



August 26, 2026

Jonathan Morrison
Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

RE: Request for comments (RFC); New Car Assessment Program (NCAP), Docket NHTSA-2026-1156, 91 FR 31834 (May 28, 2026)

Dear Administrator Morrison:

Alliance for Automotive Innovation¹ (Auto Innovators) appreciates the opportunity to submit comments to the National Highway Traffic Safety Administration (NHTSA) regarding its request for comment on incorporating rear automatic braking (RAB) system evaluations in the New Car Assessment Program (NCAP).² Auto Innovators supports NHTSA's continued efforts to modernize NCAP and provide consumers with meaningful information about advanced driver assistance systems (ADAS) that can help improve roadway safety. As a consumer information program, NCAP's core purpose is to provide clear, reliable, and comparable safety information to inform vehicle purchasing decisions. The evaluations included in NCAP should be limited to those that directly advance that objective. Backover crashes involving pedestrians, particularly young children and other vulnerable road users, remain an important safety concern, and Auto Innovators appreciates the agency's continued attention to evaluating technologies that may help address these risks.

Auto Innovators shares NHTSA's goal of encouraging the development and deployment of effective crash avoidance technologies. NCAP can play an important role in giving consumers clear, reliable, and useful information about emerging ADAS technologies. To fulfill that role, NCAP should only include evaluations that produce information that is meaningful and interpretable to consumers. NCAP evaluations must be objective, repeatable, technology-neutral, and aligned with real-world safety needs and current system capabilities. This is especially important for RAB pedestrian detection because it remains a developing technology area which may be affected by pedestrian size, location, movement, lighting, sensor field of view, vehicle geometry, and system design strategy.

¹ Auto Innovators represents the full auto industry, including the manufacturers producing most vehicles sold in the U.S., equipment suppliers, battery producers, semiconductor makers, technology companies, and autonomous vehicle developers. Our mission is to work with policymakers to realize a cleaner, safer, and smarter transportation future and to ensure a healthy and competitive auto industry that supports U.S. economic and national security. Representing over 5 percent of the country's GDP, responsible for supporting nearly 11 million jobs, and driving \$1.5 trillion in annual economic activity, the automotive industry is the nation's largest manufacturing sector.

² <https://www.federalregister.gov/documents/2026/05/28/2026-10611/new-car-assessment-program>

Auto Innovators encourages NHTSA to continue developing an evaluation approach that recognizes the safety potential of RAB systems while ensuring that any NCAP criteria are appropriate for consumer vehicle safety information purposes and result in outputs that are meaningful, comparable, and useful to consumers. In particular, NHTSA should consider whether the proposed pass/fail structure - requiring satisfaction of all 20 test conditions each based on a single trial - would provide consumers with meaningful comparative vehicle safety information, or whether it could result in outcomes that are difficult to interpret and therefore misaligned with NCAP's stated mission.³

As RAB and other crash avoidance technologies continue to develop and are deployed voluntarily across the fleet, NCAP should recognize meaningful safety performance without unintentionally discouraging continued innovation. At the same time, NCAP should avoid adopting evaluation approaches that do not result in clear, meaningful, and actionable information for consumers. A no-contact criterion may be appropriate in certain test contexts, but if applied as the sole basis for credit, it may make it more difficult for NCAP to communicate technology maturity, comparative system performance, and real-world safety value to consumers. This consideration is particularly important given NHTSA's stated plans⁴ and Congressional direction⁵ to improve consumer awareness of crash avoidance technologies through the issuance of comparative safety information alongside crashworthiness ratings. An RAB evaluation (or any ADAS evaluation) that does not recognize gradations in performance could make it more difficult for NCAP to support a future crash avoidance technology rating and to communicate meaningful differences in system maturity, capability, and safety potential, which are essential to maintaining NCAP's value as a consumer information program.

Auto Innovators also encourages NHTSA to provide greater clarity on key elements of the proposed evaluation protocol, including the definition of "deliberate override action," the treatment of warning strategies, the proposed brake-hold requirement, and the rationale for selecting specific pedestrian mannequins, overlap positions, speeds, and lighting conditions. Clearer definitions and supporting validation would help ensure consistent application across vehicle platforms and system architectures while preserving flexibility for different technical approaches.

