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August 28, 2019

Heidi King, Deputy Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE,
West Building, Ground Floor, W12-140
Washington, DC 20590

Re: Docket No. NHTSA-2019-0036: Removing Regulatory Barriers for Vehicles With Automated Driving Systems

Dear Deputy Administrator King:

Uber is pleased to submit these comments in response to the National Highway Traffic Safety Administration's (NHTSA) advanced notice of proposed rulemaking (ANPRM) on Removing Barriers for Vehicles With Automated Driving Systems.[1] Uber fully supports NHTSA's continuing efforts to exercise its authority to facilitate the commercial deployment of self-driving vehicle technology that promises to reduce the number of crashes on our public roads, which kill over 36,000 Americans each year.[2]

The ANPRM makes clear that NHTSA shares Uber's view regarding the enormous potential of Automated Driving Systems ("ADS") to improve road safety. At Uber, we put safety at the heart of everything we do. Our efforts to develop self-driving technology are guided by our core value to Stand for Safety. We believe that introducing self-driving vehicles to the Uber digital network will make transportation safer for people around the world. It is this commitment to safety that motivates us in preparing this comment.

We applaud NHTSA for emphasizing safety as its foremost priority in shaping policy for the development of self-driving vehicle technology. In *Automated Driving Systems 2.0: A Vision for Safety*, the Department of Transportation (DOT) and NHTSA identified twelve ADS safety elements that should serve as focal points for development efforts.[3] Last year, Uber published its Voluntary Safety Self-Assessment (VSSA), which details how Uber Advanced Technologies Group's (Uber ATG's) overall approach to safety advances these twelve ADS safety elements.[4]

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[1] Removing Regulatory Barriers for Vehicles With Automated Driving Systems, 84 Fed. Reg. 24,433 (proposed May 28, 2019) (to be codified at 49 C.F.R. pt. 571).
[2] *See* U.S. Dep't of Transp., *Preparing for the Future of Transportation: Automated Vehicles 3.0* 1 (2018); Nat'l Highway Traffic Safety Admin., *Early Estimate of Motor Vehicle Traffic Fatalities in 2018* 1 (June 2019), https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812749.
[3] U.S. Dep't of Transp., *Automated Driving Systems 2.0: A Vision for Safety* 5-15 (2017).
[4] Uber Advanced Technologies Group, *A Principled Approach To Safety* (Nov. 2018), https://uber.app.box.com/v/UberATGSafetyReport ("UATC VSSA").

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Building on this work, we have recently published Uber ATG's draft Self-Driving Vehicle Safety Case Framework,[5] which is structured around the same safety principles outlined in our VSSA. We welcome the industry at large to use and build on this framework.

I. The ANPRM reaffirms that there is a clear path forward for both ADS-DVs and dual-mode vehicles.

We thank NHTSA for reaffirming that "the existing FMVSSs neither have any provisions addressing the self-driving capability of an ADS nor prohibit inclusion of ADS components on a vehicle."[6]

We also appreciate the clarification that self-driving vehicles with traditional controls and conventional seating do not pose the same challenges when it comes to testing or certifying compliance with the FMVSS.[7] This clarification builds on DOT's prior recognition that "NHTSA's current safety standards do not prevent the development, testing, sale, or use of ADS built into vehicles that maintain the traditional cabin and control features of human-operated vehicles."[8] This additional guidance from NHTSA offers the kind of regulatory certainty that developers need by making clear that no existing standard bars testing or deployment of vehicles that incorporate ADS into base vehicles with conventional designs.

Uber recognizes that the primary focus of the ANRPM is Automated Driving System-Dedicated Vehicles that lack traditional controls and/or conventional seating (ADS-DVs).[9] At the same time, the ANPRM reinforces several important points about the core policy objectives advanced by the FMVSS and, as a result, the appropriate regulatory treatment of "dual-mode vehicles" that can be configured for both manual driving by a human driver and self-driving operations.[10]

In its development efforts to date, Uber has mostly tested passenger vehicles equipped with ADS that retain conventional controls (i.e., dual-mode vehicles) and conventional seating. Our approach begins with a strong safety baseline by relying on base vehicles that have been certified as meeting all FMVSS requirements. To date, Uber has *not* been developing ADS-DVs, and we therefore have not relied on a single best method for validation testing of ADS-DVs.

