Materials, 206 *Door Locks and Door Retention Components,* 207 *Seating Systems,* 209 *Seat Belt Assemblies,* 210 *Seat Belt Assembly Anchorages,* 212 *Windshield Mounting,* 214 *Side Impact Protection,* 216 *Roof Crush Resistance,* 219 *Windshield Zone Intrusion,* 225 *Child Restraint Anchorage Systems,* 301 *Fuel System Integrity,* and 302 *Flammability of Interior Materials.*

The petitioner also contends that the vehicles are capable of being readily altered to meet the following standards, in the manner indicated:

Standard No. 101 *Controls and Displays:* Replacement of the speedometer with the U.S.-model part, which includes the BRAKE telltale, and reprogramming of the speedometer.

Standard No. 138 *Tire Pressure Monitoring Systems:* Verification that programming matches U.S.-model programming.

Standard No. 208 *Occupant Crash Protection:* A U.S.-version of the owner's manual must be provided with the vehicle to meet the information requirements of the standard. Verification will be performed that programming of automatic restraint systems matches U.S.-model programming.

The petitioner additionally states that a vehicle identification plate must be affixed to the vehicle near the left windshield post to meet the requirements of 49 CFR part 565. The petitioner also states that each vehicle will be inspected prior to importation for compliance with 49 CFR part 541 and modified if necessary.

All comments received before the close of business on the closing date indicated above will be considered, and will be available for examination in the docket at the above addresses both before and after that date. To the extent possible, comments filed after the closing date will also be considered. Notice of final action on the petition will be published in the **Federal Register** pursuant to the authority indicated below.

Authority: 49 U.S.C. 30141(a)(1)(A), (a)(1)(B), and (b)(1); 49 CFR 593.7; delegation of authority at 49 CFR 1.95 and 501.8.

Jeffrey M. Giuseppe,

Director, Office of Vehicle Safety Compliance.

[FR Doc. 2015–28129 Filed 11–4–15; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

[Docket No. NHTSA–2015–0006]

New Car Assessment Program (NCAP)

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

ACTION: Final decision.

SUMMARY: On January 28, 2015, NHTSA published a notice requesting comments on the agency's intention to recommend various vehicle models that are equipped with automatic emergency braking (AEB) systems that meet the agency's performance criteria to consumers through the agency's New Car Assessment Program (NCAP) and its Web site, *www.safercar.gov.* These systems can enhance the driver's ability to avoid or mitigate rear-end crashes. This notice announces NHTSA's decision to include AEB technologies as part of NCAP Recommended Advanced Technology Features, if the technologies meet NCAP performance criteria. The specific technologies included are crash imminent braking (CIB) and dynamic brake support (DBS).

DATES: These changes to the New Car Assessment Program are effective for the 2018 Model Year vehicles.

FOR FURTHER INFORMATION CONTACT: For technical issues: Dr. Abigail Morgan, Office of Crash Avoidance Standards, Telephone: 202–366–1810, Facsimile: 202–366–5930, NVS–122. For NCAP issues: Mr. Clarke Harper, Office of Crash Avoidance Standards, email: *Clarke.Harper@DOT.GOV,* Telephone: 202–366–1810, Facsimile: 202–366–5930, NVS–120.

The mailing address for these officials is as follows: National Highway Traffic Safety Administration, 1200 New Jersey Avenue SE., Washington, DC 20590.

SUPPLEMENTARY INFORMATION:

I. Executive Summary

This notice announces the agency's decision to update the U.S. New Car Assessment Program (NCAP) to include a recommendation to motor vehicle consumers on vehicle models that have automatic emergency braking (AEB) systems that can substantially enhance the driver's ability to avoid rear-end crashes. NCAP recommends crash avoidance technologies, in addition to providing crashworthiness, rollover, and overall star ratings. Today, 3 crash avoidance technologies—forward collision warning, lane departure warning, and rearview video systems—are recommended by the agency if they meet NHTSA's performance specifications.

NHTSA is adding AEB as a recommended technology, which means that we now have tests for AEB. AEB refers to either crash imminent braking (CIB), dynamic brake support (DBS), or both on the same vehicle. CIB automatically applies vehicle brakes if the vehicle sensing system anticipates a potential rear impact with the vehicle in front of it. DBS applies more brake power if the sensing system determines that the driver has applied the brakes prior to a rear-end crash but estimates that the amount of braking is not sufficient to avoid the crash. NHTSA is also removing rearview video systems (RVS) as a recommended technology in Model Year 2019, because RVS is going to be required on all new vehicles manufactured on or after May 1, 2018, and that technology's presence in NCAP will no longer provide comparative information for consumers.

The vehicles that have Advanced Technologies recommended by NHTSA may be seen on the agency Web site *www.safercar.gov.*

II. Background

The National Highway Traffic Safety Administration's (NHTSA) New Car Assessment Program (NCAP) provides comparative safety rating information on new vehicles to assist consumers with their vehicle purchasing decisions. In addition to issuing star safety ratings based on the crashworthiness and rollover resistance of vehicle models, the agency also provides additional information to consumers by recommending certain advanced crash avoidance technologies on the agency's Web site, *www.safercar.gov.* For each vehicle make/model, the Web site currently shows the vehicle's 5-star crashworthiness and rollover resistance ratings and whether the vehicle model is equipped with and meets NHTSA's performance criteria for any of the three advanced crash avoidance safety technologies that the agency currently recommends to consumers. NHTSA began recommending advanced crash avoidance technologies to consumers starting with the 2011 model year.[1] NHTSA has under consideration other ways of incorporating crash avoidance technologies into its NCAP program, but those changes are not a part of this notice.

The agency first included recommended advanced technologies as part of the NCAP upgrade that occurred as of the 2011 model year. These first technologies were electronic stability control (ESC), forward collision warning (FCW), and lane departure warning (LDW). Subsequently, in 2014, NHTSA replaced ESC, which is now mandatory for all new light vehicles, with another technology, rearview video systems (RVS).[2] FCW uses forward looking sensors to detect other vehicles ahead. If the vehicle is getting too close to another vehicle at too high of a speed, it warns the driver of an impending crash so the driver can brake or steer to avoid or mitigate the crash. LDW monitors lane markings on the road and cautions a driver of unintentional lane drift. RVS assists the driver in seeing whether there are any obstructions, particularly a person or people, in the area immediately behind the vehicle. RVS is typically installed in the rear of the vehicle and connected to a video screen visible to the driver.

The agency may recommend vehicle technologies to consumers as part of NCAP if the technology: (1) Addresses a major crash problem, (2) is supported by information that corroborates its potential or actual safety benefit, and (3) is able to be tested by repeatable performance tests and procedures to ensure a certain level of performance.

Rear-end crashes constitute a significant vehicle safety problem. In a detailed analysis of 2006–2008 crash data,[3] NHTSA determined that approximately 1,700,000 rear-end crashes involving passenger vehicles occur each year.[4] These crashes result in approximately 1,000 deaths and 700,000 injuries annually. The size of the safety problem has remained consistent since then. In 2012, the most recent year for which complete data are available, there were a total of 1,663,000 rear-end crashes. These rear-end crashes in 2012 resulted in 1,172 deaths and 706,000 injuries, which represent 3 percent of all fatalities and 30 percent of all injuries from motor vehicle crashes in 2012.[5] [6]

Collectively, NHTSA refers to CIB and DBS systems as automatic emergency braking (AEB) systems. Prior to the development of AEB systems, vehicles were equipped with forward collision warning systems, to warn drivers of pending frontal impacts. These FCW systems sensed vehicles in front, using radar, cameras or both. These CIB and DBS systems can use information from an FCW system's sensors to go beyond the warning and potentially help avoid or mitigate rear-end crashes. CIB systems provide automatic braking when forward-looking sensors indicate that a crash is imminent and the driver is not braking. DBS systems provide supplemental braking when sensors determine that driver-applied braking is insufficient to avoid an imminent crash. As part of its rear-end crash analysis, the agency concluded that AEB systems would have had a favorable impact on a little more than one-half of rear-end crashes.[7] The remaining crashes, which involved circumstances such as high speed crashes resulting in a fatality in the lead vehicle or one vehicle suddenly cutting in front of another vehicle, were not crashes that current AEB systems would be able to address.

The agency has conducted test track research to better understand the performance capabilities of these systems. The agency's work is documented in three reports, ''Forward-Looking Advanced Braking Technologies Research Report'' (June 2012) [8] ''Automatic Emergency Braking System Research Report'' (August 2014) [9] and ''NHTSA's 2014 Automatic Emergency Braking (AEB) Test Track Evaluations'' (May 2015).[10]

AEB technologies were among the topics included in an April 5, 2013 request for comments notice on a variety of potential areas for improvement of NCAP.[11] All of those commenting on the subject supported including CIB and DBS in NCAP. None of those submitting comments in response to the request for comments opposed adding CIB and DBS to NCAP. Some commenters stated generally that available research supports the agency's conclusion that these technologies are effective at reducing rear-end crashes, with some of those commenters citing relevant research they had conducted. No one was specifically opposed to including CIB and DBS in NCAP.

The agency found that CIB and DBS systems are commercially available on a number of different production vehicles and these systems can be tested successfully to defined performance measures. NHTSA has developed performance measures that address real-world situations to ensure that CIB and DBS systems address the rear-end crash safety. The agency believes that systems meeting these performance measures have the potential to help reduce the number of rear-end crashes as well as deaths and injuries that result from these crashes. Therefore, the agency is including CIB and DBS systems in NCAP as recommended crash avoidance technologies on *www.safercar.gov.*

III. Summary of Request for Comments

The January 28, 2015 request for comments notice that preceded this document sought public comment in the following four areas.

Draft test procedures:

- General response to the draft test procedures;
- Whether or not the draft test procedures' combination of test scenarios and test speeds provide an accurate representation of real-world CIB and DBS system performance;
- Whether or not any of the scenarios in the draft test procedures can be removed while still ensuring that the procedures still reflect an appropriate level of system performance—if so, which scenarios and why they can be removed;
- Whether or not the number of test trials per scenario can be reduced—if so, why and how; and
- How the draft test procedures can be improved—if so, which specific improvements are needed.

The strikeable surrogate vehicle (SSV) designed by NHTSA and planned for use in CIB and DBS testing:

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[1] *See* 73 FR 40016.

[2] On April 7, 2014, NHTSA published a final rule (79 FR 19177) requiring rearview video systems (RVS). The rule provides a phase-in period that begins on May 1, 2016 and ends on May 1, 2018 when all new light vehicles will be required to be equipped with RVS. As was done with electronic stability control, RVS will no longer be an NCAP recommended technology after May 1, 2018, once RVS is required on all new light vehicles.

[3] These estimates were derived from NHTSA's 2006–2008 Fatality Analysis Reporting System (FARS) data and non-fatal cases in NHTSA's 2006–2008 National Automotive Sampling System General Estimates System (NASS/GES) data.

[4] The 1,700,000 total cited in the two NHTSA reports reflects only crashes in which the front of a passenger vehicle impacts the rear of another vehicle.