In developing any RAB evaluation for NCAP, NHTSA should consider relevant international protocols and the rationale for recent changes to those protocols, including Euro NCAP's low-speed crash avoidance procedures. Alignment with global approaches, where appropriate, can help reduce unnecessary divergence and support efficient deployment of proven safety technologies. Any U.S. NCAP protocol should also be supported by transparent research, a clear implementation roadmap, and sufficient lead time for manufacturers to understand, validate, and respond to the criteria.

Auto Innovators looks forward to continued engagement with NHTSA as it considers how best to incorporate RAB evaluations into NCAP. We support the agency's broader goal of improving consumer access to comparative safety information and encouraging technologies that can help protect vulnerable road users. The recommendations below are intended to help ensure that any NCAP update in this area is objective, repeatable, transparent, and capable of producing meaningful information for

³ <https://www.nhtsa.gov/ratings/resources-related-nhtsas-new-car-assessment-program#overview>

⁴ <https://www.nhtsa.gov/sites/nhtsa.gov/files/2024-11/NCAP-Roadmap-11182024-web.pdf>

⁵ <https://www.congress.gov/114/plaws/publ94/PLAW-114publ94.pdf>



consumers, while encouraging safety improvements and ensuring alignment with the current state of technology development.

Regards,

A handwritten signature in black ink, appearing to read "Lauren A. Collins". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Lauren A. Collins
Senior Director, Safety Policy
Alliance for Automotive Innovation

Appendix A: Responses to Specific NHTSA Questions

This appendix provides Auto Innovators' responses to the specific questions on the inclusion of RAB in NCAP as raised in Appendix A of the RFC. Collectively, these responses are intended to help ensure that any RAB crash avoidance evaluation incorporated into NCAP is objective, repeatable, transparent, and appropriately aligned with technology capabilities, real-world safety needs, and comparative vehicle safety information objectives.

1. NHTSA seeks comment on whether the inclusion of RAB technology in NCAP is appropriate.

Auto Innovators supports NHTSA's continued consideration of RAB system evaluations in NCAP and recognizes the potential safety benefits of technologies that can help address pedestrian backover risks. That said, there are significant problems with elements of the current proposal, including the reliance on a single trial per test condition, the requirement for full collision avoidance without recognizing meaningful crash mitigation, the proposed use of a two-year-old mannequin with limited global validation experience, and certain overlap test conditions. Any RAB evaluation should be grounded in test conditions that are objective, repeatable, technology-neutral, and aligned with current system capabilities. Auto Innovators also recommends that NHTSA update its mid-term NCAP roadmap⁶ to reflect recent program delays⁷ and realistic timelines for publishing a final decision notice, and sufficient lead time to implement RAB evaluations. The current notice does not identify when RAB evaluations would begin or what model year would be subject to the proposed criteria. This lack of indicated lead time, coupled with the introduction of a new test procedure, makes it difficult for stakeholders to evaluate the practicability of the proposal, respond fully to questions about technical feasibility, and assess whether the proposed protocol is appropriately aligned with current system development and validation cycles.

Given the proposal's focus on pedestrian test targets, the agency should also consider whether RAB would be more appropriately categorized within NCAP's "VRU Safety" category, particularly as the agency develops a future comparative rating system. If RAB is ultimately included in the "Overall Safety Rating," Auto Innovators recommends that the technology be weighted in a manner that reflects the proportion of crashes associated with reversing maneuvers and the relative safety opportunities it may address.

2. NHTSA seeks information regarding the motivation for the changes in RAB test scenarios between the 2023 Euro NCAP Protocol (Test Protocol – AEB/LSS VRU Systems; Implementation 2023, Version 4.5.1, February 2024) and the October 2025 Euro NCAP Protocol, "Crash Avoidance Low Speed Conditions Protocol, Version 1.1 October 2025, Implementation January 2026."

⁶ <https://www.nhtsa.gov/sites/nhtsa.gov/files/2024-11/NCAP-Roadmap-11182024-web.pdf>

⁷ <https://www.federalregister.gov/documents/2025/09/22/2025-18285/new-car-assessment-program-ncap-notice-delay-of-program-updates>

The 2023 Euro NCAP protocol provides greater continuity with existing technology development, validation experience, and available test data, and may provide a more practicable and technically grounded starting point for an initial RAB evaluation. Auto Innovators encourages NHTSA to carefully consider the rationale for, and practical implications of, the changes made between the 2023 Euro NCAP protocol⁸ and the 2025 Euro NCAP Protocol⁹ before incorporating similar elements into NCAP. Alignment with the 2023 Euro NCAP protocol would not, by itself, ensure successful performance across all proposed test conditions but may provide a more grounded initial framework for evaluating RAB technology in NCAP.

