unnecessarily impede competitive sourcing of components and related vehicle manufacturing and assembly practices. For example, automakers may source a component from different suppliers, such that the components have dissimilar part numbers even though they are built to the same OEM specification and have the same performance. Alliance/Global also cited a legal precedent under which NHTSA regulations generally must avoid being design-restrictive except when there is a valid safety justification.

To implement the amendment described above, the agency is adopting new language based largely on that suggested by Alliance/Global. The revisions to paragraph S5.5.2 acknowledge two types of design of a digital sound-generating system. In simple terms, one type uses a digitally coded source, such as a digitally recorded sound file, which is processed by a controller program and played back through the speaker system.

Another type creates the sound without a source file using programmed algorithms that generates the signal that is played back through the speaker system.

D. Alteration of the OEM Alert Sound

Section S8 of the final rule has the heading “Prohibition on altering the sound of a vehicle subject to this standard.” This requirement is unchanged from what the agency proposed in the NPRM, and it originated from a PSEA requirement stating that the safety standard must “prohibit manufacturers from providing any mechanism for anyone other than the manufacturer or the dealer to disable, alter, replace, or modify the sound” except to remedy a noncompliance or defect.

NHTSA’s interpretation of the purpose of this requirement in the PSEA was to prevent access to vehicle features which control the alert sound system so that it could not be modified, adjusted, or reprogrammed in a way that would change the emitted sound or render it noncompliant. In other words, the alert system needs to be tamper-resistant to some extent. For example, a vehicle’s owner-accessible setup menus should not include a setting that disables the alert system.

The Alliance/Global expressed concern with NHTSA’s wording of this requirement in the final rule. They stated, “An OEM may decide to install a body controller or other component that may not be dedicated solely to FMVSS 141 compliance, but which is installed – in part- to comply with FMVSS 141. The PSEA does not preclude actions to repair such a body controller for reasons unrelated to FMVSS 141, yet the final rule appears to preclude such repairs.” They also state that the requirement in the final rule exceeds the authority granted by the PSEA.

Alliance's/Global's petition contained suggested edits to the regulatory text that would remove the potential conflict in the regulatory text.

Alliance/Global also stated that the final rule was unnecessarily restrictive on this issue, and it did not allow for "reasonable manufacturing tolerance" as stipulated in the PSEA. Furthermore, they along with Honda are concerned the final rule could prohibit vehicle repairs or create other obstacles to vehicle updates when components such as an electronic control unit or body control module are shared between the alert system and other vehicle systems.

We have decided to grant the request to modify the final rule with respect to this issue. Although the agency is uncertain that the existing final rule language in section S8 actually would impede any vehicle repair or upgrade, we are adopting this change because the language should be clear, and because it was not the agency's intention to hinder any vehicle repair or remedy unrelated to the pedestrian alert system.

The amended text we are adopting is that suggested by Alliance/Global. The revisions appear in the amended text of section S8 at the end of this document.

E. Crossover Speed

Nissan's petition request to lower the crossover speed revisits the issues raised in Nissan's comments to the NPRM. Nissan stated that NHTSA did not specifically address their May 19, 2014 submission to the NPRM docket on crossover speed. Nissan's petition for reconsideration did not provide any new information or data that was not already considered by the agency when developing the final rule.

NHTSA notes that the final rule specifically addressed a JASIC study¹⁸ and test data which was the basis of Nissan's submission. More importantly, NHTSA included a new analysis in the final rule to address comments, including Nissan's, about the need to evaluate crossover speed using detectability criteria rather than by other methods. (Those other methods included comparisons of ICE sound levels with the engine on and engine off, referred to as the "coast down" method; and also, comparisons of the sound level of EVs or HVs to identical or similar ICE vehicles, called the "peer vehicle" method.) For the final rule, NHTSA added a new detectability analysis for crossover speed using the Volpe detection model¹⁹ which had been used to develop the final rule's acoustic specifications. In this new analysis, data from a selection of ICE vehicles in coast down mode (engine off to simulate EVs and HVs in electric mode) was analyzed by the Volpe model to determine whether the vehicle noise at each test speed (10, 20, and 30 km/h) had reached a detectable level. NHTSA's conclusion from this new detection-based analysis, which we included in the final rule preamble to respond to comments, was that it did not support lowering the crossover speed to 20 km/h (12.4 mph). Furthermore, since this analysis was based on the detection model rather than comparisons between vehicles, it provides a more useful means of identifying the speed at which added sound is no longer needed than peer vehicle and coast down comparisons.²⁰ As Nissan's

¹⁸ See 81 FR 90447

¹⁹ Hastings, et al. Detectability of Alert Signals for Hybrid and Electric Vehicles: Acoustic Modeling and Human Subjects Experiment. (2015) Washington, DC: DOT/NHTSA; available at www.regulations.gov, Docket NHTSA-2016-0125-0010.

²⁰ The PSEA defines "crossover speed" as the speed at which tire noise, wind resistance, or other factors eliminate the need for a separate alert sound. Because NHTSA's detection model attempts to determine when a vehicle would be detectable to pedestrians based on the sound from tire noise, wind resistance, and

petition cited their previous comment based on the existing JASIC study rather than providing new information, NHTSA has no basis to revise our previous conclusion about crossover speed.