[5] See NHTSA's Traffic Safety Facts 2012, Page 70, *http://www-nrd.nhtsa.dot.gov/Pubs/812032.pdf.*

[6] The approximately 1,000 deaths per year in 2006–2008 were limited to two-vehicle crashes, as fatal crash data at the time did not contain detailed information on crashes involving three or more vehicles. This information was added starting with the 2010 data year, and the 1,172 deaths in 2012 occurred in crashes involving any number of vehicles.

[7] See ''Forward-Looking Advanced Braking Technologies Research Report'' (June 2012). (*http://www.Regulations.gov,* NHTSA 2012–0057–0001), page 12.

[8] See *http://www.Regulations.gov,* NHTSA 2012–0057–0001.

[9] See *http://www.Regulations.gov,* NHTSA 2012–0057–0037.

[10] DOT HS 812 166.

[11] See *http://www.Regulations.gov,* NHTSA 2012–0180.

• Whether or not there are specific elements of the SSV that would make it inappropriate for use in the agency's CIB and DBS performance evaluations—if so, what those elements are and why they represent a problem; and

• Whether or not the SSV will meet the needs for CIB and DBS evaluation for the foreseeable future—if not, why not, and what alternatives should be considered and why.

The planned DBS brake application strategy:

• Whether the two brake application methods defined in the DBS test procedure, those based on displacement or hybrid control, provide NHTSA with enough flexibility to accurately assess the performance of all DBS systems; and

• What specific refinements, if any, are needed to either application method?

CIB and DBS research:

• The agency wanted to know whether there is any recent research concerning CIB and DBS systems that is not reflected in the agency's research to date and, if so, what is that research

Twenty-one comments were received.[12] Most of the comments were from the automobile industry—vehicle manufacturers, associations of vehicle manufacturers, suppliers, and associations of suppliers. In addition, comments were received from another Federal government entity, an organization of insurance companies, and an association of motorcycle interests. Those in support included Advocates, Alliance, AGA, ASC, Bosch, CU, Continental, DENSO, Ford, Infineon, IIHS, Malik, MBUSA, MEMA, NADA, NTSB, Tesla, and TRW. Advocates supported using NCAP to encourage vehicle safety technologies, but indicated its preference for requiring AEB systems on new vehicles by regulation. Honda expressed its support for NCAP generally, but did not specifically support the addition of AEB systems to NCAP. Honda stated that it would like these systems to be rated. IIHS said that its research on the effectiveness of Volvo's City Safety system and Subaru's Eyesight system indicates that NHTSA may have ''vastly underestimated the benefit of AEB.'' Bosch said a 2009 study it conducted indicated DBS ''may be effective'' in reducing injury-related rear-end crashes by 58 percent and CIB by 74 percent.

The ASC, Bosch, IIHS, MEMA, and, TRW addressed the desirability of NHTSA harmonizing its AEB NCAP test procedures and other evaluation criteria with other consumer information/rating programs, particularly Euro NCAP. Other commenters urged harmonization with Euro NCAP with respect to specific details.

Many commenters (Alliance, AGA, ASC, Continental, Ford, Honda, IIHS, MEMA) stated that they would like NHTSA to harmonize the SSV used in NCAP with the target vehicle used in Euro NCAP Advanced Emergency Braking System (AEBS) tests. Commenters also asked for harmonization with specific technical areas such as brake application magnitude and rate, brake burnishing and test speeds.

NHTSA plans to establish minimum performance criteria in the two test procedures for CIB and DBS to be recommended to consumers in NCAP. Comments on these test procedures were broad and very detailed. Advocates suggested stronger criteria. Manufacturers suggested changes to various parts of the test procedures.

Several commenters argued against the introduction of another SSV to the vehicle testing landscape and urged NHTSA to adopt a preexisting SSV instead to avoid imposing added vehicle testing costs on the vehicle manufacturing industry. Specifically, AGA, ASC, Continental, Ford, Honda, IIHS, and Tesla asked NHTSA to specify the Allgemeiner Deutscher Automobil-Club e.V. (ADAC) target vehicle that is used by Euro NCAP and IIHS. Bosch supported harmonization of surrogate test vehicles generally.

The Alliance asked for further development of the SSV equipment and tow frame structure to eliminate the use of the lateral restraint track. The association asked that NHTSA harmonize the SSV propulsion system with that of the ADAC propulsion system used by Euro NCAP.

The Alliance said that since the new SSV is not readily available, its members have not been able to conduct a full set of tests to assess the repeatability and reproducibility of the SSV relative to the ADAC barrier or other commercially available test targets.

The Alliance requested additional clarification about the SSV initial test set-up to maintain the intended accuracy and repeatability of tests. Members of the Alliance also requested clarification regarding the definition of the target ''Zero Position'' coupled with the use of deformable foam at the rear bumper. Other SSV concerns raised by AGA were that the energy absorption of the SSV should be increased to minimize potential damage to the subject vehicle in the event of an impact, that the color of the lateral restraint track used in conjunction with the SSV be changed to avoid its being interpreted as being a lane marking by camera-based classification of lanes, that the possibility that the SSV could be biased toward radar systems, and how the SSV may appear to camera systems in various lighting conditions.

Some of the comments went beyond the changes discussed in the January 2015 notice. The AMA said that all AEB systems included in NCAP should be able to detect and register a motorcycle. If not, vehicle operators may become dependent on these new technologies and cause a crash, because the system did not detect and identify a smaller vehicle. Advocates, AGA, Bosch, CU, Continental, Honda, IIHS, MEMA, and NTSB said they would like a rating system for advanced crash avoidance technologies, including CIB and DBS, which reflects systems' effectiveness. Honda urged NHTSA to include pedestrian and head-on crashes among the types of crashes that are covered by NCAP evaluation of AEB systems in the future.

IV. Response to Comments and Agency Decisions

The majority of comments received were from the automobile industry. No commenter opposed including AEB systems in NCAP.

By including CIB and DBS systems in NCAP as Recommended Advanced Technologies, we will be providing consumers with information concerning advanced safety systems on new vehicles offered for sale in the United States. The vehicle models that meet the NCAP performance tests offer effective countermeasures to assist the driver in avoiding or mitigating rear-end crashes. In addition, the agency believes recognizing CIB and DBS systems that meet NCAP's performance measures will encourage consumers to purchase vehicles that are equipped with these systems and manufacturers will have an incentive to offer more vehicles with these systems.

[12] See *http://www.Regulations.gov,* NHTSA–2015–0006 for complete copies of comments submitted. Those submitting comments were: Advocates for Highway and Auto Safety (Advocates), Alliance of Automobile Manufacturers (Alliance), American Honda Motor Co., Inc. (Honda), American Motorcyclist Association (AMA), Association of Global Automakers, Inc. (AGA), Automotive Safety Council, Inc. (ASC), Consumers Union (CU), Continental Automotive Systems, Inc. (Continental), DENSO International America, Inc. (DENSO), Ford Motor Company (Ford), Infineon Technologies (Infineon), Insurance Institute for Highway Safety (IIHS), Malik Engineering Corp. (Malik), Mercedes-Benz USA, LLC (MBUSA), Motor and Equipment Manufacturers Association (MEMA), National Automobile Dealers Association (NADA), National Transportation Safety Board (NTSB), Robert Bosch, LLC (Bosch), Subaru of America (Subaru), Tesla, and TRW Automotive (TRW).

Comments focused on the details of how the inclusion of AEB systems into NCAP should be administered. The agency's responses to the comments received are below.

A. Harmonization

The Alliance, AGA, ASC, Continental, Ford, Honda, IIHS, and MEMA stated that they would like NHTSA to harmonize the SSV used in NCAP with the target vehicle used in Euro NCAP. Some commenters requested that NHTSA use the Euro NCAP towing system. They also wanted similar performance criteria, such as identical test scenarios, identical speeds, and identical tolerances.

NHTSA has carefully examined Euro NCAP specification and procedures for AEB technologies. The agency has decided against redirecting the program toward harmonization for several reasons, as discussed in more detail below.

For AEB systems and their application to the U.S. market, NHTSA's benefit estimation and test track performance evaluations began five years ago. This work is documented in three reports, ''Forward-Looking Advanced Braking Technologies Research Report'' (June 2012), ''Automatic Emergency Braking System Research Report'' (August 2014), and ''NHTSA's 2014 Automatic Emergency Braking (AEB) Test Track Evaluations'' (May 2015) with accompanying draft CIB and DBS test procedures.

Early into its test track AEB evaluations, NHTSA staff members met with representatives of Euro NCAP. Among the matters discussed at that time was the need for a realistic-appearing, robust test target that accurately emulated an actual vehicle. Specific attributes included a need to (1) be ''realistic'' (*i.e.,* be interpreted the same as an actual vehicle) to systems using radar, lidar, cameras, and/or infrared sensors to assess the potential threat of a rear-end crash; (2) be robust (able to withstand repeated impacts with little to no change in shape over time); (3) not impose harm to the test driver(s) or damage to the test vehicle under evaluation; and (4) be capable of being accurately and repeatably constructed.

Euro NCAP, as of 2014, included AEB systems in the technologies it rates in its ''Safety Assist'' assessments. The ratings for ''Safety Assist'' systems are in turn combined with ratings for adult occupant protection, child occupant protection, and pedestrian protection to determine a vehicle's overall rating. Euro NCAP assessments of AEB systems adopted the use of a target vehicle developed by ADAC. Known as the Euro NCAP Vehicle Target (EVT), this target is comprised of an inflatable and foam-based frame with PVC cover. The outside of the cover features a rear-aspect image of an actual car and retro-reflective film over the taillights. Internally, the EVT includes a combination of shapes and materials selected to be provide realistic radar return characteristics. To provide longitudinal motion, the EVT is towed.

At the time of its initial AEB evaluations, NHTSA attempted to evaluate the EVT device. We attempted to purchase an EVT from ADAC, but we were ultimately unable to obtain the device and its propulsion system. To avoid research program delays, NHTSA decided to develop and manufacturer its own strikeable surrogate vehicle. Like the EVT, the design goal of the NHTSA equipment was to be as safe, realistic, and functional as possible. The NHTSA SSV and tow equipment are both commercially available, and the drawings for the equipment are publicly available.

NHTSA has developed a carbon fiber strikeable surrogate vehicle (SSV) that uses original equipment taillights, reflectors, brake lights and a simulated license plate. These features help define the SSV so that it will be interpreted by a vehicle's AEB sensing system as being an actual vehicle. We believe that the SSV is a target vehicle that better mimics real vehicles than other target vehicles because its radar signature more closely resembles that of an actual vehicle. We will be using the SSV in the AEB validation testing to confirm that AEB systems meet the agency's performance criteria.

Manufacturers do not need to use the SSV to generate and submit data in support of their AEB systems that are recommended to consumers on *www.safercar.gov.* However, if the vehicle cannot satisfy the minimum performance criteria of the AEB NCAP program when tested by, the vehicle will not be able to retain its credit for the recommendation of AEB system by NCAP.

We will continue to look for ways in which U.S. NCAP and other consumer vehicle safety information programs around the world, particularly Australasian NCAP, Euro NCAP and the Insurance Institute for Highway Safety can harmonize and complement each other. We expect one of the benefits of the U.S. NCAP and other NCAP programs having different test procedures will be that these programs will eventually have data that could support how best to modify these programs harmonize some elements of the programs while retaining other elements that are unique and necessary to each programs.