The 2025 Euro NCAP protocol introduces more technically demanding reverse pedestrian scenarios that may increase the burden on current RAB systems. In particular, shorter rear-gap conditions and moving-child scenarios may reduce available object detection and tracking time, requiring the system to identify and classify the target, predict its path, and initiate an appropriate response within a narrower operating window.

These scenarios create perception and vehicle control challenges during initial reversing. Vehicle pitch, sensor field-of-view limitations, and uncertainty about the target's precise location and movement can affect the system's ability to distinguish true collision risks from non-threatening objects. Addressing these conditions may require more robust rear sensing and sensor fusion, including between rear camera and radar inputs, while also managing the potential for false positive braking.

Publicly available Euro NCAP materials¹⁰ describe the 2026 protocol updates as part of a broader effort to improve the system robustness and better reflect real-world conditions. However, Auto Innovators is not aware of information explaining the specific safety data supporting the more demanding reverse pedestrian scenarios included in the 2025 Euro NCAP protocol. Before adopting these elements in NCAP, NHTSA should clearly identify the supporting data and explain how they would improve comparative consumer safety information.

- 3. A draft NCAP test procedure for evaluating RAB is provided in the docket for this request for comment notice.¹¹ NHTSA seeks comment on the details of this test procedure, and whether any further test procedure clarification or refinement is needed to facilitate objective performance evaluation of RAB pedestrian crash avoidance.**

⁸ https://cdn.euroncap.com/cars/assets/euro_ncap_aeb_lss_vru_test_protocol_v451_cb0d5dfd0a.pdf

⁹

https://cdn.euroncap.com/cars/assets/euro_ncap_protocol_crash_avoidance_low_speed_collisions_v11_7c_d824b0b5.pdf

¹⁰ <https://www.euroncap.com/press-media/euro-ncap-announces-2026-protocol-changes-to-tackle-modern-driving-risks/>

¹¹ https://downloads.regulations.gov/NHTSA-2026-1156-0005/attachment_1.pdf

Auto Innovators recommends that NHTSA publish a formal, complete test procedure before incorporating RAB evaluations into NCAP. Certain aspects of the June 2026 draft procedure¹² may be more representative of real-world reversing conditions than the 2015 approach,¹³ but additional clarification is needed before the procedure can provide an objective, repeatable, and comparable assessment of system performance. The current draft should be clarified to address, at minimum, the starting distance between the subject vehicle and pedestrian test mannequin, the expected pedal application method, applicable speed-control profiles and tolerances, and the precise meaning of the “no contact” criterion.

Auto Innovators supports NHTSA’s use of controlled reverse speeds rather than idle-based assumptions, which may better reflect modern vehicle behavior. Controlled reverse speeds make clear speed-control procedures, pedal application guidance, and tolerances especially important for repeatable testing across vehicle architectures.

The draft procedure appears to introduce ambiguity in the subject vehicle speed requirements. Figure 3 identifies a fixed upstream distance of approximately 2.2 m (7.3 ft) for achieving test speed relative to the 6.1 m (20 ft) reference point, while Section 12.2, Step 4 requires the vehicle to reach test speed at least 2 seconds before reaching that same reference point. It is not clear whether the 6.1 m (20 ft) reference point represents the start of the evaluation boundary, the location of the pedestrian test mannequin, or another measurement point.

If the 2.2 m distance shown in Figure 3 is intended to define the speed-stabilization region, these requirements do not appear to be harmonized across the proposed 4 km/h (2.5 mph) and 8 km/h (5 mph) test speeds. Under that interpretation, the available time at speed would be approximately 1.98 seconds at 4 km/h (2.5 mph) and 0.99 seconds at 8 km/h (5 mph), leaving little or no margin at 4 km/h (2.5 mph) and making the 8 km/h (5 mph) condition difficult to reconcile with the 2 second requirement. This ambiguity could lead to inconsistent test setups, reduced repeatability, and differing interpretations across test laboratories.