The agency also notes that the final rule contained concessions that indirectly address manufacturer concerns about crossover speed. In the final rule, the minimum number of required one-third octave band components was reduced from the proposed number of eight bands. In addition, all of the required minimum sound levels for each operating speed were reduced by 4 dB to offset potential measurement variation. By virtue of these changes to the acoustic specifications, the overall level of sounds meeting the final rule acoustic requirements at 30 km/h (60 to 64 dB(A) for the 4-band option) is very similar to the overall level of sounds meeting the NPRM's proposed 8-band requirements at 20 km/h (approx. 62 dB(A)).

For all the reasons stated above, the agency's position continues to be that lowering the crossover speed from the 30 km/h level contained in both the NPRM and final rule is not warranted, and we are denying the Nissan petition request on this issue.

F. Technical Clarifications in the Nissan and Honda Petitions

Nissan Technical Issues

Nissan's petition raised two technical issues in addition to the petition request on crossover speed addressed above. First was a request to allow the use of adjacent instead

other factors that may be present, NHTSA contends that the detection model is the method for determining crossover speed most consistent with the language of the PSEA.

of only non-adjacent one-third octave bands for compliance; and second was a request to set the minimum band sum requirements at each test speed for the 2-band compliance option to be equal to the corresponding overall SPLs of the 4-band compliance option.

After considering these two technical requests from Nissan, the agency is not making any changes to the acoustic specifications related to these issues. We note that, while Nissan phrased these two issues as petition requests, we are treating them as technical clarifications because Nissan's petition did not directly respond to or acknowledge the discussion and explanation in the final rule preamble as to the agency's rationale for specifying non-adjacent bands for compliance and the agency's methodology for selecting the band sum levels for the 2-band compliance option. The preamble included a lengthy discussion of detectability research the agency conducted after the NPRM had been published.

On the first issue, the question of adjacency of bands, Nissan cited a Zwicker loudness model that, according to Nissan, shows a frequency band will mask an adjacent band when the sound level difference between the two bands reaches 6 dB or more (in one-third octave band frequencies). Nissan pointed out that the difference from any band to an adjacent one in the final rule's required minimum levels is less than 4 dB for all of the bands included.

Our response to this is that the masking data cited by Nissan applies to the masking of a component at the center of its one-third octave band. If the masker is shifted toward the signal, while still in its own one-third octave band, masking can take place at levels significantly less than 6 dB.

Although it may be possible, depending on the ambient, to achieve detectability using adjacent bands, there still would be greater susceptibility to the combined masking effects due to adjacent components and the ambient that are enough to make a barely perceptible component not perceptible. This phenomenon appears to have influenced results of NHTSA's validation study²¹ in which alert signals with non-adjacent bands were detected more consistently (in a standardized 55 dB(A) ambient) than signals with only adjacent bands.

NHTSA also is concerned that an acoustic specification allowing adjacent one-third octave bands is vulnerable to poor design practice, in that a single tone placed at the cut-off frequency of a one third octave band could be credited for two bands (one on either side of the cut-off, with a level in both bands about 3 dB lower than the tone). A signal like this, though it might technically meet a 2-band criterion with adjacent bands allowed, would disregard NHTSA's findings about the importance of spreading signal components across a wide frequency range to create robust sounds detectable in a variety of ambient sound profiles.

For these reasons, we do not agree with Nissan that adjacent bands should be allowed in the 2-band and the 4-band compliance requirements of the FMVSS No. 141 final rule. Furthermore, specifying non-adjacent bands imposes only a minor limitation on alert sound design, and we did not find any reason given in Nissan's submission why this requirement is unreasonable, impractical, or burdensome to an extent that it should

²¹ Hastings, et al. Detectability of Alert Signals for Hybrid and Electric Vehicles: Acoustic Modeling and Human Subjects Experiment. (2015) Washington, DC: DOT/NHTSA; available at www.regulations.gov, Docket NHTSA-2016-0125-0010.

be deleted. Therefore, the agency has decided not to amend the final rule with respect to the non-adjacency issue raised in Nissan's petition.

Regarding the second technical issue in Nissan's petition, they requested that the band sums at each test speed for the 2-band compliance option should be set equal to the overall SPL levels for the 4-band compliance option. In response, we first point out that the agency's reasons for specifying higher band sums when using the 2-band option are discussed in the preamble of the December 2016 final rule.²² In that discussion, the agency noted that the 2-band specifications were optimized so that allowable 2-band signals would achieve a degree of robustness (i.e., detectability in a wide range of ambients normalized to a 55 dB(A)) equivalent to that achieved by compliant 4-band signals. To maintain robustness, it was necessary to set the band sum levels high enough to compensate for the reduced number of bands. Without this optimization, the agency would not have been able to accommodate NPRM comments calling for a 2-band approach.

In comparing the 2-band and 4-band options, robustness is achieved for the latter by requiring acoustic energy at threshold levels in a minimum of four bands and specifying that these four bands span a minimum of nine one-third octave bands. The idea is that for an ambient of 55 dB(A), either the masking components would match those used for determining thresholds or masking components would tend not to spread across a wide range of nine one-third octave bands. Thus, there is a high likelihood with a 4-band alert signal that some portion of the vehicle's sound will be detectable in an

²² See final rule at 81 FR 90461 to 90463.

ambient that is 55 dB(A) or lower so that it can be heard by pedestrians. The 2-band option has fewer bands and thus fewer opportunities to have a signal coincide with an advantageous ambient level. Instead, it achieves robustness by requiring a greater overall level (higher band sum) from the two bands (one below 800 Hz and one at or above 1000 Hz) that have the most acoustical energy. There is a fundamental tradeoff between loudness versus sound bandwidth when comparing the 2-band and 4-band options.

