



May 20, 2018

*By regulations.gov*

National Highway Traffic Safety Administration (NHTSA)  
Docket Management Facility  
West Building, Ground Floor, Room W12-140  
1200 New Jersey Avenue SE, Washington, DC 20590-0001

Re: General Motors, LLC- Petition for Temporary Exemption from Various Requirements of the Safety Standards for an All-Electric Vehicle with an Automated Driving System; NHTSA-2019-0016

Ladies and Gentlemen:

The National Automobile Dealers Association (NADA) represents more than 16,000 franchised automobile and truck dealers who sell new and used motor vehicles and engage in service, repair and parts sales. Together they employ over 1,100,000 people nationwide, yet the majority are small businesses as defined by the Small Business Administration.

Last March, NHTSA requested comment on a petition filed by General Motors, LLC (GM) for a two-year temporary exemption from the application or partial application of some 16 Federal Motor Vehicle Safety Standards (FMVSS) to a “Zero-Emission Autonomous Vehicle” (ZEAV) to be operated exclusively by an Automated Driving System (ADS).<sup>1</sup> Designed to provide on-demand mobility services in GM-controlled fleets, the ZEAV will lack steering wheels, manually-operated gear selection mechanisms, and foot pedals for braking and accelerating. In response, NADA offers the following comments and suggestions.

## **I. Introduction**

GM appropriately is availing itself of the statutory process set out in the National Traffic and Motor Vehicle Safety Act (the Act) to enable manufacturers to request temporary exemptions from otherwise applicable FMVSS for certain vehicles they seek to manufacture for distribution and use in commerce.<sup>2</sup> Temporary exemptions, if granted, are from the Act’s general mandate that persons may not *manufacture for sale, sell, offer for sale, introduce or deliver for introduction in interstate commerce, or import* new vehicles unless they comply with applicable FMVSS.<sup>3</sup> Note that

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<sup>1</sup> 84 Fed. Reg. 10182, *et seq.* (March 19, 2019).

<sup>2</sup> 42 U.S.C. §30113(b).

<sup>3</sup> 49 U.S.C. §30112(a)(1); emphasis added. GM cannot seek an exemption to enable ZEAVs to be “deployed”, for the simple reason that neither the statute nor NHTSA’s regulations use terms such as “deployed” or “deployment”.

GM did not seek to introduce noncompliant ZEAVs pursuant to a statutory provision designed for limited testing and evaluation.<sup>4</sup>

NHTSA correctly notes that an analysis of GM's petition necessarily involves a

*...comparison of (1) a vehicle in which all driving decisions as to when and how it is appropriate to use crash avoidance technologies and take actions to implement those decisions would be made by an ADS to (2) a vehicle in which almost all of those decisions are made and implemented by a human driver.<sup>5</sup>*

In light of the fact that any exemption granted by NHTSA for the ZEAV must be consistent with both the public interest<sup>6</sup> and the purposes and goals of the Act<sup>7</sup>, the proper standard by which NHTSA should make this comparison involves a determination that 1) the safety purpose of each FMVSS will still be met; and 2) the ZEAV ADS will operate in at least as safe a manner as a human driver. This latter criterion necessarily requires that the ZEAV ADS to be subject to a full and rigorous safety testing, evaluation, and verification protocol.

For at least two reasons, NADA disagrees with any suggestion that an evaluation of the "public interest" associated with the GM petition should involve the hypothetical public benefits, safety and otherwise, that some suggest would result from the use of HAVs. First, the GM petition stands on its own and is limited to the time-period, number of ZEAVs, and FMVSS involved. Second, several studies conclude that 75-90% of the safety benefits associated with eliminating human error by using ADS-operated HAVS can be derived from the use of human-operated vehicles equipped with Advanced Driver Assist Systems (ADAS).

## **II. Statutory Basis for Exemption**

The GM petition seeks a limited two-year exemption pursuant to either the statutory provision for the development and field evaluation of new motor vehicle safety feature providing a safety level at least equal to the safety level of the standard<sup>8</sup> or the statutory provision for the development and field evaluation of low-emission vehicles<sup>9</sup>. NADA submits that the former provision is the proper statutory basis by which NHTSA should evaluate the GM petition. To be sure, the petition states that the ZEAV will be a battery electric vehicle (BEV) that will meet the definition of "low-emission motor vehicle" as that term is used in the Clean Air Act.<sup>10</sup> But that

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<sup>4</sup> 49 U.S.C. §30112(b)(10). By effectively requiring a commitment not to sell or offer for sale vehicles once tested and evaluated, this exclusion would likely limit GM's ability to commercially use ZEAVs in controlled fleets.

<sup>5</sup> 84 Fed. Reg. 10182, at 10183.