Accordingly, NHTSA should clarify the definition and location of the 6.1 m (20 ft) reference point and adopt a single, consistent speed-stabilization metric that is clearly defined and physically achievable at both proposed test speeds. NHTSA should also define whether “no contact” means no physical contact between the vehicle and test mannequin, or whether it includes a predefined zone or perimeter around the mannequin that the vehicle must not enter. Systems demonstrating consistent performance, including those that do not satisfy every test condition, can still provide substantial crash avoidance and mitigation benefits and should be recognized within an NCAP evaluation framework.

4. NHTSA seeks comment on whether the proposed adult and two-year-old mannequins are appropriate for evaluating RAB system performance.

¹² Ibid.

¹³ https://downloads.regulations.gov/NHTSA-2015-0119-0030/attachment_1.pdf

Auto Innovators understands NHTSA's interest in evaluating RAB performance for very young children.¹⁴ However, NHTSA should provide additional technical support before adopting the proposed two-year-old mannequin for NCAP evaluation. Unlike more established pedestrian test targets, the two-year-old mannequin has limited documented use in global ADAS consumer information testing and is not broadly reflected in current RAB system development or validation experience.

For that reason, Auto Innovators recommends deferring the use of the proposed target for NCAP evaluations until the agency has provided additional validation and sufficient lead time for system development. While Auto Innovators understands the safety concern motivating NHTSA's interest in testing with very young child targets, Auto Innovators agrees with the agency's own conclusion that its limited experience and testing do not support considering mannequins younger than the two-year-old at this time.¹⁵

Auto Innovators specifically recommends that NHTSA defer implementation of a two-year-old test target in NCAP until the corresponding surrogate target has been independently validated and demonstrated to produce repeatable and reproducible results under standardized testing conditions. Although the recent publication of ISO/TS 19206-9:2025¹⁶ establishes technical specifications for small-child surrogate targets, additional implementation experience and independent correlation are needed to confirm consistent performance across target manufacturers, test laboratories, and sensing technologies before such a target is incorporated into a consumer information program.

In addition, the proposed two-year-old mannequin is not articulated, which limits its ability to represent realistic pedestrian motion in moving child scenarios. A small child crossing behind a vehicle without representative motion may present an artificial target signature that does not fully reflect real-world pedestrian behavior. Designing systems to detect and respond to that target could also increase the risk of false positive braking if the target's sensor characteristics differ materially from those of real children or from more established test devices.

NHTSA should further validate the proposed two-year-old mannequin before using it for NCAP evaluations, including its visual, radar, and other relevant sensor characteristics; repeatability across test laboratories; and correlation to real-world child pedestrian scenarios. Additional time is also needed to better understand current RAB system capabilities and validation experience with small-child targets under representative test conditions. If NHTSA proceeds with a child pedestrian target for this initial implementation of RAB in NCAP, the agency should consider using a more established and articulated child mannequin, such as the seven-year-old target, or otherwise adopt a phased approach that provides sufficient lead time for industry validation and system development.

¹⁴ <https://www.federalregister.gov/d/2026-10611/p-162>

¹⁵ <https://www.federalregister.gov/d/2026-10611/p-140>

¹⁶ <https://www.iso.org/standard/83232.html>

More generally, NHTSA should ensure that the proposed target configurations provide a representative, repeatable, and consistent evaluation framework. Where practicable and technically justified, validated articulated pedestrian targets can better reflect motion cues relevant to system perception and should be applied consistently across adult and child, stationary and moving scenarios. This approach would reduce unnecessary differences in target characteristics, support alignment with established ADAS test practices, and provide a more representative assessment of RAB system performance.

5. *NHTSA seeks comment on whether the proposed vehicle test speeds (four km/h and eight km/h) and the three overlap percentages (25 percent, 50 percent, and 75 percent) for the stationary adult and two-year-old mannequins are appropriate for evaluating RAB system performance.*

Auto Innovators generally considers the proposed vehicle test speeds of 4 km/h (2.5 mph) and 8 km/h (5 mph), together with the 25, 50, and 75 percent overlap locations, to be reasonable parameters for evaluating RAB performance in stationary adult pedestrian scenarios. NHTSA-reported idle reverse speeds of approximately 6.00 to 6.84 km/h provide a reasonable basis for treating the proposed 4 km/h and 8 km/h test speeds as representative low-speed backing conditions. These speeds and overlap conditions are consistent with several established Euro NCAP test concepts and reflect low-speed reversing situations that may occur in real-world parking and maneuvering environments. This position is limited to stationary adult-target testing and should not be read as support for applying the same overlap structure to moving pedestrian scenarios or to the proposed two-year-old mannequin without further validation.