B. Rating System for Cash Avoidance Technologies in NCAP

Advocates, AGA, Bosch, CU, Continental, Honda, IIHS, MEMA, and NTSB said they would like a rating system for advanced technologies, including CIB and DBS, which reflects systems' effectiveness. AGA said CIB and DBS should each be rated separately. AGA pointed out that some CIB and DBS systems already in the marketplace would not pass the NCAP performance criteria, but would still provide safety benefits. AGA stated that information regarding these safety benefits would not reach consumers under the current pass/fail approach. AGA further noted that Euro NCAP gives credit to vehicles for the tests they do pass.

In the January 28, 2015 request for comments, the agency sought comment on our plans to add AEB to the list of Recommended Advanced Technologies, a feature which appears on the agency's Web site *www.safercar.gov,* but did not seek comments on whether such a rating should appear on motor vehicles.

The agency fully recognizes that published requests for comments provide an opportunity for the public to address not only issues specifically raised in the request for comments, but also to express concerns in other areas. We will consider these comments in evaluating future changes to NCAP.

C. Draft Test Procedures [13]

1. AEB Performance Criteria Stringency

While supporting NHTSA's plan to establish minimum performance criteria that AEB systems must meet to be recommended to consumers in NCAP, Advocates criticized the planned AEB performance criteria as being insufficiently stringent. The Advocates' comments focused on the speeds at which Euro NCAP testing is conducted, including:

- Speeds up to 31 mph (50 kilometers per hour (km/h)) such that 19 percent of the possible points for Euro NCAP AEB are awarded for performance at approach speeds above the planned NHTSA NCAP testing.
- Lead vehicle stopped scenarios are tested at subject vehicle speeds of a range of 6 to 31 mph (10 to 50 km/h), as compared with the planned NHTSA NCAP lead vehicle stopped test which will be conducted at a single speed of

[13] See *http://www.Regulations.gov,* NHTSA–2012–0057–0038 for copies of the test procedures that were the basis of comments received.

25 mph (40 km/h) and permit impact at speeds up to 15 mph (24 km/h).

The Advocates further noted that Euro NCAP is proposing to incorporate additional, more stringent AEB tests and ratings in its star rating system beginning in 2016. These will include:

• Lead vehicle stopped scenarios at subject vehicle (SV) speeds up to 50 mph (80 km/h).

• Lead vehicle moving slower tests with a SV speed of 19 to 50 mph (30 to 80km/h) approaching a principal other vehicle (POV) moving at 12 mph (20 km/h), for a closing speed of 7 to 38 mph (11 to 61 km/h). Advocates noted that the planned NHTSA approach would include lead vehicle moving slower tests with SV/POV speeds of 25/10 mph (40/16 km/h) and 45/20 mph (72/32 km/h), for a maximum closing speed of 25 mph (40 km/h).

• Lead vehicle braking tests with SV/POV speeds at 31/31 mph (50/50 km/h) with a lead vehicle deceleration of 0.2 to 0.6g (2 and 6 meters per second squared [m/s^2]).

Conversely, the Alliance suggested we reduce the stringency of the performance criteria by deleting the lead vehicle stopped scenarios entirely.

The proposed NCAP test scenarios and test speeds are in part based on crash statistics, field operational tests, and testing experience. In developing the scenarios and test speeds for this test program we considered work done to develop the forward collision warning performance tests. In reviewing the information concerning crashes, we noted that the most common rear-end pre-crash scenario is the Lead-Vehicle-Stopped, at 16 percent of all light vehicle rear-end crashes (975,000 crashes per year).[14]

In evaluating the test speeds we considered the practicality of safely performing crash avoidance testing without damaging test vehicles and/or equipment should an impact with the test target occur during testing. Testing vehicles at speeds over 45 mph (72 km/h) may have safety and practicality issues. Testing at speeds over 45 mph (72 km/h), the speed used in NCAP's forward collision warning test, could potentially cause a safety hazard to the test driver and the test engineers. The problem arises if the vehicle being tested fails to perform as expected. For the FCW tests, warning system failure is not a problem because the nature of the test allows the test driver to steer away from the principal other vehicle, without any vehicle-to-vehicle contact. However, for the AEB tests, there can be no evasive steering. At speeds over 45 mph (72 km/h), we believe that the test vehicles in the AEB program might experience frontal impact of the subject vehicle into the principal other vehicle if there is a system failure or speed reduction that does not result in a reduction of velocity of 25 mph (40 km/h). This may be a hazard to the test drivers and to people around the test track. Also potential front end damage at higher speeds, for the same reasons, may have unacceptable test program delays or make completion of the tests impractical. If front end damage to the test vehicle occurs, the agency would have to repair the test vehicle and recalibrate its sensing system. This might take weeks to repair and to restart the testing.

Another upper speed limitation is the practicality of running the tests. For example, the Lead Vehicle Decelerating test becomes difficult. The SSV rides on a 1500-ft (457 m) monorail to constrain its lateral position within the test lane, an attribute that helps improve the accuracy and repeatability that the slower moving and decelerating lead vehicle scenarios may be performed. However, this track length is too short to safely accelerate the SSV to 45 mph (72 km/h), establish a steady state SV-to-SSV headway (to insure consistent test input conditions), then safely decelerate the SSV to a stop at 0.3g; conditions like those specified in the FCW NCAP decelerating lead vehicle test scenario. These logistic restrictions have prevented NHTSA from evaluating the durability of the SSV when subjected to the forces of being towed at 45 mph (72 km/h). To address these concerns, the NCAP CIB and DBS Decelerating Lead Vehicle tests are designed to be performed from 35 mph (56 km/h).

We believe the test vehicle speeds specified in this program, (25, 35 and 45 mph) (40, 56 and 72 km/h) represent a large percentage of severe injuries and fatalities and represent the upper limit of the stringency of currently available test equipment.

We are therefore retaining the test speeds in the test procedures.

2. Brake Activation in DBS Testing, Profile, Rate and Magnitude

a) Brake Input Profile Selection

The Alliance suggests that because of the differences in DBS design and performance abilities among vehicles (*i.e.* brake pads and rotors, tires, suspension, etc.), the vehicle manufacturers should be allowed to specify the brake input. (Brake input does not apply to the CIB test because the CIB test does not include brake input in the subject vehicle.) Vehicle manufactures thus far have taken several approaches to DBS system activation based on brake pedal position, force applied, displacement, application rate time-to-collision, or a combination of these characteristics. All of these characteristics can represent how a driver reacts in a panic stop, versus a routine stop. The Alliance suggests the agency should use the same characteristic used by the vehicle manufacturer, to assure the system is activated the way the manufacturer has intended. Conversely they indicate the agency should not dictate a specific application style and create an unrealistic triggering condition.

In the previous version of the DBS test procedures (August 2014), commenters pointed out that the brake characterization process used would typically result in decelerations that exceeded the allowable 0.3g. In order to address this concern, NHTSA evaluated a revised characterization process that now include a series of iterative steps designed to more accurately determine the brake application magnitudes capable of achieving the same baseline (braking without the effect of DBS) deceleration of 0.4g for all vehicles. This deceleration level is very close to the deceleration realized just prior to actual rear-end crashes, and is consistent with the application magnitude used by Euro NCAP during its test track-based DBS evaluations. This process is included, in great detail, in the updated version of the DBS test procedure.

(b) Brake Application Rate

The Alliance pointed out that the brake pedal application rate of 279 mm/s maximum for DBS activation differs from Euro NCAP, where the application rate can be specified by a manufacturer as long as it is within a range of 200 to 400 mm/s (8 to 16 in/s). Noting that there will always be differences in dynamic abilities between vehicles, the Alliance said that specifying the rate to 279 mm/s increases the DBS system's sensitivity and can lead to more false activations. The Alliance suggested that NCAP harmonize with Euro NCAP to allow manufacturers the option to specify a brake pedal application rate limit beyond 279 mm/s, up to 400 mm/s.

MBUSA provided a bit more detail in its comments. MBUSA noted that values above 360 mm/s are more representative of emergency braking situations and will be addressed in vehicle designs using conventional brake assist rather than AEB.

[14] ''Pre-Crash Scenario Typology for Crash Avoidance Research'', DOT HS 810 767, April 2007, Table 13.

In a preliminary version of its DBS test procedure, NHTSA specified a brake application rate of 320 mm/s. Feedback from industry suggested this was too high, indicating it was at or near the application rate used as the trigger for conventional brake assist. This is problematic because the agency wants to provide NCAP credit for DBS, not for conventional brake assist, if the vehicle is so-equipped. To address this problem, the application rate was reduced to 7 in/s (178 mm/s) in the June 2012 draft DBS test procedure. Feedback from vehicle manufactures was that this reduction to 178 mm/s went too low. A system able to activate DBS with such a brake application rate on the test track may potentially result in unintended activations during real-world driving. As an alternative, multiple vehicle manufacturers suggested the application rate be increased to 10 in/s (254 ± 25.4 mm/s). This value was implemented in the August 2014 draft DBS test procedure.

The Euro NCAP procedure specifies a range of brake pedal application speed of 7.9 to 15.8 in/s (200–400 mm/s). MBUSA noted that values significantly above 14.2 in/s (360 mm/s) are more representative of emergency braking situations and are addressed by conventional brake assist not using forward looking sensor technology.

Information provided over the course of this program has caused us to initially select a value less than 360 mm/s and greater than 178 mm/s. We recommend 254 ± 25.4 mm/s, and we have no substantive basis to change this value again. Moreover, this value is well within the range of the Euro NCAP specification. The value of 254 mm/s appears a reasonable representation of the activation of DBS in an attempt to stop, rather than slow down, but not fast enough to represent an aggressive emergency panic stop of greater than 360 mm/s.

We are retaining the proposed values of 254 ± 25.4 mm/s (10 in/s ± 0.1 in/s) for the brake pedal application rate on the DBS test.

(c) Brake Application Magnitude

The Alliance commented that the braking deceleration threshold should be 0.4g (4.0 m/s^2) or higher. Citing Euro NCAP's specification for pedal displacement to generate a deceleration of 0.4g (4.0 m/s^2), The Alliance said using brake performance of at least 0.3g (3 m/s^2) deceleration as a threshold for DBS activation, as in the draft NCAP test procedure, will lead to calibrations too sensitive and generate excessive false positives or overreliance on the system.

The Alliance said the threshold for DBS intervention should be toward the upper acceptable deceleration rates for adaptive cruise control systems. These upper rates are up to 0.5g (5 m/s^2) at lower speeds and up to 0.35g (3.5 m/s^2) at higher speeds. The Alliance believes that a lower position for 0.3g (3 m/s^2) will lead to calibrations too sensitive in the real world and will generate excessive false positives or overreliance on the system.

MBUSA said NHTSA's proposed magnitude of 0.3g (3 m/s^2) more closely resembles standard braking. It recommended brake pedal application magnitude of near 0.4g (4 m/s^2) that truly represents a hazard braking situation. MBUSA said that according to its field test data, the median brake amplitudes that occur ahead of real-world DBS activations are closer to 0.425g (4.3 m/s^2). MBUSA noted that for Euro NCAP DBS testing, a brake magnitude of 0.4g (4 m/s^2) is used.