In summary, NHTSA believes that the approach taken in the final rule for setting the band sum levels for the 2-band option is reasonable and justifiable, and Nissan's petition did not include any research or other information that would persuade the agency to take a different approach. Therefore, we are not making the requested change to the final rule.

Honda Technical Issues

Honda made several comments in its petition about technical clarifications they believe are needed in the final rule. The first issue was whether a vehicle can switch between 2-band and 4-band compliance at the different test speeds.

The answer is 'yes', it is acceptable to switch between compliance with the 2-band and 4-band options for different test conditions (stationary, reverse, 10 km/h, 20 km/h, and 30 km/h). In any test to verify compliance with FMVSS No. 141, the measured sound of a vehicle at each test condition would be checked for compliance with both the 2-band and 4-band requirements. For example, sound measurements of a vehicle in a 10 km/h pass-by test would be evaluated relative to both the 2-band and 4-band specifications, and the vehicle could achieve compliance by meeting one or both specifications. At 20 km/h, the evaluation of both the 2-band and 4-band specifications

would be repeated independent of which specification was complied with at 10 km/h, and the vehicle could again comply with one or both specifications. As long as the measured sound at a given test speed meets at least one of the two optional specifications, then it would comply for the particular test speed.

Regarding evaluating the relative volume change requirement (S5.4) for vehicles that switch between 2-band and 4-band compliance, we note that relative volume change is based on a band sum of the whole range of 13 bands in the measured sound at each test condition, calculated per S7.6 of the test procedure. Because the criterion is the band sum of all the bands, relative volume change evaluation does not depend on which of the two minimum sound level options, 2-band or 4-band, is complied with in each test condition, and there is no conflict if a vehicle switches between the two specifications for different test conditions.

Another technical clarification requested by Honda was in regard to section S7.1.6(e) of the December 2016 final rule. That section of the test procedure specifies which one-third octave bands should be selected for compliance evaluations under the 2-band compliance option. The requirement states that the two bands with the highest levels, one below 1000 Hz and the other at or above 1000 Hz, should be selected. Honda said that it is unclear which bands should be selected in the event that the two bands with the highest levels are adjacent, i.e., if they are specifically the 800 Hz and 1000 Hz bands.

NHTSA recognizes this discrepancy and agrees that some clarification is needed. The intent of the final rule was that the two one-third octave bands (one below and one at or above 1000 Hz) with the highest SPLs that are, at the same time, non-adjacent would be selected, but the text does not specify what happens if the two bands with the highest

SPLs are adjacent. In that case, to maintain non-adjacency, another band having the next-largest SPL would have to be substituted for either the 800 Hz or 1000 Hz band. This substitution involves at least two permutations of band selection. In one permutation, the 800 Hz band would be selected along with the band above 1000 Hz with the second-largest SPL of the bands at or above 1000 Hz. In the other permutation, the 1000 Hz band would be selected along with the band below 800 Hz with the second-largest SPL of the bands at or below 800 Hz. Both combination of two bands selected according to these restrictions are then evaluated according to S7.1.6(e)(ii) and at least one must comply with the applicable requirements in section S5 of the Standard.

To make this clear, we are revising the regulatory text of paragraph S7.1.6(e)(i) in a manner similar to what Honda suggested.

As a consequence of Honda's request to clarify this language, the agency identified two additional places in the regulatory text -- in paragraphs S7.1.5(e) and in S7.3.5(e) -- where it is necessary to insert similar amended text because those two paragraphs are analogous to S7.1.6(e), that is, all three of these paragraphs address an equivalent step in the procedure, with the only difference being the test speed. In the two additional paragraphs, S7.1.5(e) and S7.3.5(e), we also note that some of the text that was of concern to Honda in S7.1.6(e) was inadvertently omitted from the final rule.

Specifically, those two paragraphs should have included the sentence, "One band shall be below 1000 Hz and one band shall be at or greater than 1000 Hz."

To clarify the text and accurately state the procedural step for selection of bands to be evaluated for compliance with the 2-band option, the agency is revising S7.1.5(e) and S7.3.5(e) using the same amended text as for S7.1.6(e), described above, except with

different paragraph references within the text, as appropriate. The amended text for these two paragraphs is included at the end of this document.

In addition to the above text clarifications and corrections, in section S7.1.5(e) of the December 2016 final rule, text applying to one-third octave band selection for the 4-band compliance option, but not for the 2-band compliance option was included. The iterative process to select a combination of four bands to be used to evaluate compliance does not apply for the 2-band option. Therefore, the agency is deleting that sentence from three sections of the test procedure where it is not relevant. The amended text appears at the end of this document.

Lastly, in making the above text changes, the agency identified a few minor mistakes and inconsistencies in the wording of related requirements. In sub-paragraphs S7.1.5(d)(ii) and S7.1.5(e)(ii), the words “of this paragraph” are unnecessary because the exact paragraph reference numbers are included in the text. Furthermore, the phrase “of this paragraph” could lead to a misunderstanding as it is not entirely clear what “this paragraph” refers to. Thus, we are deleting the phrase “of this paragraph” in both places. Additionally, in S7.1.5(e)(ii) and in S7.1.6(d)(ii), where reference is made to paragraph “(c)” without further specificity, we are replacing “(c)” with the full paragraph numbers, “S7.1.5(c)” and “S7.1.6(c)” respectively, to avoid any misunderstanding and to be consistent with the wording used in related sections of the test procedure. Also, to enhance S7.2, procedure for testing in Reverse, we are adding the sentence, “The minimum sound level requirements for the Reverse test condition are contained in S5.1.2, Table 2, for 4-band compliance and in S5.2, Table 6, for 2-band compliance.”