NHTSA should also ensure that the test procedure can be applied consistently across vehicle platforms, powertrain configurations, and transmission types. At very low reversing speeds, vehicle speed control may vary depending on vehicle architecture.

For example, some internal combustion engine vehicles, including larger vehicles with higher idle torque, may require brake modulation to maintain the target speed, while other vehicles, including certain dual-clutch transmission vehicles, may require accelerator input. Manual transmission vehicles may present additional control considerations. These differences could affect repeatability at 4 km/h (2.5 mph) and 8 km/h (5 mph) unless the procedure clearly defines acceptable speed-control methods and tolerances.

For the reasons discussed in response to Question 4, Auto Innovators recommends that NHTSA defer use of the two-year-old mannequin for NCAP evaluation until the agency has provided additional validation, demonstrated repeatability, and allowed sufficient lead time for system development.

6. *NHTSA seeks comment on the proposed moving mannequin test scenario for evaluating RAB system performance. Specifically, NHTSA seeks comment on the proposed vehicle speed (four km/h and eight km/h), lower speed of 3.2 km/h for the two-year-old mannequin compared to the five km/h for the adult mannequin, and mannequin approach directions (left and right) with respect to the vehicle's reversing path.*

Auto Innovators generally agrees that moving pedestrian scenarios can provide useful information about RAB system performance, but NHTSA should ensure that the selected conditions are technically justified, repeatable, and appropriate for an initial NCAP evaluation. Because backing conflicts may occur from either side of the vehicle, evaluating approaches from both the left and right directions is reasonable, provided the procedure clearly defines the target path, timing, and tolerances needed to ensure repeatable testing. NHTSA's observation that tested vehicles did not consistently avoid moving pedestrian mannequins supports continued evaluation of dynamic reversing conflicts. Any moving pedestrian scenarios included in RAB evaluations should be structured in a manner consistent with current system maturity.

NHTSA should further evaluate the proposed lower walking speed of 3.2 km/h (2.0 mph) for the two-year-old mannequin relative to the 5 km/h (3.1 mph) speed proposed for the adult mannequin. Combining a very small, non-articulated target with a slow crossing speed may create perception and path-prediction challenges that are not yet sufficiently validated for current RAB systems or reflected in existing test experience. These conditions may also increase the risk of false-positive braking if the target movement or signature is not sufficiently representative of real-world pedestrian behavior.

To improve repeatability and reduce unnecessary complexity in an initial NCAP protocol, NHTSA should consider whether a consistent pedestrian target speed across moving scenarios would be more appropriate. NHTSA should also evaluate whether the *Start from Stop* approach used in the 2025 Euro NCAP protocol better reflects the way many real-world reversing maneuvers begin. This specific procedural concept may be useful for U.S. NCAP, even if other aspects of the 2025 Euro NCAP protocol are not appropriate for immediate adoption.

7. NHTSA also seeks comment on whether to add the 25 percent overlap location to the moving pedestrian scenario, which is more stringent than the 50 percent overlap location as shown in Figure 8 for the tests conducted on four MY 2022 vehicles.

Auto Innovators does not support adding the 25 percent overlap location to the moving pedestrian scenario at this time. NHTSA has not yet provided sufficient real-world crash data, test data, or other technical justification demonstrating that additional off-center overlap conditions, including 25 percent and 75 percent, are representative, frequent, safety-relevant, or necessary for consumer-information purposes.

Introducing a 25 percent overlap in a moving-crossing scenario would significantly increase test complexity by combining multiple challenging variables, including low vehicle speed, moving targets, and small pedestrian profiles. These conditions may also increase the risk of false-positive braking, particularly in parking environments where objects, pedestrians, and vehicle paths can change quickly. More stringent overlap conditions may require tighter tolerances for vehicle speed, pedestrian speed, and target positioning, increasing test burden without a demonstrated consumer-information benefit.