The brake characterization process described in NHTSA's August 2014 draft DBS test procedure was intended to provide a simple, practical, and objective way to determine the application magnitudes used for the agency's DBS system evaluations. In this process, a programmable brake controller slowly applies the SV brake with a pedal velocity of 1 in/s (25 mm/s) from a speed of 45 mph (72 km/h). Linear regression is then applied to the deceleration data from 0.25 to 0.55g to determine the brake pedal displacement and application force needed to achieve 0.3g. These steps are straight-forward and the per-vehicle output is very repeatable. However, when these outputs are used in conjunction with the brake pedal application rate used to evaluate DBS (*i.e.,* rates ten times faster than used for characterization), the actual decelerations typically exceed 0.3g. Although this is not undesirable per se (crash data suggest the braking realized just prior to a rear-end crash is closer to 0.4g), the extent to which these differences exist has been shown to depend on the interaction of vehicle, brake application method, and test speed.[15]

To address this concern, NHTSA has revised the characterization process to include a series of iterative steps designed to more accurately determine the brake application magnitudes capable of achieving the same baseline (braking without the effect of DBS) deceleration of 0.4g for all vehicles. The deceleration level is very close to the deceleration observed just prior to many actual rear-end crashes,[16] and is consistent with the application magnitude used by Euro NCAP during its test track-based DBS evaluations. Vehicle manufacturers have told NHTSA that encouraging DBS systems designed to activate in response to inputs capable of producing 0.4g, not 0.3g, deceleration will reduce the potential for unintended DBS activations from occurring during real-world driving.

NHTSA will adopt its revised brake characterization process, and include it as part of the DBS procedure. This process will ensure baseline braking for each test speed, (25, 35, and 45 mph) will be capable of producing 0.4 ± 0.025g.

3. Use of Human Test Driver Versus Braking Robot

TRW advocated the use of a human driver in DBS testing to reduce the test setup time and reduce the testing costs. Bosch supports the test procedures as currently written calling for the use of a braking robot in both CIB and DBS testing.

While the NHTSA AEB test procedures can be performed with human drivers, satisfying the brake application specifications in the DBS test procedures would be challenging for a human driver. The agency acknowledges that some test drivers are capable of performing most or all of the maneuvers in this program within the specifications in the test procedures. However, we believe a programmable (*i.e.* robotic) brake controller can more accurately reproduce the numerous braking application specifications debated in this notice. Moreover, as these technologies evolve and the algorithms are refined to create earlier, more aggressive responses to pending crashes, while at the same time avoiding false positives, the specifications for the test parameters may become more complex and more precise. The agency will continue to conduct all of the DBS NCAP tests using a brake robot.

Manufacturers, suppliers and test laboratories working for these entities may choose not to use a brake robot, nor do they need to follow the test procedures exactly. However they should be confident their alternative methods demonstrate their systems will pass NHTSA's tests because NHTSA will conduct confirmation testing as outlined above. If a system fails NHTSA's confirmation testing, the

[15] See *http://www.Regulations.gov*, NHTSA 2012–0057–0037.

[16] See *http://www.Regulations.gov*, NHTSA 2012–0057–0037.

vehicle in question will not continue to receive credit for its DBS system.

4. Brake Burnishing

NHTSA indicated we plan to use the brake burnishing procedure from Federal Motor Vehicle Safety Standard (FMVSS) No. 135, ''Light vehicle brake systems.'' IIHS said this is more pre-test brake applications than is needed. IIHS said its research shows that brake performance can be stabilized for AEB testing with considerably less effort. It cited a test series of its own involving seven vehicle models with brand new brakes in which AEB performance stabilized after conducting 60 or fewer of the stops prescribed in FMVSS No. 135. IIHS said its AEB test results after all 200 brake burnishing stops were not appreciably different from those conducted after following the abbreviated procedure described in FMVSS No. 126, ''Electronic stability control systems.''

Ford urged NHTSA to adopt the Euro NCAP's brake burnishing procedure and tire characterization from the Euro NCAP AEB protocol, which it said can be completed in a few hours.

Tesla said the test procedures' specification for a full FMVSS No. 135 brake burnish is not clearly explained. They asked about how often the burnishing had to be conducted and how the brakes are to be cooled.

FMVSS No. 135 ''Light vehicle brake systems'' is NHTSA's light vehicle brake performance standard. The purpose of the standard is to ensure safe braking performance under normal and emergency driving conditions. The burnish procedure contained in FMVSS No. 135 is designed to ensure the brakes perform at their optimum level for the given test condition and to ensure that test result variability is minimized. The burnish procedure in FMVSS No. 135 includes 200 stops from a speed of 80 km/h (49.7 mph) with sufficient brake pedal force to achieve a constant deceleration of 3.0 m/s^2 (0.3g). It also specifies a brake pad temperature range during testing.

The commenters suggested reducing the burnishing for two reasons. First, they want to reduce the testing burden. The IIHS states that their research shows that the foundation brake performance can be stabilized after considerably less effort. Their testing showed performance stabilization after 60 stops. Second, others want the procedure to be harmonized with the Euro NCAP. The Euro NCAP brake burnish procedure includes 13 stops total and a cool-down and is otherwise identical to the brake conditioning in FMVSS No. 126.

The agency has considered these comments. The agency believes that a full 200-stop burnishing procedure is critical to ensuring run-to-run repeatability of braking performance during AEB testing and also ensures that the vehicle's brakes performance does not change as the test progresses. The intent of the 200-stop burnishing is deemed the appropriate procedure for ensuring repeatability of brake performance in FMVSS No. 135, the agency's light vehicle brake system safety standard. The performance measured in these AEB tests relies on the vehicle's braking system to reduce speed in order to mitigate or avoid a crash with the test target. Since the agency has adopted the 200-stop procedure as the benchmark for repeatable brake performance, dropping the number of stops might create a repeatability situation for some brake system designs and therefore a repeatability situation for some AEB systems. Therefore, the agency will test AEB consistently with its light vehicle brake system tests in FMVSS No. 135.

Tesla said the need for a full FMVSS No. 135 brake burnish is not clearly explained. They interpreted the test procedure to specify brake burnishing before each and every test run.

Tesla misunderstands the test procedure. NHTSA will perform the 200-stop brake burnish only one time prior to any testing unless any brake system pads, rotors or drums are replaced, in which case the 200-stop burnish will be repeated. After the initial burnish, additional lower-speed brake applications are done only to bring the brake temperatures up to the specified temperate range for testing.

Tesla also suggested that NHTSA should better explain how, and to what extent, the agency expects the brakes to be cooled before conducting each individual test run and series of runs. Tesla said adding these cooling procedures will have test performance implications.

The process of driving the vehicle until the brake cools below a temperature between 65 °C (149 °F) and 100 °C (212 °F) or drive the vehicle for 1.24 miles (2 km), whichever comes first, has been an accepted practice in brake testing such as in FMVSS No. 135 testing. It is the brake temperature at the time of the test, not how that temperature was obtained, that is the reportedly critical characteristic in brake performance. Moreover, specifying an overly-detailed procedure may not result in desired temperature. The amount of heating or cooling may be affected by the vehicle design and the ambient conditions of the testing. Alterations in the process may be needed to achieve the temperature range.

For the AEB test procedures, NHTSA is maintaining its use of the brake burnish procedure and the initial brake temperature range currently used in its light vehicle brake standard, FMVSS No. 135.

5. Feasibility and Tolerances

TRW said the test procedures may not completely cover the control and tolerance around the deceleration of the POV during the Lead Vehicle Decelerating (LVD) portions of the test. It cited as an example, that brakes were applied to a level providing deceleration of 0.3g with a tolerance of +/− 0.03g, but the ability to control that parameter was not among the list of items used for the validity of test criteria, nor is it present in the test procedure for how to monitor and control that parameter for test validity.

The agency disagrees with TRW that the parameter was not among the list of items used for the validity of a test criteria. The test procedure for this parameter is described in the section titled ''POV Brake Application. The test procedure provided details of this specification, such as the beginning or onset of the deceleration period, the nominal constant deceleration, the time to achieve the 0.3g deceleration, and the average tolerance of the deceleration after the nominal 0.3g deceleration is achieved, and the point at which the measurement is finished. We believe TRW is stating that this description of the deceleration parameters is not itemized in the list of 10 items specified in the section ''SV Approach to the Decelerating POV''. This list contains items that must be controlled during the entire test, not just during the deceleration period. Since the deceleration does not occur during the entire test we will not be adding the specification to this list. The fact that the specifications are listed makes these deceleration specifications necessary for a valid test, even though the word ''valid'' does not appear in the section called ''POV Brake Application''.

TRW states that the test procedures do not specify how the test laboratory will monitor the declaration parameters. NHTSA has recommended in Table 2 of the test procedures that the contractor will need to have an accelerometer to measure the longitudinal deceleration of the SV and POV. These instrumentation recommendations include specifications for the range, resolution and accuracy of these instruments. The test procedure does not specify how the contractor is to monitor or control the acceleration during this test. As much as possible, the agency specifies performance specifications, not design specifications. We depend on the expertise of the contractor to achieve these performance goals. We then monitor the output of this performance.

6. Lead Vehicle Stopped Tests (Scenarios)

MEMA supported the planned AEB test scenarios as representative of typical, real-world driving occurrences. It said the scenarios are appropriate ways to evaluate CIB and DBS systems.

The Alliance said the lead vehicle stopped test should be deleted and the agency should only uses the lead vehicle deceleration to a stop test because 50 percent of police-reported cases rear-end crashes coded as lead stopped vehicle are actually lead vehicle decelerating to a stop. They argued such a change would permit more affordable systems and would reduce false activations.

In the August 2014 research report,[17] we adjusted estimates of AEB-relevant rear-end crashes by splitting the estimated number of police-reported lead-vehicle-stopped crashes evenly between lead vehicle stopped and lead vehicle decelerating to a stop. This change was made based on comments to the 2013 AEB request for comments and additional analysis of the crash data.

The use of the lead stopped vehicle scenarios is very important. Even if 50 percent of the lead-vehicle stopped crashes are re-classified as lead vehicle decelerating to a stop, hundreds of thousands of lead-vehicle stopped crashes still occur each year. For this reason, and to be consistent with the Euro NCAP tests, NHTSA does not believe it is appropriate to exclude the lead-vehicle stopped scenario from the CIB and DBS performance evaluation.

Based on the test track testing we have conducted since 2013, we have found that vehicles able to satisfy our LVS evaluation criteria also do so for the LVD–S test scenario. However, not all vehicles that pass our LVD–S pass the LVS scenarios.

Therefore we have decided to reduce the test burden by removing the lead vehicle deceleration to a stop (LVD–S) test and retaining the lead vehicle stopped (LVS) test.