Similarly, to enhance S7.4 for pass-by tests above 20 km/h up to 30 km/h and S7.5 for pass-by tests at 30 km/h, we are adding an analogous statement to clarify which S5 requirements apply at those test speeds. In addition to this edit, we are re-wording S7.4 to more clearly express the pass-by speeds that may be tested. Finally, we are re-wording and adding an additional sentence to S7.3.6 so that pass-by test speeds above zero up to 10 km/h are explicitly included and to include specific reference to the appropriate requirement tables in S5 for both the zero to 10 km/h pass-by speed range and the greater than 10 km/h up to 20 km/h pass-by speed range.

NHTSA is making these technical changes in section S7 as part of the amendments in this document to respond to Honda's request and to correct inconsistencies and minor errors in the regulatory text. All technical changes and corrections discussed above appear in the amended regulatory text at the end of this document.

Another technical question in Honda's petition was how to correctly calculate the average of the overall SPL values in section S7.1.4 of the test procedure. The answer to Honda's question is that a linear average is taken, which is the sum of the SPL values divided by four. The result is rounded to a tenth of a decibel, as specified in the test procedure. We also point out, as discussed in more detail in the following paragraph, that NHTSA intends to provide a computer program for compliance evaluation that will automatically execute all necessary calculations including averaging overall SPLs for S7.1.4(c).

As a general response to Honda's comments, we note that the agency has been developing a "NHTSA Compliance Tool" for FMVSS No. 141, which is a programmed,

computer-based application to facilitate compliance testing. As discussed in the final rule preamble,²³ NHTSA intends to make this tool available publicly so that OEMs, test labs, suppliers, and others will have access to and full use of this tool, similar to what the agency did for FMVSS No. 126, Electronic Stability Control. This compliance tool will include a user interface that will prompt for test data input and will automatically evaluate vehicle compliance based on the input. All test data processing steps and calculations in section S7 of the safety standard are built-in to the tool. For example, with respect to Honda's technical questions, the tool will execute the band selection and calculate averages needed to verify compliance with the 2-band and 4-band specifications at each test speed, as well as compliance with the volume change requirements. The tool will evaluate all possible band combinations, such that if the situation regarding S7.1.6(e) cited by Honda were to arise, the tool would evaluate all combinations of the two highest non-adjacent bands above and below 1000 Hz.

The last technical issue raised in Honda's petition was about indoor testing. Honda stated that indoor testing should be optional, and it is preferable for certification of vehicles to FMVSS No. 141. Honda also stated that indoor testing is accommodated in the European regulation, United Nations Economic Commission for Europe Regulation (UN ECE) No. 138, *Uniform Provisions Concerning the Approval of Quiet Road Transport Vehicles with Regards to Their Reduced Audibility*. Honda cited factors such as Doppler shift that influence outdoor testing, and stated that indoor testing has better stability and efficiency for sound measurement.

²³ See 81 FR 90501

In response to this, the agency points out that the preamble of the December 2016 final rule addressed indoor testing²⁴ because this topic was raised in several NPRM comments. The agency acknowledged some advantages of indoor testing in hemi-anechoic chambers but also pointed out several reasons why outdoor testing on an ISO-compatible test pad is preferable, and concluded that the agency intends to conduct its own compliance tests using outdoor facilities. Importantly, with regard to Honda's indoor testing comment in their petition, the agency notes that the absence of a specific test procedure for indoor testing in the final rule does not mean indoor testing is prohibited. On the contrary, vehicle manufacturers, suppliers, and others have the discretion to conduct FMVSS No. 141 certification tests indoors as long as they can certify that a vehicle fully complies with the Safety Standard.

G. Other Comments Relevant to the Final Rule

The comment from Publicresource.org expressed concern with public availability of technical documents that were incorporated by reference into the final rule. However, their docket submission did not specify any particular reasons that they believe various parties such as consumer protection groups, small manufacturers, hobbyists, and students would not have adequate access to these reference documents. Thus, NHTSA is not able to provide a response to more adequately address any concerns they might have. Given that the subject documents from SAE, ISO, and ANSI are copyrighted material, the agency followed its normal practice in making them publicly available, which includes

²⁴ See 81 FR 90481

keeping a printed copy of each of the reference documents on hand at NHTSA headquarters. Printed copies of the referenced documents are also available at the National Archives and Records Administration. The public availability of documents incorporated by reference was discussed in Section VI of the December 14, 2016, final rule.²⁵

V. Response to Petitions for Reconsideration

Pursuant to the process established under 49 CFR part 553.37, after carefully considering all aspects of the petition, except for the request regarding driver selectable sounds, NHTSA has decided to grant the petitions discussed above without further proceedings.

VI. Rulemaking Analyses and Notices

Executive Order 12866, Executive Order 13563, and DOT Regulatory Policies and Procedures

Executive Order 12866, Executive Order 13563, and the Department of Transportation's regulatory policies require this agency to make determinations as to whether a regulatory action is "significant" and therefore subject to OMB review and the requirements of the aforementioned Executive Orders. The Executive Order 12866 defines a "significant regulatory action" as one that is likely to result in a rule that may:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity,

²⁵ See 81 FR 90513.

- competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
 - (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
 - (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

We have considered the potential impact of this final rule under Executive Order 12866, Executive Order 13563, and the Department of Transportation's regulatory policies and procedures and have determined that today's final rule is not significant for any of the aforementioned reasons. This final rule only makes minor adjustments to the existing requirements of FMVSS No. 141. We are adjusting the phase-in schedule and its reporting requirements to give manufacturers additional time to comply with the requirements of the final rule. We are also making several minor amendments to the rule to clarify the rule's requirements. We thus anticipate that the economic impacts of this final rule will be limited.