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[5] Uber Advanced Technologies Group, *Safety Case Framework* (July 2019), https://uberatg.com/safetycase.
[6] Removing Regulatory Barriers, 84 Fed. Reg. at 24,435.
[7] *See id.*
[8] U.S. Dep't of Transp., *Automated Vehicles 3.0* at 6-7.
[9] *See* Removing Regulatory Barriers, 84 Fed. Reg. at 24,434 n.1.
[10] *See* Nat'l Highway Traffic Safety Admin., Pilot Program for Collaborative Research on Motor Vehicles With High or Full Driving Automation, 83 Fed. Reg. 50,872, 50,877 (proposed Oct. 10, 2018) (to be codified at 49 C.F.R. pts 555, 571, 591).

Although more varying validation mechanisms may become necessary or appropriate as vehicle designs evolve, Uber's own efforts—focused on dual-mode passenger-transport vehicles—have not necessitated such novel validation techniques. This comment is accordingly limited to those aspects of the ANPRM that implicate or are informed by Uber's own development efforts. While Uber's development efforts have thus far focused on dual-mode vehicles, our efforts offer lessons on some of the key questions posed by NHTSA through this ANPRM, especially with regard to the validation testing of vehicles (ADS-DVs or dual-mode vehicles) that are primarily designed for light-vehicle passenger transportation.

On the core subject matter of this ANPRM: Among the options discussed by NHTSA for testing ADS-DVs, Uber appreciates that several may help fulfill the agency's testing mandate, whether alone or in combination. But in our view, the "surrogate-vehicle" testing method described in the ANPRM offers a straightforward path for safe and consistent ADS-DV testing. This method aligns with traditional testing performed by NHTSA and requires minimal or no alteration to current regulatory standards. Our comments below are aimed at clarifying: (1) our understanding of the policy intent of the ANPRM and the relevant FMVSS and (2) how these policy objectives can be advanced through constructions of the FMVSS and a surrogate-vehicle testing approach.

II. The core policy objectives of many FMVSS can be effectuated without the inclusion of traditional controls.[11]

As the ANPRM notes, installing an ADS into a traditional vehicle does not, by itself, clash with any FMVSS. As NHTSA has previously explained, "vehicles with traditional interior designs . . . that meet the existing FMVSS would still comply with the FMVSS even if those vehicles were designed to be operated as vehicles with high and full driving automation."[12]

This interpretation is eminently reasonable, and it underscores an important point about the role of traditional controls in the regulation of motor vehicle safety: As long as a particular safety feature satisfies the relevant performance standards, the traditional controls that a human driver would normally manipulate to engage those features primarily function to (1) facilitate NHTSA's ability to conduct compliance testing and (2) provide one possible (but not exclusive) method of activating or manipulating the underlying safety feature.

Potential compliance and testing questions arise where ADS-DVs lack those traditional controls or conventional seating.[13] NHTSA has appropriately asked whether existing regulations may impede the testing and deployment of ADS-DVs and may limit NHTSA's ability to carry

[11] The following section answers, among other things, ANPRM questions one, two, and four. *See* Removing Regulatory Barriers, 84 Fed. Reg. at 24,440-41.
[12] Pilot Program, 83 Fed. Reg. at 50,877.
[13] Removing Regulatory Barriers, 84 Fed. Reg. at 24,435-36.

out its vehicle testing responsibilities.[14] This focus presumably underscores DOT's recent recognition that "NHTSA's current safety standards do not prevent the development, testing, sale, or use of ADS built into vehicles that maintain the traditional cabin and control features of human-operated vehicles."[15]

This focus accords with DOT's understanding that regulatory references to a "driver" may be satisfied by an ADS,[16] which makes clear that the safety standards embodied in many of the crash-avoidance FMVSS are designed to assure a certain level of safety in system *design* rather than to assure the ideal use of those safety devices in all situations or to mandate a certain set of human-driver interactions with the vehicle. The ANPRM makes this point explicit. Using FMVSS No. 126's standard for Electronic Stability Control as an example, the ANPRM points out that:

> [T]he agency did not promulgate the rule for the purpose of requiring a steering wheel or regulating the performance of the steering wheel, but used the equipment it reasonably anticipated at the time would be included in any of the vehicles for which ESC would be required. . . . *[O]ther standards that present similar types of barriers were also intended to address the performance of some other part of the vehicle, rather than the manual control*."[17]

Taken together with past DOT pronouncements on this subject, the ANPRM makes clear that the FMVSS are aimed at (1) assuring the presence of a certain safety system with certain capacities and (2) assuring that NHTSA is able to test vehicles for compliance with the requisite safety system capacity.