7. False Positive Tests (Scenarios)

AGA, ASC and TRW said only radar-based AEB systems will react to NHTSA's steel trench plate based false positive test, whereas other types of systems, camera- and lidar-based for example, will not be affected. AGA said that unless a test that could challenge both camera and radar systems can be identified, the false positive test should be dropped. MEMA also noted that since radar systems are sensitive to the steel trench plate false positive test, this may impact the comparative nature of radar versus other systems such as camera or lidar sensors. MEMA encouraged NHTSA to evaluate the procedure and continue to make further improvements to avoid any potential test bias.

TRW suggested two other possible false positive tests, one that would reflect ''the most typically observed false-positive AEB event'' a dynamic passing situation and the other in which the test vehicle drives between two stationary vehicles. Bosch said there is no single test that will fully address the problem of false activations.

The Crash Avoidance Metrics Partnership (CAMP) Crash Imminent Braking (CIB) Consortium endeavored to define minimum performance specifications and objective tests for vehicles equipped with FCW and CIB systems. While assessing the performance of various system configurations and capabilities, the CAMP CIB Consortium also identified real-world scenarios capable of eliciting a CIB false positive.[18] Additionally, two scenarios from an ISO 22839 ''Intelligent transport systems—forward vehicle collision mitigation systems—Operation, performance, and verification requirements'' (draft) were used to evaluate false positive tests, two tests with vehicles in an adjacent lane. The CAMP study originally documented real world situations that could be used to challenge the performance of the systems, such as an object in roadway, an object in a roadway at a curve entrance or exit, a roadside stationary object, overhead signs, bridges, short radius turns, non-vehicle and vehicle shadows, and target vehicles turning away.[19] NHTSA performed a test program of six of the CAMP-identified scenarios that could produce a positive. The eight maneuvers selected and tested by NHTSA in considering a false-positive test were decelerating vehicle in an adjacent lane—straight road, decelerating vehicle in an adjacent lane—curved road, driving under an overhead bridge, driving over Botts' Dots in the roadway, driving over a steel trench plate, a stationary vehicle at a curve entrance, a stationary vehicle at a curve exit, and a stationary roadside vehicle.

During testing we found that all CIB activations presently known by NHTSA are either preceded by or are coincident with FCW alerts. For the testing, we use the FCW warning as a surrogate for the CIB and DBS activations. Of the maneuvers used in the study, FCW activations were observed during the conduct of four scenarios: Object in roadway—steel trench plate, stationary vehicle at curve entrance, stationary roadside vehicles, and decelerating vehicle in an adjacent lane of a curve. Of the maneuvers capable of producing an FCW alert, CIB false positives were observed only during certain Object in Roadway—Steel Trench Plate tests, and for only one vehicle. The vehicle producing the CIB false-positives did so for 100 percent of the object in roadway—steel trench plate tests trials. No FCW or CIB activations were observed during the decelerating vehicle in an adjacent lane (straight), driving under an overhead bridge, objects in roadway—Botts' Dots, and stationary vehicle at curve exit maneuvers.

The steel trench plate was the easiest to set up, the least complex to perform, and a realistic test because the scenario is encountered during real world driving. Also, the steel trench plates are similar to some metal gratings found on bridges. The steel trench plate used in this program is believed to impose similar demands on the system functionality, albeit with better test track practicality (*i.e.,* cost, expediency, and availability).

Both the agency and some commenters believe that a false-positive test should be included in this program. Conversely, commenters state that the steel trench plate test is biased against radar systems.

The agency will retain the steel trench plate false-positive test in this program and will continue to monitor vehicle owner complaints of false positive activations. The agency has received consumer complaints of false-positives of these AEB systems. This program should make an effort to reduce false-positives in the field. We believe a false-positive test is important to be included in the performance tests for these technologies. We disagree that the steel trench plate is biased against radar systems. The agency establishes performance-based tests. The purpose of the performance specifications in this program is to discern and discourage systems that do not perform sufficiently in real-world scenarios. If the steel trench plate identifies a notable

[17] *http://www.Regulations.gov,* Docket NHTSA–2012–0057–0037.

[18] ''Evaluation of CIB System Susceptibility to Non-Threatening Driving Scenarios on the Test Track'', July 2013, DOT HS 811 795.

[19] ''Objective Tests for Automatic Crash Imminent Braking (CIB) Systems Appendices Volume 2 of 2'', September 2011, DOT HS 811 521A.

performance weakness in system, that weakness should be pointed out to consumers.

It is impossible to recreate every possible source of false-positive activations experienced during real-world driving. The steel trench plate tests are included as one significant common source of false positives during our CIB and DBS test track evaluations. We encourage vehicle manufactures to include identified false-positive scenarios in system development. If in the future, other scenarios become prevalent and are brought to our attention through consumer complaints, we will consider including them in our test protocol.

8. Steel Plate Weight

Noting that the steel trench plate currently specified in the test weighs 1.7 tons and is difficult to put in place, AGA urged the agency to allow an alternative plate if manufacturers can verify its performance. Concerning the weight of the steel trench plate, the test procedures do not specify this plate to be positioned on a part of the test track used for other tests. The plate is not installed or embedded, merely laid on top of a road surface. We do not see a need to be concerned with weight or the size of this test item. We are not developing a lighter weight version of this plate at this time.

9. DBS False Activation Test Brake Release

The Alliance requested that the brake application protocol and equipment for the DBS steel trench plate scenario test procedure should provide specification for a pedal release by the driver during the false positive test. The Alliance states that some systems have mechanisms that allow the driver to release the DBS response if a false activation occurs. One of the simplest and most intuitive mechanisms is for the driver to release the brake pedal. This is not in the DBS false positive test.

The agency does not agree with the Alliance's recommendation that a way for the driver to override false positives should be provided in the test scenario. The purpose of the false-positive test is to ensure that they do not occur during this performance test. If the vehicle's DBS system activates in reaction to the steel trench plate, then this is the kind of false-positive for which the test procedure is designed to identify. The agency feels that the potential consequences of a false positive are sufficient to warrant a test failure.

The agency has decided not to add a brake release action to the false-positive test procedures.

10. CIB False Activation Test Pass/Fail Criteria

The Alliance and Bosch commented that the allowable CIB steel plate test deceleration threshold of 0.25g was too low. Bosch and the Alliance observed that some current state-of-the-art forward collision warning (FCW) portion of these AEB systems in the market use a brake jerk to warn the driver. The majority of the current brake-jerk applications for FCW use a range of 0.3g–0.4g and the maximum speed reduction normally does not exceed 3 mph (5 km/h), Bosch said. Bosch suggested increasing the threshold of the CIB false activation failure to 0.4g or using a maximum speed reduction, rather than peak deceleration rate, as the key factor for determining a pass/fail result for this test. Setting the fail point of the false activation test at 0.25g would restrict haptic pedal warning design to below 0.25g.

The steel plate test is intended to evaluate CIB performance. This test is not intended to evaluate a haptic FCW capable of producing a peak deceleration of at least 0.25g before completion of the test maneuver. To make this distinction clear, we will raise the false positive threshold to a peak deceleration of 0.50g for CIB, and 150 percent of that realized with foundation brakes during baseline braking for DBS.

11. Pass/Fail Criteria for the Performance Tests

The Alliance, Honda, AGA and Ford said that the determination that AEB technologies will pass each of the tests in the test procedure seven out of eight times should be changed to be consistent with the five passes out of seven trials that is specified by the NCAP forward collision warning (FCW) test procedures. The Alliance and Ford noted that the agency did not provide data to support the seven out of eight criterion approach. Ford presented the results of a coin toss experiment, which it said indicated that the five out of seven criteria covers 93.8 percent of all possible outcomes, a level whose robustness compares favorably to the 99.6 percent of all possible outcomes covered by the seven out of eight criterion.

Tesla said the planned test procedures include too many tests.

NHTSA notes that for the FCW NCAP, the vehicle must pass five out of seven trials of a specific test scenario, to pass that scenario. The vehicle must pass all scenarios to be recommended.

The agency believes the current FCW test procedure criterion of passing five out of seven tests has successfully discriminated between functional systems versus non-functional systems. Allowing two failures out of seven attempts affords some flexibility in including emerging technologies into the NCAP program. For example, NHTSA test laboratories have experienced unpredictable vehicle responses, due to the vehicle algorithm designs, rather than the test protocol. Test laboratories have seen systems that improve their performance with use, systems degrading and shutting down when they do not see other cars, and systems failing to re-activate if the vehicle is not cycled through an ignition cycle.

To be in better alignment with the FCW NCAP tests, we are changing the pass rate for the CIB and DBS tests used for NCAP to five out of seven tests within a scenario.

12. Vehicle Test Weight/Weight-Distribution

AGA said the current test protocol allows testing a vehicle up to the vehicle's gross vehicle weight rating (GVWR). The Alliance noted that the Euro NCAP AEB test protocol defines the vehicle weight condition as ±1% of the sum of the unladen curb mass, plus 440 lb (200 kg). AGA asked that the test protocol be amended to include an upper weight limit, similar to the way that Euro NCAP's AEB test specifies the vehicle to be loaded with no more than 440 lb (200 kg). Specifically, the Alliance recommended replacing the current language in Section 8.3.7 of the current CIB and DBS test procedures with:

> ''7. The vehicle weight shall be within 1% of the sum of the unloaded vehicle weight (UVW) plus 200kg comprised of driver, instrumentation, experimenter (if required), and ballast as required. The front/rear axle load distribution shall be within 5% of that of the original UVW plus 100% fuel load. Where required, ballast shall be placed on the floor behind the passenger front seat or if necessary in the front passenger foot well area. All ballast shall be secured in a way that prevents it from becoming dislodged during test conduct.''

The agency inventoried the current loads used at our test laboratory. The instrumentation and equipment currently used weighs approximately 170 lb (77 kg). Allowing two occupants in the vehicle could push the total load over 440 lb (200 kg) upper bound suggested by AGA and he Alliance.

The agency would like to reserve the flexibility of having an additional person in the vehicle during testing to assist in the testing process, observe the tests and perhaps train on the testing process. Also, we measured the effects of our standard load of one driver plus the instrumentation and equipment on weight distribution, and found that the percentage of weight on the front axle tended to increase by about 1 percent, on average. We assume adding a passenger in the rear seat would be approximately the same. This is well within the 5 percent variance from the unloaded weight as suggested by the Alliance.

We have considered the comments that vehicle weight and weight distribution will have a large effect on the performance of CIB systems. We believe that this comment concerns both the vehicle sensing system alignment and braking performance repeatability. If it is true that weight and weight distribution consistent with predictable consumer usage have a large effect on the performance of CIB systems, this is a concern of the reliability of these systems to consumers.

The agency will specify a maximum of 610 lb (277 kg) loading in these test programs. This will allow some test equipment and personnel flexibility, while still maintaining some reasonable cap on the loading changes. We also note that we may raise this limit on a case-by-case basis and in consultation with the vehicle manufacturer, if there is a need for additional equipment or an additional person that we have not anticipated at this time.