<sup>6</sup> 49 U.S.C. §30113(b)(3)(A).

<sup>7</sup> 49 U.S.C. §30101. *The purpose of this chapter is to reduce traffic accidents and deaths and injuries resulting from traffic accidents. Therefore it is necessary....to prescribe motor vehicle safety standards for motor vehicles and motor vehicle equipment in interstate commerce....*(emphasis added).

<sup>8</sup> 49 U.S.C. §30113(b)(3)(B)(ii).

<sup>9</sup> 49 U.S.C. §30113(b)(3)(B)(iii).

<sup>10</sup> 49 U.S.C. §30113(a); 42 U.S.C. §7521.

ZEAVs will be BEVs is irrelevant to the important safety questions posed by a petition seeking exemption from some 16 FMVSS based on the fact that the ZEAV will be a SAE Level 4 ADS-only operated vehicle. Indeed, GM currently produces and sells into commerce battery electric Chevrolet Bolts, ostensibly in full compliance with all applicable FMVSS.

NHTSA's rules governing exemptions require GM to provide 1) a description of the safety or impact protection features, and research, development, and testing documentation establishing the innovational nature of such features; 2) an analysis establishing that the level of safety or impact protection of the feature is equivalent to or exceeds the level of safety or impact protection established in the standard from which exemption is sought; 3) substantiation that a temporary exemption would facilitate the development or field evaluation of the vehicle; 4) a statement whether, at the end of the exemption period, the manufacturer intends to conform to the standard, apply for a further exemption, or petition for rulemaking to amend the standard to incorporate the safety or impact protection features; and 5) a statement that not more than 2,500 exempted vehicles will be sold in the United States in any 12-month period for which an exemption may be granted pursuant to this paragraph.<sup>11</sup>

GM's petition takes pains to describe the innovational nature of the ZEAV's safety features and provides analysis in support of its claim that, in each instance, the ZEAV will provide a level of safety that is at least equal to that established by the FMVSS for which an exemption is sought. It also includes statements indicating that not more than 2,500 vehicles per year will be introduced into a GM-controlled ride-share program, that during the two-year exemption period GM will work with NHTSA and other stakeholders on changes to the FMVSS and on ADS standards designed to address HAV technologies, and that at the end of the two-year exemption period it will continue to operate exempt ZEAVs in controlled fleets for up to their normal service life, after which they will not be resold. While it may be easier for GM to collect data on and to evaluate an exemption program for ZEAVs operating in a self-controlled fleet, the exemptions called for in the GM petition are by no means dependent on who owns the ZEAVs, i.e., they could just as well be destined for sale to a GM dealership or independent fleet.

### **III. Safety Analyses**

Prior to the granting of any temporary ZEAV exemption, NHTSA should thoroughly evaluate and document the GM petition's "equal or better" claims. Moreover, the grant of any ZEAV exemption should be conditioned on appropriate restrictions designed to meet the public's interest in ensuring that the ZEAVs they may ride in or share the road with will be operated by an ADS that was subject to a full and rigorous safety testing, evaluation, and verification protocol. That protocol should demonstrate, among other things, that the ZEAV ADS is able to perform in a manner that is at least as safe as a human driver.

Given that this is the first exemption petition being considered by NHTSA for a SAE Level 4 ADS-only operated vehicle, the the agency should take care to evaluate it in terms of its potential

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<sup>11</sup> 49 CFR §555.6.

impact on the public's perception of and confidence in such vehicles. At the very least, the public needs to know that ZEAVs will compare favorably to similarly-equipped FMVSS-compliant, human-controlled GM vehicles, and that a ZEAV ADS will operate at a safety level equal to or greater than an average human driver. SAE Level 4 ADS-only operated HAVs that cannot match the safety record of the average human driver will, by definition, have a negative impact road safety and, as such, will inhibit any future widespread sale and use of such vehicles.

Any granting of a ZEAV exemption should be the start, not the end, of NHTSA's involvement. NADA urges NHTSA (and GM) to recognize the need for an ongoing sharing and analysis of critical safety data. Such data analysis will be key to evaluating the relative safety performance of the ZEAV and its ADS. For example, through ongoing data analysis, NHTSA should be able to evaluate the ZEAV's safety performance relative to similar vehicles operated under similar conditions by human drivers. Moreover, ongoing safety data analysis will enable NHTSA to help determine which changes to existing FMVSS will not detract from the overall level of safety they were designed to enhance. For any documented crashes that occur during ZEAV operation, NHTSA should analyze how a similarly-equipped human driven vehicles would have performed.