NHTSA has authority to adopt this interpretation of its own regulations.[18] This interpretation is not only reasonable—it is the most faithful to the policies underlying the FMVSS. The goal of any given crash-avoidance FMVSS is to provide for a certain safety capability. Any traditional control referenced in the course of that standard simply serves (as the ANPRM notes) as a possible way of realizing that feature, along with a presumptive mechanism for regulatory testing of that safety feature. For example, the core concern of FMVSS No. 126 is to ensure that vehicles have a steering system that reduces the risk that drivers will lose directional control of the vehicle.[19] Whether the vehicle employs a traditional steering wheel as a means of manipulating that steering system is incidental to that underlying safety goal.

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[14] *See id.* at 24,447 ("As noted through this document, we are especially interested in comments that focus on how the test methods discussed ensure vehicle safety.").
[15] *See* U.S. Dep't of Transp., *Automated Vehicles 3.0* at 6-7.
[16] *Id.* at iv.
[17] Removing Regulatory Barriers, 84 Fed. Reg. at 24,439 (emphasis added).
[18] *See Auer v. Robbins*, 519 U.S. 452, 461 (1997); *Kisor v. Wilkie*, 139 S. Ct. 2400, 2410-18 (2019) (reaffirming the doctrine of *Auer* deference).
[19] Removing Regulatory Barriers, 84 Fed. Reg. at 24,439.

Regardless of the type of control employed, what ultimately matters is that the steering system is *capable* of performing to the standard NHTSA deems critical for maintaining lateral vehicle control.

Understood in that way, as the ANPRM does, the FMVSS do not mandate a permanent cause-and-effect relationship between a traditional control and the operation of a safety system. Rather, the crash-avoidance FMVSS focus on the presence of a system that can deliver the required safety capacity upon some controlling input.

III. NHTSA can validate the performance of crash-avoidance safety systems of ADS-DVs through testing of surrogate vehicles that retain traditional controls.

The core policy goals of the FMVSS—and the concomitant relevance of references to traditional controls—also provides important context for what testing procedures might best enable NHTSA to execute its testing and validation responsibilities with respect to ADS-DVs. This question forms the heart of the ANPRM.[20]

The ANPRM proposes six different approaches to testing vehicles that lack conventional controls. Several of these options may—standing alone or in combination—present workable approaches.[21] Based on Uber's own experience with developing self-driving vehicles and our understanding of the core policy objectives promoted by the FMVSS, we write today to resoundingly endorse the prospect of testing a "surrogate" vehicle with human controls as a means for testing all self-driving vehicles, with or without traditional controls.[22]

Surrogate-vehicle testing can enable NHTSA to fully explore the functioning of a given vehicle's crash-avoidance systems. Testing with a surrogate vehicle equipped with conventional controls can provide insight into how the various crash-avoidance systems (brakes, stability control, etc.) will be able to perform when placed under the control of an ADS, as opposed to a human driver.

Uber submits that the surrogate-vehicle approach offers several salient benefits. First, the approach would largely avoid the need for NHTSA to devise new tests for validation testing. Once a suitable surrogate is identified, testing can proceed as it would for a conventional vehicle. Second, using a surrogate vehicle would avoid the potential challenges that NHTSA has

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[20] This section answers, among other things, ANPRM questions 37-39. *See* Removing Regulatory Barriers, 84 Fed. Reg. at 24,446-47.
[21] *See infra* Section IV for further discussion on the potential benefits and drawbacks of some of these approaches.
[22] Removing Regulatory Barriers, 84 Fed. Reg. at 24,446.

identified with transporting ADS-DVs for testing.[23] A surrogate vehicle equipped with traditional controls can be transported for testing in much the same way as any conventional vehicle. Third, using the surrogate-vehicle approach has the added benefit of allowing NHTSA's testing procedures to remain technology neutral by allowing NHTSA to use the same tests to verify the compliance of both ADS-DVs and dual-mode vehicles (which are themselves amenable to traditional testing methods).[24]

The ANPRM identifies some potential challenges for this approach, including identifying a suitable surrogate for an ADS-DV designed without traditional controls. This challenge is not unique to testing ADS-DVs. It arises for *any* vehicle that undergoes NHTSA validation testing. Any test vehicle must act as a suitable stand-in for many other different vehicles—including vehicles with varying features. Accordingly, we see no reason to think this challenge is insurmountable.