13. Lateral Offset of SV and SSV; Test Vehicle Yaw Rate

AGA urged the agency to adopt the +/−1 ft (0.3 m) lateral offset and 1 degree per second yaw rate specifications that were in previous versions of the test procedures as opposed to the +/−2 ft (0.6 m) in the latest version to improve test accuracy and better reflect anticipated real world conditions. DENSO agreed that the 1 foot lateral offset (0.3 m) and 1 degree per second yaw rate should be restored. MEMA also noted the change in yaw and lateral orientation of the SV and POV from the 2012 draft test procedures to the 2014 test procedure draft and asked for clarification. The Alliance noted that the allowable vehicle yaw rate in each test run has been increased to +/−2 degrees per second from +/−1 degree per second in the previous versions of the test procedures. Bosch recommended that NHTSA consider using a steering robot or some other means of controlling the lateral offset.

Confirming this tolerance range may be difficult with the ADAC EVT surrogate used by Euro NCAP and other institutions because the surrogate's position relative to the road or the subject vehicle is not directly measured. The measurement equipment is stored in the tow vehicle, not in the ADAC surrogate.

Review of the NHTSA's 2014 AEB test data indicate that decreasing the lateral displacement tolerance from ±2 ft to ±1 ft (±0.6 m to ±0.3 m) should not be problematic. Of the 491 tests performed, only 13 (2.7 percent) had SV lateral deviations greater than 1 ft (0.3 m). Those that did ranged from 1.06 to 1.21 ft (0.32 m to 0.37 m). The use of the SSV monorail makes conducting the test within the allowable 1-ft lateral displacement this feasible because the SSV position is controlled by the monorail.

Through testing conducted by the NCAP contractor, we have determined that we should be able to satisfy the tighter tolerance. Testing performed by NHTSA's VRTC support this finding. We believe we can perform this testing with a human driver steering the vehicle, rather than a steering robot.

For SV yaw rate, we will tighten the test tolerance to ±1 deg/sec. For the SV and POV, we will tighten the test tolerance to ±1 ft (±0.3 m) relative to the center of the travel lane. The lateral tolerance between the centerline of the SV and the centerline of the POV will be tightened to ±1 ft (0.3 m). Additionally, we will be filtering these data channels with a 3 Hz digital filter (versus the 6 Hz used previously) to eliminate short duration data spikes that would invalidate runs that are otherwise valid. We are also eliminating the lateral offset and yaw rate validity specifications for the brake characterization (12.2.1.5 and 6) and false positive baseline tests (12.6.1.5 and 6) of the DBS test procedure. This data is not needed to ensure detection and braking repeatability; with no POV in these tests, it is not necessary to be in the exact center of the lane, for example.

14. Headway Tolerance

Subaru recommended in its comment that NHTSA adopt a headway tolerance of 5 ft (1.5 m) in the test procedures. No explanation of why this is needed was provided in the comments. The headway tolerance is the allowable variance in the longitudinal distance between the front of the subject vehicle and the rear of the principal other vehicle ahead of it as the two vehicles move. The current tolerance is ±8 ft (2.4 m).

A review of our test data reveals a 5 feet (1.5 m) tolerance is too tight unless the agency were committed to fully-automated AEB testing is conducted. At this time we do not plan to fully automate the two test vehicles (the SV and the vehicle towing the POV). The 8 ft (2.4 m) tolerance currently specified in our AEB procedures for the LVD tests is the same used for FCW NCAP testing. We are not aware of this tolerance causing any problems in AEB testing. We will leave the tolerance at 8 ft (2.4 m).

15. Speed Range, Upper and Lower Limits

The Alliance, AGA, Continental, Ford, Honda, IIHS, and MBUSA said the activation limits of the test procedures are too high at the upper end and too low at the lower end or otherwise took issue with the speed parameters of the test procedures.

AGA objected to specifying systems to operate up to 99.4 mph, noting that 80 percent of crashes covered by these systems occur at speeds of 50 mph or less. The high speed will preclude systems that are very effective and will create safety hazards for test drivers and test tracks, AGA added.

Continental said although it is listed as a definition, the CIB/DBS active speed range is described as a performance specification, which they said makes it unclear if NHTSA's intent that the definition speed range must be met in order to receive the NCAP recommendation. If this is the case Continental said it would be necessary to define the associated performance criteria to meet the specification that the system must remain active, especially at the maximum speed, to achieve the balance between effectiveness and false positives at these specified higher speeds.

As suggested by Continental's comments, the upper and lower activation limits were intended to define the AEB systems under consideration. There is no need to define these systems in the test procedure with a reference to their upper and lower activation limits. The agency hopes that the systems made available on light vehicles sold in the United States will be active at these speeds. However, the primary focus is to assure that AEB systems meet the specifications of the test procedures and activate at the speeds at which an AEB system can reasonably be expected to avoid or mitigate a rear end crash. Therefore, the references to the upper and lower activation limits will be removed from the NCAP AEB test procedures.

16. DBS Throttle Release Specification

The Alliance states the current throttle release specification within 0.5 seconds from the onset of the FCW warning will result in test results that are different between manufacturers. This specification in the DBS test procedure was established to simulate the human action of removing the foot from the throttle and placing it on the brake. In the test setup, the test driver releases the throttle at a specific time to collision relative to the DBS brake robot braking initiating the brake application. System design strategies across manufacturers vary on how to ascertain when a driver needs assistance and are often based on driver inputs on the steering wheel and pedals. The Alliance suggests that to avoid future interference with the optimization of warning development, we should consider other options.

The Alliance requested that the agency consider the following options:

Maintain Throttle Position to the Onset of Brake Application: The agency believes this is not possible for vehicles such as the Infiniti Q50. For this vehicle, part of the FCW is a haptic throttle pedal that pushes back up against the driver's foot. This change in pedal position would violate a constant pedal position criterion. While it may be possible to hold the throttle pedal position fixed with robotic control, NHTSA has not actually evaluated the concept, and the agency does not plan to use a robot on subject vehicle throttle applications during the FCW and/or AEB performance testing.

Throttle Release Relative to a Braking Initiation Time to Collision (TTC): In this approach the driver monitors the SV-to-POV headway, and responds at the correct instant. Although NHTSA has experience with this technique,[20] the agency has concerns about incorporating it into the LVS, LVM, and LVD scenarios used to evaluate DBS because the agency does not intend to automate SV throttle applications for these tests. Since the brake applications specified in NHTSA's DBS test procedure are each initiated at a specific TTC, this approach would also cause the throttle release to occur at a specific TTC. If this causes the commanded throttle release occur after the FCW is presented, it may not be possible for the driver to maintain a constant throttle pedal position between issuance of the FCW and the commanded throttle release point. The driver maintaining a constant throttle may result in the SV-to-POV headway distance changing and move out of the specified headway tolerance. While this may be possible with robotic control of the throttle, NHTSA has not actually evaluated the concept.

OEM Defined Throttle Release Timing: NHTSA would like to minimize vehicle manufacturers' input on how their vehicles should be evaluated.

The agency will not make a test procedure change at this time. We believe it is possible for the SV driver to repeatably release the throttle pedal within 0.5 s of the FCW, and that any reduction of vehicle speed between the time of the throttle pedal release and the onset of the brake application is within the test procedure specifications. Human factors research indicates that when presented with an FCW in a rear-end crash scenario, driver's typically (1) release the throttle pedal then (2) apply the brakes.[21] Therefore, the speed reduction that occurs between these two points in time has strong real-world relevance.

D. Suggested Additions to Test Procedures

1. Accounting for Regenerative Braking

Tesla expressed concern that the test procedures as currently written do not account for totally or partially electric vehicles that utilize regenerative braking to recharge batteries. Tesla urged NHTSA to clarify protocols for EV and hybrid vehicles, specifically regarding regenerative braking.

Regenerative braking is an energy-preservation system used to convert kinetic (movement) energy back to another form, which in the case of an electric vehicle, is used to charge the battery. The reason it is called "braking" is that the vehicle is forced to decelerate by this regenerative system, once the driver's foot is taken off of the throttle. This system is independent of the standard brake system but the result is the same; the vehicle slows down.

NHTSA's direct experience with testing a vehicle equipped with AEB and regenerative braking has been limited to the BMW i3. As expected, once the driver released the throttle pedal in response the FCW alert, regenerative braking did indeed slow the vehicle at a greater rate than for other vehicles not so equipped with regenerative braking. This had the effect of reducing maneuver severity since the SV speed at the time of AEB intervention was less than for vehicles not so-equipped. This is not considered problematic.

For vehicles where the driver can select the magnitude of the vehicle's regenerative braking (*e.g.,* the Tesla Model S), the vehicle's AEB system will be evaluated in its default mode (as originally configured by the vehicle manufacturer).

2. Customer-Adjustable FCW Settings

The Alliance noted that in some CIB and DBS applications, system performance may take into account the warning timing setting of the FCW system when the FCW system allows the consumer to manually set the warning threshold. To clarify, the Alliance recommended that the following language, which is adapted from the FCW NCAP test procedure (Section 12.0), be included in the CIB and DBS NCAP test procedure: "If the FCW system provides a warning timing adjustment for the driver, at least one setting must meet the criterion of the test procedure."

In its previous work involving FCW, the agency has allowed vehicle manufacturers to configure the systems with multiple performance level modes. This provided vehicle manufacturers flexibility in designing consumer acceptable configurations. The test procedure allowed an FCW mode that provides the earliest alert if the timing can be selected and used during agency testing. Additionally, the test procedures do not include resetting to the original setting after ignition cycles.

NHTSA believes that as a consumer information program, we should test the vehicles as delivered. We also believe the performance level settings of the FCW systems within the AEB test program should now be set similar to the AEB. The Alliance requested that we have language in the test procedure specifying that if there are adjustments to the FCW system, one setting must meet the criterion of the test procedure. Vehicle manufacturers may provide multiple settings for the FCW systems. However, the agency will only use the factory default setting for both the FCW and the AEB systems in the AEB program.

3. Sensor Axis Re-Alignment

The Alliance commented that when the SV hits the SSV in some trials, the impact may misalign the system's sensors. To ensure baseline performance in each trial, the Alliance asked that the test procedure be modified to allow the vehicle manufacturer representatives or test technicians to inspect and, if needed, re-align the sensor axis after each instance of contact between the subject vehicle and the SSV.

[20] NHTSA's false positive DBS tests are performed in the presence of the steel trench plate, since this plate does not cause the FCW to activate for many light vehicles, the DBS test procedure includes a provision for the SV driver to release the throttle at a fixed TTC if the FCW does not activate before a TTC = 2.1s.

[21] "Development of an FCW Algorithm Evaluation Methodology With Evaluation of Three Alert Algorithms—Final Report," June 2009 Figure 5. DOT HS 811 145

NHTSA has seen two cases of sensor misalignment during the initial development of this program. In one case, the subject vehicle had visible grill damage because the AEB system did not activate and the test vehicle hit the SSV at full speed. In another case, the vehicle sensing system shut down after numerous runs; inspection also revealed visible grill damage to the subject vehicle. In both cases, the vehicles were returned to an authorized dealer, repaired and then returned to the test facility.

The NCAP test program has instituted two new procedural improvements to monitor for system damage. First, we began testing with less-severe tests, such as the lead vehicle moving test first, to determine if the vehicle system is capable of passing any of the tests. Second, we have instituted more rigorous visual between-vehicle inspections by the contractor during the testing. Based on our observations in testing, we believe systems that have sensor damage will likely show visible grill damage.