Executive Order 13771

Executive Order 13771 titled "Reducing Regulation and Controlling Regulatory Costs," directs that, unless prohibited by law, whenever an executive department or agency publicly proposes for notice and comment or otherwise promulgates a new regulation, it shall identify at least two existing regulations to be repealed. In addition, any new incremental costs associated with new regulations shall, to the extent permitted

by law, be offset by the elimination of existing costs. Only those rules deemed significant under section 3(f) of Executive Order 12866, "Regulatory Planning and Review," are subject to these requirements. As discussed above, this rule is not a significant rule under Executive Order 12866 and, accordingly, is not subject to the offset requirements of 13771.

NHTSA has determined that this rulemaking is a deregulatory action under E.O. 13771, as it imposes no costs and, instead, amends FMVSS No. 141 to give manufacturers of hybrid and electric vehicles greater flexibility during the manufacturing process and when sourcing parts that comprise the alert sound system. This final rule also provides flexibility to manufacturers by allowing them to differentiate hybrid and electric vehicles of different trim levels within a vehicle model by allowing vehicles of different trim levels to produce different sounds. This final rule also amends FMVSS No. 141 to delay the date by which manufacturers are required to fully comply with the requirements of the standard by one year.

Delaying the compliance date of FMVSS No. 141 for one year will result in a cost savings to manufacturers of hybrid and electric vehicles to which the standard applies of \$21M to \$20.75M for MY 2019 and \$21M to \$20.75M⁷⁵ for MY 2020 at the three and seven percent discount rates, respectively. These cost savings will accrue because manufacturers of hybrid and electric vehicles to which the standard applies will not have to comply with the phase-in requirements of the standard until September 1, 2019 and will not have to fully comply with the standard's requirements until September 1, 2020. NHTSA contends that these cost savings estimates are conservative and that the true cost savings of the rule are likely to be higher because, as discussed above, the cost benefit

analysis accompanying the December 2016 final rule assumed a longer compliance lead time and did not account for costs that may have been necessary to comply with the rule in a shorter time period.

Executive Order 13609: Promoting International Regulatory Cooperation

The policy statement in section 1 of Executive Order 13609 provides, in part:

The regulatory approaches taken by foreign governments may differ from those taken by U.S. regulatory agencies to address similar issues. In some cases, the differences between the regulatory approaches of U.S. agencies and those of their foreign counterparts might not be necessary and might impair the ability of American businesses to export and compete internationally. In meeting shared challenges involving health, safety, labor, security, environmental, and other issues, international regulatory cooperation can identify approaches that are at least as protective as those that are or would be adopted in the absence of such cooperation. International regulatory cooperation can also reduce, eliminate, or prevent unnecessary differences in regulatory requirements.

In the preamble to the December 2016 final rule we discussed the reasons for the differences in the regulatory approach taken by foreign governments that have addressed this issue. As stated above, we are declining to adopt a test procedure for indoor testing included in UN ECE Reg. No. 138. NHTSA's test procedures are not requirements that manufacturers must follow when certifying vehicles to the FMVSS and manufacturers are free to choose whatever certification method they wish as long as the manufacturer can demonstrate a good faith basis for certification.

Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 et seq., as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice of proposed rulemaking or final rule, it must

prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). The Small Business Administration's regulations at 13 CFR Part 121 define a small business, in part, as a business entity "which operates primarily within the United States." (13 CFR 121.105(a)). No regulatory flexibility analysis is required if the head of an agency certifies the proposal will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a proposal will not have a significant economic impact on a substantial number of small entities.

I hereby certify that this rule would not have a significant economic impact on a substantial number of small entities. This final rule does not make any significant changes to the existing FMVSS No. 141. Instead, this rule aligns the phase-in requirements with manufacturers' design and production cycles, and makes other minor adjustments to specific regulatory text to facilitate manufacturer compliance with the new FMVSS No. 141. It also clarifies some technical requirements and test procedures. The final requirements as amended in this document afford more lead time, and somewhat greater clarity and flexibility to vehicle manufacturers while maintaining the safety goals and benefits of the enabling statute, the PSEA, under which FMVSS No. 141 was created.

Executive Order 13132 (Federalism)

NHTSA has examined today's final rule pursuant to Executive Order 13132 (64 FR 43255, August 10, 1999) and concluded that no additional consultation with States,

local governments or their representatives is mandated beyond the rulemaking process. The agency has concluded that the rulemaking would not have sufficient federalism implications to warrant consultation with State and local officials or the preparation of a federalism summary impact statement. Today's final rule does not have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

NHTSA rules can have preemptive effect in two ways. First, the National Traffic and Motor Vehicle Safety Act contains an express preemption provision:

When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter. 49 U.S.C. 30103(b)(1).

It is this statutory command by Congress that preempts any non-identical State legislative and administrative law addressing the same aspect of performance.

The express preemption provision described above is subject to a savings clause under which "[c]ompliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law." 49 U.S.C.

30103(e). Pursuant to this provision, State common law tort causes of action against motor vehicle manufacturers that might otherwise be preempted by the express preemption provision are generally preserved. However, the Supreme Court has recognized the possibility, in some instances, of implied preemption of State common law tort causes of action by virtue of NHTSA's rules—even if not expressly preempted.