The general goal of the FMVSS is to establish performance standards for underlying safety systems, and the FMVSS reflect the understanding that actual use by real-world drivers will be subject to some variability. After all, as noted above, there can be no doubt that, even with conventional vehicles, the actual performance of a given safety system will vary according to the driver, the environment, and a host of other factors. This underscores that the FMVSS are designed to ensure system capacity, rather than how a system would be utilized under any and all conditions.

With that in mind, the primary challenge for identifying a suitable surrogate vehicle would be to make sure that the only material difference between the proposed surrogate and the ADS-DV is that the former incorporates traditional controls whereas the latter would activate the same safety systems using different, computerized controls (realizing the promise of DOT's prior recognition that an ADS could, for all relevant regulatory purposes, fulfill the responsibilities of the human driver). In other words, the weight, footprint, crashworthiness, performance of underlying systems, and other physical features should remain substantially the same. If these conditions are satisfied, it should be possible for NHTSA to confirm that the underlying system (e.g., the steering system, the braking system) in the ADS-DV meets the safety goals of the relevant FMVSS—just as NHTSA confirms material equivalency when testing a representative example of a conventional vehicle model. Accordingly, a surrogate that does not materially differ from the ADS-DV aside from its controls should allow NHTSA to test for compliance.

Although ADS-DVs may differ in various respects from existing conventional vehicles, Uber maintains that only a relatively small set of "inherent differences" should be expected between an ADS-DV and a designated surrogate vehicle—i.e., a vehicle equipped with an ADS and also equipped (for testing purposes) with conventional controls necessary to operate the

[23] *See id.* at 24,442.
[24] *See infra* Section V for further discussion on the potential consequences of this approach for dual-mode vehicles.

vehicle's crash-avoidance systems. The ANPRM seems to suggest that material differences would follow merely because the ADS-DV is capable of self-driving, whereas the conventional surrogate is not.[25] But that is a difference that goes to the details of how a system is manipulated, not a difference in the underlying systems' *capabilities*. As noted above, even in the case of conventional vehicles, a system premised on use of traditional controls does not eliminate the prospect of differential performance in the hands of different human drivers. Yet this is not by itself a reason to doubt that a particular conventional vehicle is an adequate surrogate for validation testing. The only expected difference, therefore, between an ADS-DV and an otherwise comparable surrogate/conventional vehicle would arise due to the performance and capacity of the ADS—a subject that the ANPRM clearly identifies as beyond the scope of this regulatory effort.[26]

Furthermore, developers could reasonably attempt to identify a suitable surrogate using any number of approaches. In fact, some of the testing approaches discussed in the ANPRM—including simulation and submission of documentation—may present viable options for establishing the necessary equivalence between a surrogate vehicle and an ADS-DV. Any such documentation package would, presumably, also need to establish that the control changes do not otherwise violate a vehicle's safety envelope (e.g., through changes of a certain magnitude to the vehicle weight).

At core, the key inquiry here would be to identify the basic function of a given FMVSS—typically not a difficult exercise in light of the explicit performance requirements baked into the FMVSS—and then to demonstrate via testing that the basic function meets the standard. For example, for the FMVSS related to braking, a manufacturer might demonstrate that both the ADS-DV and its traditional-control-equipped surrogate utilize the same foundation brakes and the same brake controller, isolating the source of the actuation signal (from a conventional pedal or an ADS) as the only difference between the surrogate and the ADS-DV. A manufacturer might establish that comparable functionality for the brake system by measuring the control signals flowing to the braking system. If the braking process and performance remained otherwise consistent, then the surrogate could be deemed sufficiently equivalent for purposes of validation testing.

But in any event, NHTSA could embrace such a general approach while reserving judgment on whether an individual manufacturer has established equivalence in any given case. Uber does recognize that a uniform method for establishing equivalence has not yet been adopted. We would be eager to work with all relevant stakeholders to identify such a method.

IV. ***Notes on other testing frameworks***

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[25] *Id.* at 24,446.
[26] *Id.* at 24,434 n.3.