With the improvements in the AEB systems and refinement of our test protocol, we do not believe sensor misalignments will be a significant problem. We invite vehicle manufacturer representatives to attend each of our tests. We reserve the right to work with the vehicle manufacturers on a one-on-one basis if we have problems with the vehicles during the tests.

4. Multiple Events—Minimum and Maximum Time Between Events

The Alliance and Ford asked that the AEB test procedures specify a minimum time of 90 seconds and a maximum time of 10 minutes between each test run as in Euro NCAP AEBS test procedures. Some AEB systems initiate a fail-safe suppression mechanism when multiple activations are triggered in a short time. Most systems can be activated again with an ignition key cycle. In most cases activation of the suppression mechanism can be avoided by including a time interval between individual AEB activations or by cycling the ignition. The current test procedure addresses this by checking for diagnostic test codes (DTCs) to determine if any system suppression or error codes have occurred with the sensing system software.

The agency agrees that there should be a minimum of 90 seconds between test runs and will modify the AEB test procedures to state this explicitly. We recognize that the algorithms in these vehicles look for conditions that are illogical, such as multiple activations in short periods of time, and within a single ignition cycle. The time needed to allow the subject vehicle brakes to cool and the test equipment to be reset between each test trial has always exceeded 90 seconds in the agency's testing experience. The agency will also specify in the test procedures that the vehicle ignition be cycled after every test run.

The agency believes a maximum time between test runs of 10 minutes is too short to be feasible. The test engineers need sufficient time to review data, inspect the test equipment and set up for the next test run. Also recall that the test engineers need time to ensure the vehicle brake temperatures are within specification and the brake system is ready for the next test run. Additionally, it is impractical to specify that all of the tests must be completed within 10 minute cycles while conversely specify that testing be discontinued if ambient conditions are out of specifications. At this time, we are unaware of any algorithm-based reason why testing must be resumed in less than 10 minutes.

5. Time-to-Collision (TTC) Definition

The Alliance observed that the TTC values used in the test procedures are calculated in the same manner as they are in the current NCAP FCW test procedure, but noted that the TTC calculation equations are not included in the draft CIB and DBS test procedures. The Alliance asked that, for clarification purposes, the TTC equations that appear in Section 17.0 of the NHTSA NCAP FCW test procedure dated February 2013 be added to the CIB and DBS test procedures.

The agency acknowledges that the TTC calculations for the FCW test procedure are the same as these test procedures. The TTC calculations that are included in the NCAP FCW test procedures will be added to the AEB test procedures, as requested in the comments. This will make it clear that the TTC equations apply to the AEB test procedures as well.

E. Strikeable Surrogate Vehicle (SSV)

1. Harmonization Urged

NHTSA's strikeable surrogate vehicle (SSV) was discussed earlier in this notice. Multiple commenters encouraged NHTSA to harmonize with Euro NCAP and to use the ADAC EVT in lieu of the SSV. The commenters had concerns about the use of the SSV. They asked NHTSA to establish a maintenance process for the SSV. They questioned whether parts such as the MY 2011 Ford Fiesta vehicle's taillights, rear bumper reflectors and third brake light can be a part of the SSV indefinitely (*i.e.,* will parts continue to be built). The Alliance, Ford, and Continental took a moderate position, supporting calls for harmonization but acknowledging all the work that went into developing the SSV. Other commenters proposed NHTSA could potentially use the SSV target in conjunction with the EVT propulsion system used by Euro NCAP. Concern was also expressed over the SSV setup, the number of facilities capable of performing the actual test maneuvers, the additional test costs, and the problem of damage to the subject vehicles.

AGA said NHTSA could provide an option for manufacturers to use an alternative test devices of Euro NCAP or IIHS. Both Euro NCAP and IIHA use ADAC EVT.

Tail light availability is not expected to be a problem for the foreseeable future. However, if this should this become an issue, simulated taillights, an updated SSV shell, or potentially other changes could be made to replace the current model.

Overall, the AEB system sensors interpret the SSV appears to sensors as a genuine vehicle. Nearly all vehicle manufacturers and many suppliers have assessed how the SSV appears to the sensors used for their AEB systems. The results of these scans have been very favorable.

Although the SSV has been designed to be as durable as possible, its various components may need to be repaired or replaced over time. As with all other known surrogate vehicles used for AEB testing, the frequency of repair or replacement is strongly dependent on how the surrogate is used, particularly the number of high speed impacts sustained during testing.

With regards to availability, the specifications needed to construct the SSV are in the public domain.[22] Multiple sets of the SSV and the tow system have been manufactured and sold to vehicle manufactures and test facilities. The SSV can be manufactured by anyone using these specifications. With regard to other issues like cost and convenience of use, we feel the SSV is within the range of practicality as a test system. In relation to other motor vehicle test systems, the SSV system is reasonably priced and can be moved from test facility to test facility.

While we appreciate the concerns about the SSV expressed in the comments, we will continue to specify

[22] *http://www.regulations.gov,* Docket NHTSA–2012–0057.

the SSV in the NCAP AEB test procedures that NHTSA will use to confirm through spot checks that vehicles with AEB technologies and for which a manufacturer has submitted supporting data meet NCAP performance criteria. As noted previously this does not require use of the SSV by manufacturers for their own testing.

2. Repeatability/Reproducibility

The Alliance said because the SSV is not readily available, its members have not been able to conduct a full set of tests to assess the repeatability and reproducibility of the SSV in comparison with other commercially available test targets.

NHTSA is aware that the SSV is a relatively new test device and that every interested entity may not have had a chance to perform a comprehensive series of SSV evaluations or seen how it is actually used. However the specifications needed to construct the SSV are in the public domain and multiple SSVs have been manufactured and sold to vehicle manufacturers and test facilities. A test report describing the SSV repeatability work performed with a Jeep Grand Cherokee has recently been released.[23]

3. Lateral Restraint Track (LRT)

Commenters were concerned with the lateral restraint track (LRT). They felt the LRT was not needed. The permanent installation of the LRT used up track space and made it hard to move testing activities to another test track.

Some commenters indicated that if the LRT used to keep the SSV centered in its travel lane is white, it may affect AEB performance. This is because some camera-based AEB systems consider lane width in their control algorithms, and these algorithms may not perform correctly if the LRT is confused for a solid white lane line. Although NHTSA test data does not appear to indicate this is a common problem, the NHTSA test contractor is using a black LRT to address this potential issue. The black LRT appears more like a uniform tar strip that has been used to seal a long crack in the center of the travel lane pavement, a feature present on real-world roads.

NHTSA appreciates these concerns but believes the continued use of the LRT is important. LRT is designed to insure several things, including that the SSV will be constrained within a tight tolerance to optimize test accuracy and repeatability. Using the LRT to absolutely keep the path of the SSV within the center of the lane of travel, in conjunction with the lateral tolerances defined in the CIB and DBS test procedures, will allow the agency to test AEB systems in a situation where one vehicle is approached by another vehicle from directly behind. To reduce the potential for unnecessary interventions, some AEB systems contain algorithms that can adjust onset of the automatic brake activation as a function of lateral deviation from the center of the POV. This is because it will take less time for the driver to steer around the POV if the lateral position of the SV is biased away from its centerline. Although this may help to minimize nuisance activations in the real-world, the same algorithms may contribute to test variability during AEB NCAP evaluations if excessive lateral offset exists between the SV and POV. Since the use of the LRT prevents this from occurring, it is expected the agency's tests will allow AEB systems to best demonstrate their crash avoidance or mitigate capabilities.

Ford suggested that NHTSA use the ADAC EVT propulsion system with the SSV to increase feasibility for manufacturers. NHTSA believe the inherent design differences between the SSV and ADAC surrogates makes using the ADAC EVT propulsion system with the SSV a considerable challenge. Design changes to the SSV and/or ADAC EVT rig would be needed. It is not possible to simply substitute the SSV for the ADAC EVT surrogate on the ADAC rig as Ford suggests. Even if the ADAC EVT could be adapted, and even though it appears to track well behind a tow vehicle, the precise position of the ADAC EVT is not measured, so the lateral offset cannot be quantified.

Commenters expressed concern on the allowable lateral offset and yaw rate tolerance in the AEB test procedures placing considerable emphasis on the importance of narrowing the tolerances in these areas. AGA said the lateral offset and yaw rate in August 2014 draft test procedures (+/- 2 ft (0.3 m) lateral offset and +/- 2 deg/s yaw rate) can create a delay in AEB system response that could affect a system's performance during and AEB test. DENSO agreed that a higher tolerance in lateral offset and yaw rate tends to decrease forward looking sensor detection performance. The Alliance too weighed in on this saying, that ''the variability in lateral offset is expected to have a significant impact on test reproducibility and system performance and resultant rating,'' adding that the yaw rate should be +/- 1 deg/s to be consistent with the FCW test procedure given the fact that AEB systems use the same sensors as FCW systems. As discussed earlier, we have agreed to tighten the yaw rate and lateral offset tolerance. This makes the tight control provided by the LRT even more important to the performance of these tests.

Until the agency has an indication that an alternative approach to moving the SSV down a test track can ensure the narrow tolerances for lateral offset and yaw rate, the LRT will remain in the AEB test procedures. Our contractor has already installed a black LRT. Thought this does not completely disguise the restraint track, it is close to being masked for a camera-based AEB system.

4. What is the rear of the SSV? (Zero Position)

NHTSA considers the rearmost portion of the SSV, or the ''zero position,'' to be the back of the foam bumper. The Alliance suggested the rearmost part of the SSV should be defined by its carbon fiber body, not its foam bumper. The Alliance said it has observed SV-to-SSV measurement errors of as much as 40 cm (15.7 in), and attributes them to their vehicle's sensors not being able to consistently detect the reflective panel located between the SSV's bumper foam and its cover.

It has always been the agency's intention to make the rear of the SSV foam bumper detectable to radar while still having its radar return characteristics be as realistic as possible. This is the reason NHTSA installed a radar-reflective panel between the SSV's 8 in (20.3 cm) deep foam bumper and its cover; the panel is specifically used to help radar-based systems define the rearmost part of the SSV since the foam is essentially invisible to radar. We are presently working to identify the extent to which AEB systems have problems determining the overall rearmost position of the SSV. NHTSA considers the outside rear surface of foam bumper, immediately adjacent to the radar-reflective material to be the ''zero position'' in its CIB and DBS tests, and is considering ways to better allow AEB systems to identify it.

5. Energy Absorption, Radar System Bias

Other concerns mentioned by commenters include design changes to the SSV: Increasing energy absorption and minimizing a perceived bias towards radar systems based on the SSV's appearance in certain lighting conditions which may be challenging for camera systems. We believe the SSV appears to be a real vehicle to most

[23] Forkenbrock, GJ & Snyder, AS (2015, May) NHTSA's 2014 Automatic Emergency Braking (AEB) Test Track Evaluation (Report No. DOT HS 812 166). Washington DC, National Highway Traffic Safety Administration.

current AEB systems, regardless of what sensor or set of sensors the systems uses, and that the SSV elicits AEB responses representative of how the systems will perform in real world driving situations. The ability of the SSV to withstand SV-to-POV impacts appears to be adequate if the subject vehicles being evaluated produces even minimal speed reductions to mitigate them. We continue to evaluate SSV performance and will consider improvements.