This second way that NHTSA rules can preempt is dependent upon the existence of an actual conflict between an FMVSS and the higher standard that would effectively be imposed on motor vehicle manufacturers if someone obtained a State common law tort judgment against the manufacturer—notwithstanding the manufacturer’s compliance with the NHTSA standard. Because most NHTSA standards established by an FMVSS are minimum standards, a State common law tort cause of action that seeks to impose a higher standard on motor vehicle manufacturers will generally not be preempted. However, if and when such a conflict does exist - for example, when the standard at issue is both a minimum and a maximum standard - the State common law tort cause of action is impliedly preempted. *See Geier v. American Honda Motor Co.*, 529 U.S. 861 (2000).

Pursuant to Executive Order 13132, NHTSA has considered whether this rule could or should preempt State common law causes of action. The agency’s ability to announce its conclusion regarding the preemptive effect of one of its rules reduces the likelihood that preemption will be an issue in any subsequent tort litigation.

To this end, the agency has examined the nature (e.g., the language and structure of the regulatory text) and objectives of today’s final rule and finds that this rule, like many NHTSA rules, prescribes only a minimum safety standard. Accordingly, NHTSA does not intend that this final rule preempt state tort law that would effectively impose a higher standard on motor vehicle manufacturers than that established by today’s final rule. Establishment of a higher standard by means of State tort law would not conflict with the minimum standard established in this document. Without any conflict, there could not be any implied preemption of a State common law tort cause of action.

NHTSA solicited comments from the States and other interested parties on this assessment of issues relevant to E.O. 13132 in the NPRM. However, we did not receive any comments with regard to this issue.

Executive Order 12988 (Civil Justice Reform)

When promulgating a regulation, Executive Order 12988 specifically requires that the agency must make every reasonable effort to ensure that the regulation, as appropriate: (1) specifies in clear language the preemptive effect; (2) specifies in clear language the effect on existing Federal law or regulation, including all provisions repealed, circumscribed, displaced, impaired, or modified; (3) provides a clear legal standard for affected conduct rather than a general standard, while promoting simplification and burden reduction; (4) specifies in clear language the retroactive effect; (5) specifies whether administrative proceedings are to be required before parties may file suit in court; (6) explicitly or implicitly defines key terms; and (7) addresses other important issues affecting clarity and general draftsmanship of regulations.

Pursuant to this Order, NHTSA notes as follows. The preemptive effect of this final rule is discussed above in connection with Executive Order 13132. NHTSA notes further that there is no requirement that individuals submit a petition for reconsideration or pursue other administrative proceeding before they may file suit in court.

Executive Order 13045 (Protection of Children from Environmental Health and Safety Risks)

Executive Order 13045, "Protection of Children from Environmental Health and Safety Risks," (62 FR 19885; April 23, 1997) applies to any proposed or final rule that: (1) is determined to be "economically significant," as defined in Executive Order 12866,

and (2) concerns an environmental health or safety risk that NHTSA has reason to believe may have a disproportionate effect on children. If a rule meets both criteria, the agency must evaluate the environmental health or safety effects of the rule on children, and explain why the rule is preferable to other potentially effective and reasonably feasible alternatives considered by the agency. This final rule is not subject to Executive Order 13045 because it is not economically significant.

National Technology Transfer and Advancement Act

Under the National Technology Transfer and Advancement Act of 1995 (NTTAA) (Public Law 104-113), “all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments.” Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of Automotive Engineers (SAE). The NTTAA directs us to provide Congress, through OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

Pursuant to the above requirements, the agency conducted a review of voluntary consensus standards to determine if any were applicable to this final rule. For the specific provisions that we are adjusting in this rule, there were no applicable consensus standards.

Unfunded Mandates Reform Act

The Unfunded Mandates Reform Act of 1995 requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of more than \$100 million annually (adjusted for inflation with base year of 1995). We note that as this final rule only makes minor adjustments and clarifications to FMVSS No. 141. Thus, it would not result in expenditures by any of the aforementioned entities of over \$100 million annually.

National Environmental Policy Act

NHTSA has analyzed this rulemaking action for the purposes of the National Environmental Policy Act. The agency has determined that implementation of this action would not have any significant impact on the quality of the human environment. NHTSA has also determined that the changes in this final rule would not change the findings in the Final Environmental Assessment prepared in connection with the final rule.²⁶

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA), a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid OMB control number. While this final rule adjusts the timing of the phase-in reporting requirements to match the manufacturer's production year (i.e., to align the

²⁶ The Final EA is available in Docket No. NHTSA-2011-0100 at <http://www.regulations.gov>

requirement with other potential phase-in reports that the manufacturer may need to produce), it includes no new collection of information because the actual reporting requirements are the same as the requirements in the April 2014 final rule.

Regulation Identifier Number (RIN)

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

List of Subjects in 49 CFR Part 571

Imports, incorporation by reference, motor vehicle safety, reporting and recordkeeping, tires.

In consideration of the foregoing, NHTSA amends 49 CFR part 571 as follows:

PART 571--FEDERAL MOTOR VEHICLE SAFETY STANDARDS

1. The authority citation for part 571 of title 49 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.95.

2. Amend § 571.141 by adding a definition for “trim level” in paragraph S4, and revising paragraphs S5.5.1, S5.5.2, S7.1, S7.1.5 introductory text, S7.1.5(d) introductory text, S7.1.5(d)(ii), S7.1.5(e), S7.1.6 introductory text, S7.1.6(d) introductory text,

S7.1.6(d)(ii), S7.1.6(e), S7.2, S7.3.5 introductory text, S7.3.5(d) introductory text, S7.3.5(e), and S7.3.6, S7.4, S7.5, S8, and S9 to read as follows:

§ 571.141 Standard No. 141; Minimum Sound Requirements for Hybrid and Electric Vehicles.