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Our comments above should not be read as opposing other testing methodologies—alone or in combination—to validate FMVSS compliance for ADS-DVs. Developers in this area are innovating constantly both in system development and in test methodologies. Uber does want to highlight possible considerations that would apply to at least some of the testing alternatives discussed in this ANPRM.[27]

Test Mode With External Control (TMEC): The ANPRM notes that a remote engineer given access to a vehicle's key crash-avoidance systems could test the functionality of those systems. We note, at the outset, that the very consideration of this approach reinforces the conclusion that (1) the presence or absence of a specified traditional control is largely immaterial for assessing the functioning of the underlying safety system (other than for facilitating conventional testing) and (2) NHTSA need not, to answer the questions in this ANPRM, appreciate the actual capacity of a given ADS. As an example, the inquiry's focus on whether a vehicle brake system functions upon remote triggering underscores that the FMVSS are not primarily focused on the type of controller triggering such a function—whether that be a traditional control, a remote control, or the ADS.

Although remote testing may come with many salutary benefits, any process that enabled remote access to a consumer-facing vehicle (albeit for limited regulatory purposes) may introduce new cybersecurity risks that could undermine the broader safety advantages of an ADS-DV. After all, a process that allows NHTSA to access vehicle controls would presumably create at least some new risk of cyber intrusions into that same interface. Efforts to mitigate this risk—through encryption keys and other workarounds—may complicate both NHTSA's and the end consumer's ability to use these vehicles. Additionally, this type of testing approach may misleadingly suggest to consumers that the vehicle could be operated through some type of remote control without their knowledge or approval.

Additionally, a TMEC-focused approach would raise difficult questions on where to perform the relevant validation tests and how to align a test facility with a particular vehicle's Operational Design Domain. As the ANPRM notes when discussing the "Normal ADS-DV Operation" methodology, different ADS-DVs will be designed to operate in different ODDs.[28] For that reason, a single test facility may prove ill-suited for testing the full universe of ADS-DVs, due to likely mismatches between a particular test facility and an individual vehicle's ODDs. Any single test track may capture ODDs *not* within the ODD of a particular ADS-DV, thereby complicating the prospect of performing the validation test within that facility.

Those same concerns about ODD restrictions would be compounded if NHTSA were to try maintaining a centrally controlled test track. If NHTSA's primary concern is making sure

[27] This section answers, among other things, ANPRM questions 25-33. *See* Removing Regulatory Barriers, 84 Fed. Reg. at 24,444-45.
[28] *See id.* at 24,441-42.

that ADS-DVs can be trusted to operate safely within their specific ODDs, then any approach that involves the use of a test track must ensure that the track is properly designed to test for that ODD. But no one-size-fits-all test track can be fully responsive to *all* of the many different ODDs that developers will set for their vehicles. DOT has previously recognized the need for variety in testing courses grounds, concluding in 2018 that "[t]he Department does not intend to pick winners and losers or to favor particular automated vehicle proving grounds over others."[29] As a result, Uber recommends NHTSA conduct additional research in this area, including discussions with developers before devoting scarce resources to designing such a test track, particularly when there are other viable testing methods available. We believe that the same concerns apply to any testing methodology premised on the idea of NHTSA designing its own centralized test track for ADS-DVs.

Simulation: As Uber has noted previously, simulation presents an important tool for advancing self-driving technology.[30] Although generally valuable, this tool cannot completely replicate the experience of driving a vehicle on physical roads. This is why, for example, Uber's own simulation efforts are coupled with both track testing and public road testing.[31] The same dynamic is similarly present in evaluating crash-avoidance technologies. Simulation may provide extremely useful data on the performance of a vehicle and in its individual systems in a variety of circumstances. But validating FMVSS performance in real-world conditions requires enhancing simulation results with at least some type of real-world testing (utilizing, perhaps, any of the several possible methods described in the ANPRM).

For reasons similar to those discussed above,[32] Uber would like to encourage additional research and discussions in this area before NHTSA devotes scarce agency resources to designing its own simulation protocol for ADS-DV testing. At best, a NHTSA-designed simulation protocol would only be redundant of the simulation testing that private developers are already conducting. Additionally, any centralized simulation protocol would require interoperability with ADS technology from different developers; and these developmental efforts may not be inherently able to simply plug-in to a centralized simulation effort. That is particularly true given that different ADS-DVs will be designed to operate within different ODDs and use different proprietary algorithms to achieve particular maneuvers and operations. Because of this expected variation, we do not believe it would be feasible for NHTSA to design one simulation protocol that will (*ex ante*) appropriately test the capabilities of all ADS-DVs. We believe the only feasible alternative would be for NHTSA to design a simulation protocol that favors some ODDs and design choices over others. But putting a thumb on the scales in this way would only hamper innovation, and it would be inconsistent with DOT's principle of technology neutral regulation.