Some commenters indicated NHTSA should increase the padding to the SSV to reduce the likelihood of damage to the test equipment or to the SV during an SV-to-POV impact. When designing the SSV, we attempted to balance realism, strikeability, and durability. The body structure and frame of the SSV are constructed from carbon fiber to make them stiff (so that the shape remains constant like a real car), strong, and light weight. To enable SV-to-POV impacts, the SSV frame has design elements to accommodate severe impact forces and accelerations and an 8 in (20.3 cm) deep foam bumper to attenuate the initial impact pulse. We are concerned that simply adding more padding to the rear of the SSV will reduce its realistic appearance, and potentially affect AEB system performance. Therefore, to address the potential need for additional SSV strikeability, the agency is presently considering an option to work with individual vehicle manufacturers to add strategically-placed foam to the SV front bumper to supplement the foam installed on the rear of the SSV. At this time, no changes to the appearance of the SSV are planned. Since temporary padding added to the subject vehicle does not alter that characteristics of the SSV nor affect the distance of the SSV to the vehicle sensors, we will not be adjust the zeroing procedure in the test procedure to compensate for this one-time padding addition.

With regards to sensor bias, the SSV has been designed to be as realistic as possible to all known sensors used by AEB systems. While it is true that the SSV has a strong radar presence, use of the white body color and numerous high-contrast features (*e.g.,* actual tail lights and bumper reflectors, simulated license plate, dark rear window, etc.) was intended to make it as apparent as possible to camera and lidar-based systems as well. Aside from inclement weather and driving into the sun, conditions explicitly disallowed by NHTSA's CIB and DBS test procedures, sensor limitations capable of adversely affecting the real-world detection, classification, and response of a SV to actual vehicles during real-world driving may also affect the ability of the SV to properly respond to the SSV. The agency considers this an AEB system limitation, not an SSV flaw.

F. Other Issues

1. Non-Ideal Conditions—Exclude Away From Sun as Well

NHTSA's CIB and DBS test procedures both include a set of environmental restrictions designed to ensure that proper system functionality is realized during a vehicle's evaluation. One such restriction prohibits the SV and POV from being oriented into the sun when it is oriented 15 degrees or less from horizontal, since this can cause inoperability due to ''washout'' (temporary sensor blindness) in camera-based systems.

DENSO commented that, in addition to prohibiting testing with the test vehicles oriented toward the sun when the sun is at a very low angle (15 degrees or less from horizontal) to avoid camera ''washout'' or system inoperability, the test procedures should also prohibit testing with vehicles oriented away from the sun (with the sun at low angle) which would harmonize this issue with Euro NCAP test procedure. MEMA agreed that wash out conditions experienced in low sun angle conditions for SV and POV oriented toward the sun may also occur when they are oriented away from the sun.

To date, the agency's testing does not indicate that a low sun angle from the rear will adversely affect AEB system performance. Moreover, one of the agency's testing contractors indicates that restricting the sun angle behind as well as in front of the test vehicle will significantly reduce the hours per day that testing may be performed. If our ongoing experience suggests that this is a problem for vehicles equipped with a particular sensor or sensor set, we will consider making adjustments.

2. Multiple Safety Systems

TRW inquired as to how safety systems other than AEB systems on a test vehicle would be configured during AEB testing. The company asked whether there would be provisions in the test procedure for turning off certain safety features in order to make the testing repeatable. It gave as an example some pre-crash systems that may be activated based on these tests.

Due to the complexity and variance of vehicle designs the agency will deal with system conflicts on a one-on-one basis. The agency does not specify or recommend that vehicle manufacturers design and include cut-off provisions for the sole purpose of performing AEB tests.

3. Motorcycles

The AMA said that all AEB systems included in NCAP should be able to detect and register a motorcycle. If not, vehicle operators may become dependent on these new technologies and cause a crash, because the system did not detect and identify a smaller vehicle, the organization said.

AEB systems, while relatively sophisticated and available in the American new vehicle marketplace, are still nonetheless in the early stages of their development. Some may be able to detect motorcycles. Some may not be able to do so. Eventually, the sensitivity of these systems may increase to the point where detecting a motorcycle is commonplace among systems.

The agency believes it would be benefit to highway safety move forward with this program at this time, even though it does not include motorcycle detection. By including AEB systems among the advanced crash avoidance technologies it recommends to consumers in NCAP, the agency expects more and more manufacturers to equip more and more new vehicles with these systems. As a result, many rear-end crashes and the resulting injuries and deaths will be avoided. The agency believes it will be beneficial to take this step even if the systems involved are not as capable of recognizing motorcycles today.

We also do not have reason to believe that AEB systems are the type of technology likely to encourage over-reliance by drivers. DBS is activated based on driver braking input, and CIB is activated when for one reason or another, the driver has not begun to apply the brake. We do not think that in either scenario the driver is likely to drive differently under the assumption that the AEB system will perform the driver's task.

The agency will continue to follow the ongoing development and enhancement of AEB systems and look for opportunities to encourage the development and deployment of systems that detect motorcycles.

4. How To Account for CIB/DBS Interaction

Honda asked how the interrelationship between CIB and DBS should be treated, in situations in which CIB activates before the driver applies the brakes and DBS never activates.

The brake applications used for DBS evaluations are activated at a specific point in time prior to an imminent collision with a lead vehicle (time-to-collision) regardless of whether CIB has been activated or not. If CIB activates before DBS, the initial test speed and, thus, the severity of the test would effectively be reduced.

TRW observed that one potential future trend to watch is that as industry confidence and capability to provide CIB functionality increases and the amount of vehicle deceleration is allowed to increase and be applied earlier in the process, the need for DBS as a separate feature may diminish. The potential goal of DBS testing would become one of proving a driver intervention during an AEB event does not detract from the event's outcome, TRW said.

At this time, the agency is aware that many light vehicle DBS systems supply higher levels of braking at earlier activation times for the supplemental brake input compared to the automatic braking of CIB systems. Based on this understanding of current system design, our NCAP AEB test criteria for DBS evaluates crash avoidance resulting from higher levels of deceleration, whereas our CIB test criteria evaluates crash mitigation (with the exception of the CIB lead vehicle moving SV: 25 mph/POV: 10 mph (SV:40 km/h/POV: 16 km/h) scenario, for which crash avoidance is required). NHTSA will keep the speed reduction evaluation criteria as planned for the CIB and DBS tests.

Unless the agency uncovers a reason to be concerned about how the performance metrics of a test protocol may affect system performance in vehicles equipped with both CIB and DBS, the agency will recognize an AEB equipped vehicle as long as it passes the criteria of a given protocol, whether that occurs as a result of the activation of the particular system or a combination of systems.

5. Issues Beyond the Scope of This Notice

Some commenters raised topics outside the scope of the notice, and they will not be addressed here.

These include: A suggested two-stage approach to adding technologies to NCAP, a suggested minimum AEB performance regulation that would function in concert with NCAP, conflicts between rating systems that could cause consumer confusion, other technologies that should be added to NCAP in the future, and a call for flashing brake lights to alert trailing drivers that an AEB system has been activated.

Other topics raised may be addressed as the agency's experience with AEB systems expands over time. These topics include: Using different equipment, including a different surrogate vehicle; a call to study the interaction of the proposed CIB/DBS systems with tests for FMVSS Nos. 208 and 214 to assess whether such features should be enabled during testing and what the effect may be; a suggestion that the agency should consider the role electronic data recorders (EDRs) may play in assessing AEB false positive field performance; and concern as to how safety systems on a test vehicle other than AEB systems would be dealt with during AEB testing, such as some pre-crash systems that may be activated based on these tests.

A suggestion was made that the agency should consider the potential interactions of AEB systems with vehicle-to-vehicle (V2V) communications technology, both in how AEB tests might be performed and what the performance specifications for those tests should be. The agency is monitoring the interaction of these capabilities.

V. Conclusion

For all the reasons stated above, we believe that it is appropriate to update NCAP to include crash imminent braking and dynamic brake support systems as Recommended Advanced Technologies.

Starting with Model Year 2018 vehicles, we will include AEB systems as a recommended technology and test such systems.

(Authority: 49 U.S.C. 32302, 30111, 30115, 30117, 30166, and 30168, and Pub. L. 106–414, 114 Stat. 1800; delegation of authority at 49 CFR 1.95.)

Issued in Washington, DC, on: October 21, 2015.

Under authority delegated in 49 CFR 1.95.

Mark R. Rosekind,

Administrator.

[FR Doc. 2015–28052 Filed 11–4–15; 8:45 am]

BILLING CODE 4910–59–P

DEPARTMENT OF TRANSPORTATION

Surface Transportation Board

[Docket No. FD 35760]

Hainesport Industrial Railroad, LLC—Corporate Family Transaction Exemption

AGENCY: Surface Transportation Board.

ACTION: Correction to Notice of Exemption.

On August 26, 2013, Hainesport Industrial Railroad, LLC (Hainesport), a Class III railroad, filed a verified notice of exemption under 49 CFR 1180.2(d)(3) for a corporate family transaction pursuant to which Hainesport would transfer ownership and operation of a line of railroad, described as the East Line, in Hainesport, N.J., to a corporate affiliate, Hainesport Secondary Railroad, LLC (Hainesport Secondary).[1] The notice was served and published in the **Federal Register** on September 11, 2013 (78 FR 55,776), and became effective on September 25, 2013.

On August 6, 2015, Hainesport filed a petition to correct or amend the notice. According to Hainesport, the map provided with its notice incorrectly depicted the East Line. Thus, Hainesport requests that the Board substitute the map identified as Exhibit A to its petition for the map submitted in the notice. This correction is recognized here. All remaining information from the September 11, 2013 notice remains unchanged.

Board decisions and notices are available on our Web site at *WWW.STB.DOT.GOV.*

Decided: November 2, 2015.

By the Board, Rachel D. Campbell, Director, Office of Proceedings.

Brendetta S. Jones,

Clearance Clerk.

[FR Doc. 2015–28190 Filed 11–4–15; 8:45 am]

BILLING CODE 4915–01–P

[1] In a notice served on July 16, 2015, the Board approved a verified notice of exemption filed by Hainesport, Tunnel Hill Partners, LP (Tunnel), and New Amsterdam & Seneca Railroad Company (NAS), for Tunnel, which owns NAS, to acquire control of Hainesport. *Tunnel Hill Partners, LP—Acquis. of Control Exemption—Hainesport Indus. R.R.,* FD 35942 (STB served July 16, 2015).

DEPARTMENT OF VETERAN AFFAIRS

Privacy Act of 1974; System of Records

AGENCY: Department of Veteran Affairs (VA).

ACTION: Notice of Amendment to System of Records.

SUMMARY: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a(e)(4)) all agencies are required to publish in the **Federal Register** a notice of the existence and character of their systems of records. Notice is hereby given that the Department of Veterans Affairs (VA) is amending the system of records entitled ''Freedom of Information Act (FOIA) Records—VA'' 119VA005R1C.

DATES: Comments on the amendment of this system of records must be received no later than December 7, 2015. If no public comment is received, the new