Auto Innovators instead recommends that the agency begin with the 50 percent overlap condition as a baseline for evaluating RAB system performance in NCAP. A phased approach would allow NHTSA to monitor technology maturity, gather additional data, and assess real-world relevance

before introducing more stringent conditions. This approach would support a more representative initial evaluation framework while preserving the ability to expand test conditions over time as the technology evolves.

- 8. *The proposed stationary and moving pedestrian test mannequin test scenarios for evaluating RAB system performance are to be conducted exclusively in daylight. While RAB system performance differed across lighting conditions in recent research tests, vehicles generally avoided more collisions with the pedestrian test mannequins in daylight than in darkness. NHTSA seeks comment on whether the proposed RAB evaluation protocol should include testing in darkness, or whether darkness testing should be considered for inclusion in NCAP at a later date.***

Auto Innovators supports NHTSA's proposal to limit initial RAB evaluation in NCAP to daylight conditions. Daytime testing provides a consistent and controlled baseline for evaluating system performance and is appropriate for initial NCAP implementation. Establishing a repeatable evaluation framework is particularly important for emerging technologies such as RAB.

Expanding the protocol to include nighttime conditions at this stage would introduce additional environmental variability that is not yet sufficiently characterized within a standardized assessment framework. Reduced visibility and more challenging recognition conditions may affect system performance and could increase the risk of false-positive braking, particularly if target characteristics and test conditions are not yet fully validated. Adding darkness testing before establishing a daylight baseline could also reduce comparability across systems and limit the effectiveness of the evaluation as a consumer information tool.

NHTSA's analysis¹⁷ indicates that reversing crashes represent approximately 1.9 percent of all passenger-vehicle crashes, and pedestrian reversing crashes represent a much smaller subset: approximately 1,709 crashes annually, or about 0.03 percent of all passenger-vehicle crashes. The RFC does not appear to quantify the subset of pedestrian reversing crashes that occur in darkness or demonstrate that nighttime scenarios involving child pedestrians are sufficiently prevalent to justify inclusion in the initial NCAP protocol. Without supporting data, adding nighttime testing at this stage may introduce complexity without a demonstrated consumer-information benefit.

Accordingly, NHTSA should adopt a phased, performance-based approach that maintains a daylight-only baseline for initial implementation and defers expansion to additional environmental conditions until the evaluation framework is more fully developed and supported by data. In addition to considering the balance of real-world crash data, any future decision to include nighttime conditions should take into account whether the daytime evaluation methodology has first been sufficiently established and validated, including its repeatability and robustness. Before nighttime conditions are incorporated into the NCAP evaluation framework, the reliability of the nighttime test procedure should be demonstrated through appropriate validation testing. If NHTSA considers adding nighttime testing in a future phase, it should first resolve the more fundamental

¹⁷ <https://www.federalregister.gov/d/2026-10611/p-88>

target-selection and validation issues discussed above, particularly with respect to the proposed two-year-old mannequin.

9. NHTSA has not defined “deliberate override action” at this time to provide system design flexibility. NHTSA seeks comment on whether permitted override action(s) should be defined and if so, what would be the definition(s).

Auto Innovators recognizes that the conditions associated with a deliberate override action may vary across vehicle platforms due to differences in powertrain characteristics, speed-control strategies, and system design. For example, some vehicles rely primarily on brake modulation while reversing, whereas others require accelerator input, which can affect how an override action is initiated and interpreted during testing. In some cases, accelerator input may also be difficult to distinguish from collision-induced forces or from system strategies designed to address pedal misapplication. This variability should be considered in any NCAP evaluation framework.

Auto Innovators supports NHTSA’s objective of preserving flexibility in system design and does not recommend prescribing a fixed set of allowable “deliberate override actions.” A rigid definition based on specific driver inputs, such as pedal application or button activation, may not accommodate differences in system architectures or reflect how drivers respond in real-world reversing scenarios.

At the same time, the absence of any guiding criteria may create ambiguity for test execution, system design, verification, and result interpretation. Accordingly, NHTSA should provide clear, high-level principles defining the conditions under which an override is considered intentional within the test procedure. Such guidance could include general expectations for driver input and system response, without constraining specific implementation approaches.