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[29] *See* U.S. Dep't of Transp., *Automated Vehicles 3.0* at 17.
[30] *See* UATC VSSA at 48-49.
[31] *See id.* at 46-50.
[32] *See supra* at 7-8.

Rather than try to establish its own simulation protocol, NHTSA could oversee developers' use of simulation for testing by providing detailed guidance on how to validate simulation models for the purpose of FMVSS testing and by ensuring that developers who rely on simulation as a compliance testing methodology do so using best practices.

V. NHTSA should maintain parity in the regulatory treatment of dual-mode vehicles and ADS-DVs.

Finally, Uber encourages NHTSA to ensure that its approach to the crash-avoidance standards and testing methodologies remains neutral between ADS-DVs and dual-mode vehicles. DOT has committed to remaining technology neutral so that the market can decide how best to implement self-driving technology.[33] And this neutral approach also follows from the core principles advanced by the FMVSS.

With respect to crash-avoidance standards, NHTSA should not make those standards more burdensome for dual-mode vehicles than for ADS-DVs. Uber agrees with DOT that the current FMVSS "do not prevent the development, testing, sale, or use of ADS built into" dual-mode vehicles.[34] And Uber fully supports NHTSA's efforts to reach the same goal for ADS-DVs. But in the process of removing unnecessary regulatory barriers for ADS-DVs, NHTSA should be careful not to put dual-mode vehicles at a comparative disadvantage. This might happen if NHTSA were to exempt ADS-DVs from certain safety standards while leaving dual-mode vehicles subject to them, or if NHTSA were to create separate, less burdensome requirements that apply to ADS-DVs only.

As the ANPRM points out, the crash-avoidance standards are "intended to address the performance of some . . . part of the vehicle, *rather than the manual control*."[35] That is why "requiring installation of traditional manual controls results in unnecessary design restrictions and regulatory expense."[36] And that understanding should apply to both ADS-DVs and dual-mode vehicles alike. When designing a self-driving vehicle, developers must make sure that whatever controls and seating they choose to include are in good working order. But NHTSA should not impose any other restrictions or regulatory expense on developers just because they choose to develop dual-mode vehicles rather than ADS-DVs. That would be inconsistent with DOT's automation principles. It would also impose an unfortunate cost on our transportation system. Today, dual-mode vehicles play a critical role in the development of vehicles that can operate at SAE Level 4 and Level 5. We believe that federal regulation should

[33] *See* U.S. Dep't of Transp., *Automated Vehicles 3.0* at iv.
[34] *Id.* at 6-7.
[35] Removing Regulatory Barriers, 84 Fed. Reg. at 24,439.
[36] *Id.* at 24,436.

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not keep dual-mode vehicles from continuing to play an important role in the future of transportation.

For similar reasons, NHTSA should also not update its testing methodologies in a way that makes it easier to validate one type of vehicle than another. This should not be a challenge for dual-mode vehicles because they can be tested for compliance using traditional methods.[37] But for simplicity and efficiency, it would be ideal for NHTSA to adopt a testing methodology that can be applied to both dual-mode vehicles and ADS-DVs. This is yet another reason why NHTSA should consider adopting the surrogate-vehicle approach. This approach offers a viable method for testing ADS-DVs and applies straightforwardly to a dual-mode vehicle too because the way a dual-mode vehicle's systems perform in manual mode is plainly a good surrogate for how those systems would perform in autonomous mode.

In short, NHTSA is now making great strides to create a transparent regulatory environment for ADS-DVs. Uber fully supports these efforts. However, principles of neutrality and fairness recommend against NHTSA to clearing a path for ADS-DVs while erecting new barriers for dual-mode vehicles, simply because the latter retain traditional controls and conventional seating (a configuration that, if anything, should streamline the validation process). If federal safety standards can allow developers to dispense with these features altogether, those features should not be made the basis for impeding the development of dual-mode vehicles.

VI. Conclusion

Uber would like to thank NHTSA for its continuing efforts to remove regulatory barriers for vehicles equipped with ADS. We look forward to continue working with NHTSA on these and other issues that are critical to the future of transportation.

Sincerely,

Danielle Burr
Head of Federal Affairs

[37] *See id.* at 24,435.