* * * * *

S4 * * *

“Trim level” is defined to mean a subset of vehicles within the same model designation with the same body type and which are alike in their general level of standard equipment, such as a “base” trim level of a vehicle model. Vehicles with only minor trim differences that are unlikely to affect vehicle-emitted sound are not considered different for the purposes of this safety standard.

* * * * *

S5.5 * * *

S5.5.1 Any two vehicles of the same make, model, model year, body type, and trim level (as those terms are defined in 49 CFR 565.12 or in section S4 of this safety standard) to which this safety standard applies shall be designed to have the same pedestrian alert sound when operating under the same test conditions and at the same speed including any test conditions and speeds for which an alert sound is required in Section S5 of this safety standard.

S5.5.2 For the purposes of this requirement, the pedestrian alert sound of vehicles which meet the applicable requirements in S5.1 through S5.4 of this standard are deemed to be the same if the digital source of the sound, if any, is the same and if the algorithms

that either generate the sound directly or process the digital source to generate the sound are the same.

* * * * *

S7.1 Stationary vehicle in forward gear.

* * * * *

S7.1.5 Select one-third octave bands to be used for evaluating compliance with detection requirements for a stationary vehicle.

* * * * *

(d) For alerts designed to meet the four-band requirements of S5.1 of this standard:

* * * * *

(ii) Compare the average corrected sound pressure level from S7.1.5(c) in each of the four one-third octave bands selected in paragraph S7.1.5(d)(i) to the required minimum level of the corresponding one-third octave band specified in paragraph S5.1.1, Table 1, to determine compliance.

(e) For alerts designed to meet the two-band requirements of S5.2 of this standard:

(i) Select the two one-third octave bands, one below 1000 Hz and one at or above 1000 Hz, having the largest A-weighted SPL values within the range of 315 Hz up to 3150 Hz and that are non-adjacent to each other to evaluate according to S7.1.5(e)(ii), below. In the event that the pair of bands with the largest SPL values are the 800 Hz and 1000 Hz bands, then select both of the following pairs to evaluate according S7.1.5(e)(ii): the 800 Hz band along with the band having the second-largest A-weighted SPL value from the 1000 Hz and above bands; and, the 1000 Hz band along with the band having the second-largest A-weighted SPL value from the 800 Hz and below bands. At least one of the

band pairs selected as specified in this paragraph shall meet the minimum requirements when evaluated according to S7.1.5(e)(ii).

(ii) Compare the average corrected sound pressure level from S7.1.5(c) in each of the two one-third octave bands selected in paragraph S7.1.5(e)(i) to the required minimum level of the corresponding one-third octave band specified in paragraph S5.2, Table 6. Also, compare the band sum of the two bands to the required minimum band sum in Table 6.

S7.1.6 Select one-third octave bands to be used for evaluating compliance with directivity requirements for a stationary vehicle.

* * * * *

(d) For alerts designed to meet the four-band requirements of S5.1 of this standard:

* * * * *

(ii) Compare the average corrected sound pressure level from S7.1.6(c) in each of the four one-third octave bands selected in paragraph S7.1.6(d)(i) to the required minimum level of the corresponding one-third octave band specified in paragraph S5.1.1, Table 1, to determine compliance.

(e) For alerts designed to meet the two-band requirements of S5.2 of this standard:

(i) Select the two one-third octave bands, one below 1000 Hz and one at or above 1000 Hz, having the largest A-weighted SPL values within the range of 315 Hz up to 3150 Hz and that are non-adjacent to each other to evaluate according to S7.1.6(e)(ii), below. In the event that the pair of bands with the largest SPL values are the 800 Hz and 1000 Hz bands, then select both of the following pairs to evaluate according S7.1.6(e)(ii): the 800 Hz band along with the band having the second-largest A-weighted SPL value from the

1000 Hz and above bands; and, the 1000 Hz band along with the band having the second-largest A-weighted SPL value from the 800 Hz and below bands. At least one of the band pairs selected as specified in this paragraph shall meet the minimum requirements when evaluated according to S7.1.6(e)(ii), below.

(ii) Compare the average corrected sound pressure level from S7.1.6(c) in each of the two one-third octave bands selected in paragraph S7.1.6(e)(i) to the required minimum level of the corresponding one-third octave band specified in paragraph S5.2, Table 6. Also, compare the band sum of the two bands to the required minimum band sum in Table 6.

S7.2 Stationary vehicle in reverse gear. Test the vehicle per S7.1.1 through S7.1.5 except that the rear plane of the vehicle is placed on the PP' line, no center microphone is used, and the vehicle's transmission gear selector is placed in the 'Reverse' position. The minimum sound level requirements for the Reverse test condition are contained in S5.1.2, Table 2, for four-band compliance and in S5.2, Table 6, for two-band compliance.

* * * * *

S7.3.5 Select one-third octave bands to be used for evaluating compliance with the constant speed pass-by requirements.