A performance-based approach that preserves flexibility in override strategy, while ensuring successful collision avoidance and consistent test interpretation, would better align with real-world driver behavior and support a more representative evaluation of system performance. This approach would also preserve the driver’s ability to override the system when necessary to maintain control or respond to an immediate safety concern.

10. NHTSA seeks comment on the four proposed performance criteria for evaluating RAB system performance: (1) an auditory warning shall be provided prior to RAB system brake application onset; (2) the vehicle shall not contact the pedestrian test mannequin; (3) after the vehicle comes to a complete stop, its brakes shall not be released unless the pedestrian test mannequin is no longer in the vehicle’s path or the driver performs a deliberate override action; and (4) the RAB system shall default to “ON” after each ignition/key cycle.

NHTSA also seeks comment on the effectiveness of different RAB system warning strategies, whether a haptic warning signal should be permitted in lieu of an auditory warning, and whether a visual warning should also be required.

Auto Innovators recommends that NHTSA adopt a performance-based approach to the proposed RAB performance criteria that preserves flexibility in system design while ensuring effective driver communication and recognizing meaningful crash avoidance performance. The proposed criteria

address safety-relevant elements of RAB performance, including driver communication, collision avoidance, post-stop vehicle control, and system availability. Reduced brake use during EV reversing also underscores the potential value of automated intervention in relevant backing scenarios.

(1) Auto Innovators supports flexibility in warning timing and modality. Effective warning strategies typically assume at least 2 seconds for perception, decision, and driver response. Requiring an auditory warning to precede braking may delay intervention in time-critical scenarios, particularly in “late reveal” conditions where a pedestrian or object appears suddenly behind the vehicle and immediate braking is necessary to avoid or mitigate a collision. In such cases, a warning that occurs simultaneously with braking onset may better preserve system responsiveness while still informing the driver of the hazard and need for intervention. Where an RAB system successfully avoids contact with the pedestrian test mannequin, that outcome demonstrates meaningful crash avoidance performance and should be eligible for NCAP credit even if the system’s design strategy does not satisfy a prescriptive requirement that the warning occur before brake application. Given the agency’s crash avoidance goals, NHTSA should therefore allow warnings to occur before or at the onset of braking, as appropriate to the system design and operating context.

NHTSA should avoid prescribing a single warning modality. Drivers rely on a combination of sensory inputs, and the most effective warning strategy may vary depending on vehicle design, operating context, and driver attention. In reversing scenarios, for example, drivers may be focused on the rearview display, making visual information particularly relevant. NCAP should allow auditory, visual, haptic, or combined warning strategies, provided the system effectively communicates the intervention to the driver. Haptic warnings should be permitted in lieu of auditory warnings where appropriate, and visual warnings should not be required as a standalone modality.

(2) Auto Innovators recognizes that a “no contact” performance metric can provide a more objective measure in some test conditions, but NHTSA should clarify how this criterion will be defined and applied. Specifically, it is unclear whether “no contact” refers strictly to the absence of physical contact with the test mannequin or whether it includes a defined buffer zone or evaluation perimeter. In addition, limiting RAB evaluations to a strict no-contact outcome across all test conditions may fail to recognize meaningful safety benefits. Systems that reduce impact speed or prevent secondary contact can provide real-world crash avoidance and mitigation benefits and should be recognized within a performance-based evaluation framework.

(3) Auto Innovators recommends that NHTSA avoid prescribing a fixed or extended brake-hold requirement following RAB activation. RAB is a driver-assistance feature, and prolonged brake hold may increase the risk of driver overreliance or confusion regarding system authority. A short, controlled hold period (e.g., approximately 1–2 seconds) may be appropriate to stabilize the vehicle and prevent immediate re-contact. During this brief window, systems should be allowed flexibility in how they maintain vehicle immobility, including through torque reduction or other countermeasures that may be used in place of brake application, provided the vehicle remains stationary during that interval. RAB evaluations should focus on collision avoidance performance rather than mandating specific post-event control strategies, and systems should be permitted to release braking in a controlled manner once the immediate collision risk has been addressed.