When comparing ADS-operated ZEAVs with human-operated vehicles, NHTSA should not limit itself to metrics such as accidents-per-mile. For example, GM and NHTSA should collect and analyze data on how well ZEAVs comply with local traffic laws and established road customs. Traffic law noncompliance can be an indicator of how likely it is that an ADS (or human driver) may become involved in future accidents and such data can be used to ascertain underlying issues and edge cases where the ADS may not be performing at a sufficiently high overall level of safety. In addition, GM should be committed to an appropriate level of computer simulation modelling, as such modeling is widely recognized as an important to helping to evaluate ADS safety performance. Certainly, the lower costs and risks associated with simulation modeling, when conducted together with appropriate on-road testing, will assist with evaluating the ZEAVs safety performance.

GM and NHTSA also should carefully analyze any instance where a ZEAV is put into a minimal risk condition. Such conditions typically will reflect a vehicle or ADS malfunction and may even indicate potential safety or design defects. Moreover, given public concerns regarding the ability of SAE Level 4 HAVs to attain minimal risk conditions without causing other passenger or traffic safety concerns, any grant of the GM petition should involve a detailed discussion of how and under what conditions ZEAVs will achieve minimal risk conditions, and how passengers are to be cared for once such conditions occur. The petition states that GM will contact passengers in the event a ZEAV achieves a minimal risk condition but fails to indicate next steps. For example, it may be helpful to know that GM will arrange for a dispatch from the nearest GM dealership to assist both passengers and the ZEAV itself, and that in some circumstances law enforcement or other emergency services will be contacted.

GM and NHTSA stress that many of the tests typically performed to prove FMVSS compliance will have to be significantly altered to show that an exempt ZEAV matches or exceeds the safety level of a compliant vehicle. The GM petition outlines several standards where compliance

testing becomes implausible or even impossible due to the ZEAV's ADS operation. Certainly, those FMVSS that depend on the responsiveness of human drivers, such as FMVSS No. 135 which requires foot control activated braking, may need to be modified to accommodate a compliance test involving electronically applied braking by an ADS.

NHTSA should consider whether to condition any grant of the GM petition on the potential operational involvement of ZEAV passengers, given that they may be the first to recognize when an ADS is behaving erratically or when a serious but unusual road safety hazard is developing. For example, an exemption from FMVSS No. 135 could be conditioned on a passenger-controlled emergency brake. Of course, NHTSA and GM must analyze and balance the potential safety benefits associated enabling passengers to override a ZEAV ADS using, for example, emergency brakes or "kill switches" against the potential misuse of such devices.

GM and NHTSA should carefully consider the potential benefits of enabling passengers to monitor and appreciate ZEAV performance under ADS operation. To that end, consideration should be given to the benefits of requiring compliance with existing FMVSS dashboard telltales. Even if dashboard displays aren't necessary to ADS-only ZEAV operation, information such as speedometer/odometer readings, trouble lights, and turn signal indicators could help provide passengers with an extra level of familiarity and comfort, thereby helping to foster ZEAV trust and acceptance.

#### **IV. Terms and Conditions**

The ZEAV petition, if granted, will provide NHTSA with an opportunity to gather useful data for purposes of making FMVSS revisions and for creating ADS standards. Any grant of the petition should be conditioned on a requirement that GM collect and share with NHTSA the data it deems necessary to aid in setting future standards. Given that GM has stated an intent to keep exempt ZEAVs in operation for up to their useful life, it should be required to share useful data with NHTSA for as long as they are kept in operation. This is particularly important given that GM likely will be making changes to software and hardware that are likely to have an impact on the ZEAV's safety level over time.

Any grant of the GM petition should be conditioned on appropriate provisions governing cybersecurity and passenger privacy, both of which are critical concerns with respect to the public's acceptance of HAVs. Any data gathered by GM and shared with NHTSA should be scrubbed of personal information and compiled in aggregated data sets to help ensure passenger anonymity.

Conditions set out in any temporary ZEAV exemption should, at the very least, clearly state operational design domain restrictions and well-defined minimal risk condition criteria. In addition, conditions should cover external vehicle identification, signaling, and warning, appropriate speed limiter and emergency braking capability, data and video recording, vehicle-to-passenger and vehicle-to-emergency responder communication, etc.

As noted above, GM has indicated that if its petition is granted, it will work with NHTSA and industry stakeholders on an FMVSS rulemaking to address modifications designed to accommodate and foster autonomous vehicle technology. Importantly, this should include the development of new regulations and standards designed to address ADS performance and reliability. As a stakeholder, NADA looks forward to working with NHTSA as it moves forward with these important regulatory initiatives.

On behalf of NADA, I thank NHTSA for the opportunity to comment on this matter.

Respectfully submitted,

A handwritten signature in black ink, reading "Douglas I. Greenhaus". The signature is written in a cursive, flowing style.

Douglas I. Greenhaus  
Chief Regulatory Counsel,  
Environment, Health and Safety