* * * * *

(d) For alerts designed to meet the four-band requirements of S5.1 of this standard:

* * * * *

(e) For alerts designed to meet the two-band requirements of S5.2 of this standard:

(i) Select the two one-third octave bands, one below 1000 Hz and one at or above 1000 Hz, having the largest A-weighted SPL values within the range of 315 Hz up to 3150 Hz

and that are non-adjacent to each other to evaluate according to S7.3.5(e)(ii), below. In the event that the pair of bands with the largest SPL values are the 800 Hz and 1000 Hz bands, then select both of the following pairs to evaluate according S7.3.5(e)(ii): the 800 Hz band along with the band having the second-largest A-weighted SPL value from the 1000 Hz and above bands; and, the 1000 Hz band along with the band having the second-largest A-weighted SPL value from the 800 Hz and below bands. At least one of the band pairs selected as specified in this paragraph shall meet the minimum requirements when evaluated according to S7.3.5(e)(ii), below.

(ii) Compare the average corrected sound pressure level from S7.3.5(c) in each of the two one-third octave bands selected in paragraph S7.3.5(e)(i) to the required minimum level of the corresponding one-third octave band specified in paragraph S5.2, Table 6. Also, compare the band sum of the two bands to the required minimum band sum in Table 6.

S7.3.6 The procedures in S7.3.1 through S7.3.5 may be repeated for any pass-by test speed greater than 0 km/h and less than 20 km/h. For test speeds greater than 0 km/h and less than 10 km/h, the minimum sound level requirements are contained in S5.1.1, Table 1, for four-band compliance and in S5.2, Table 6, for two-band compliance. For test speeds greater than or equal to 10 km/h and less than 20 km/h, the minimum sound level requirements are contained in S5.1.3, Table 3, for 4-band compliance and in S5.2, Table 6, for 2-band compliance.

S7.4 Pass-by tests at speeds greater than or equal to 20 km/h and less than 30 km/h.

Repeat the procedures of S7.3 at $21 \text{ km/h} \pm 1 \text{ km/h}$. The procedures in S7.3 also may be repeated for any pass-by test speed greater than 20 km/h and less than 30 km/h. For this

range of test speeds, the minimum sound level requirements are contained in S5.1.4, Table 4, for four-band compliance and in S5.2, Table 6, for two-band compliance.

S7.5 Pass-by tests at 30 km/h. Repeat the procedures of S7.3 at 31 km/h \pm 1 km/h. For this test speed, the minimum sound level requirements are contained in S5.1.5, Table 5, for four-band compliance and in S5.2, Table 6, for two-band compliance.

* * * * *

S8 Prohibition on altering the sound of a vehicle subject to this standard. No entity subject to the authority of the National Highway Traffic Safety Administration may:

- (a) Disable, alter, replace, or modify any element of a vehicle installed as original equipment for purposes of complying with this Standard, except in connection with a repair of a vehicle malfunction or to remedy a defect or non-compliance; or
- (b) Provide any person with any mechanism, equipment, process, or device intended to disable, alter, replace, or modify the sound emitting capability of a vehicle subject to this standard, except in connection with a repair of vehicle malfunction or to remedy a defect or non-compliance.

S9 Phase-in schedule.

S9.1 Hybrid and Electric Vehicles manufactured on or after September 1, 2019, and before September 1, 2020. For hybrid and electric vehicles to which this standard applies manufactured on and after September 1, 2019, and before September 1, 2020, except vehicles produced by small volume manufacturers, the quantity of hybrid and electric vehicles complying with this safety standard shall be not less than 50 percent of one or both of the following:

(a) A manufacturer's average annual production of hybrid and electric vehicles on and after September 1, 2016, and before September 1, 2019;

(b) A manufacturer's total production of hybrid and electric vehicles on and after September 1, 2019, and before September 1, 2020.

S9.2 Hybrid and Electric Vehicles manufactured on or after September 1, 2020. All hybrid and electric vehicles to which this standard applies manufactured on and after September 1, 2020, shall comply with this safety standard.

PART 585—PHASE-IN REPORTING REQUIREMENTS

- 3. The authority citation for Part 585 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.95

- 4. Revise § 585.130 to read as follows:

§ 585.130 Applicability.

This subpart applies to manufacturers of hybrid and electric passenger cars, trucks, buses, multipurpose passenger vehicles, and low-speed vehicles subject to the phase-in requirements of § 571.141, *S9.1 Hybrid and Electric Vehicles manufactured on or after September 1, 2019, and before September 1, 2020.*

- 5. Revise § 585.132 to read as follows:

§ 585.132 Response to inquiries.

At any time during the production year ending August 31, 2019, each manufacturer shall, upon request from the Office of Vehicle Safety Compliance, provide information identifying the vehicles (by make, model and vehicle identification number) that have been certified as complying with the requirements of Standard No. 141, Minimum Sound

Requirements for Hybrid and Electric Vehicles (49 CFR 571.141). The manufacturer's designation of a vehicle as a certified vehicle is irrevocable.

6. In § 585.133, revise paragraph (a) to read as follows:

§ 585.133 Reporting requirements.

(a) Phase-in reporting requirements. Within 60 days after the end of the production year ending August 31, 2019, each manufacturer shall submit a report to the National Highway Traffic Safety Administration concerning its compliance with the requirements of Standard No. 141 Minimum Sound Requirements for Hybrid and Electric Vehicles (49 CFR 571.141) for its vehicles produced in that year. Each report shall provide the information specified in paragraph (b) of this section and in § 585.2 of this part.

* * * * *

7. Revise § 585.134 to read as follows:

§ 585.134 Records.

Each manufacturer shall maintain records of the Vehicle Identification Number for each vehicle for which information is reported under § 585.133 until December 31, 2024.

Issued in Washington, D.C., under authority delegated in 49 CFR 1.95 and 501.5.

Heidi R. King

Deputy Administrator

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