(4) Auto Innovators supports effective driver communication and broad system availability but recommends flexibility in system configuration and operation. While default-on configurations may increase system availability, mandating default-on at every ignition cycle may not align with customer expectations in all use cases, particularly in environments prone to frequent nuisance activations. Drivers should have the ability to deactivate the system when appropriate. NHTSA should also permit, but not require, automatic deactivation under certain operating conditions, such as towing, where RAB activation may be undesirable or unsafe.

Overall, a performance-based approach—focused on effective driver communication, meaningful crash avoidance and mitigation performance, and appropriate driver control—would better align with real-world operating conditions, driver behavior, customer acceptance, and continued system innovation.

11. NHTSA seeks comment on the proposal to conduct only one trial per test condition and to not conduct any remaining tests if the vehicle fails to meet all four performance criteria during a test trial.

Auto Innovators recommends that NHTSA allow all test conditions to be completed and evaluated, even if a system does not meet one or more performance criteria in an individual scenario. Continuing testing after an unsuccessful result would provide NHTSA and consumers with more comprehensive information on system performance across the full range of conditions, improve transparency, and support a more meaningful assessment of RAB capabilities.

Auto Innovators also recommends that NHTSA adopt a multiple-trial approach for each test condition. Assessing performance based on a single trial may not adequately capture system capability, particularly given the inherent variability in sensing, perception, target movement, and vehicle control in complex environments. A multi-trial framework, such as a “two-out-of-three” approach or a limited allowance for additional runs where results are inconsistent, would provide a more robust and representative evaluation of performance. NHTSA should also allow a confirmatory retest where contact occurs at a minimal impact speed, such as below 1 km/h, before treating the trial as a failure. Very low-severity contact may reflect test variability, target positioning, or vehicle-control tolerances rather than a meaningful inadequacy of the RAB system. A confirmatory retest in those cases would improve the robustness and fairness of the evaluation.

Relatedly, any approach where a single unsuccessful outcome results in a total loss of credit may not appropriately reflect real-world system performance. Systems can provide meaningful safety benefits even if performance varies across limited scenarios, and evaluation frameworks should be structured to recognize overall system effectiveness rather than requiring successful performance in all conditions.

Accordingly, NHTSA should consider a performance-based evaluation approach that allows for limited variability across trials and conditions while still providing clear and consistent consumer information. Such an approach would better account for real-world operating variability, improve test robustness, and encourage continued deployment and improvement of RAB technologies.

12. NHTSA requests comment on the proposal to give credit for RAB systems only when the vehicle meets the performance criteria for all 20 test conditions.

Auto Innovators recommends that NHTSA adopt a performance-based scoring approach that allows for partial credit across the proposed RAB test conditions, rather than requiring successful performance in all conditions as a prerequisite for receiving credit. A binary pass/fail structure may not fully reflect real-world safety performance, as systems can deliver meaningful crash avoidance and mitigation benefits even when performance varies across scenarios.

In particular, requiring all test conditions to be satisfied for credit may result in very few vehicles receiving credit, limiting the usefulness of NCAP as a consumer information tool. A system that successfully avoids collisions in the majority of conditions, such as in 19 out of 20 scenarios, may still receive no NCAP credit despite potentially providing meaningful safety benefits.

Auto Innovators therefore recommends that NHTSA consider a graded or threshold-based evaluation framework. This could include partial credit based on the number of test conditions satisfied, or a minimum performance threshold, such as an overall pass rate, that reflects system effectiveness across scenarios. A more granular structure, such as separate scoring for stationary and moving pedestrian scenarios, could further improve transparency and differentiation among systems. In addition, the current focus on a strict “no contact” outcome does not recognize meaningful impact mitigation. Systems that significantly reduce impact speed or severity can provide tangible safety benefits and should be reflected in the evaluation framework. Established consumer information programs, including Euro NCAP, use point-based scoring approaches that more effectively capture variations in system performance. A similar framework would provide a more accurate and nuanced assessment of RAB capability while supporting comparability across vehicles.

Consistent with other NCAP approaches, NHTSA should also consider awarding credit where RAB is available as optional equipment, rather than limiting recognition only to standard-equipment configurations. Providing some level of credit for available technologies can help communicate meaningful safety availability to consumers while supporting broader system deployment and alignment with global consumer information programs.

Accordingly, a performance-based approach that recognizes graduated levels of system performance would better align with real-world operating conditions, support continued technology development, and provide more meaningful information to consumers.