



ADVOCATES
FOR HIGHWAY
& AUTO SAFETY

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**General Motors, LLC – Receipt of Petition for Temporary Exemption
From Various Requirements of the Safety Standards
for an All-Electric Vehicle With an Automated Driving System
Notice of receipt of petition for temporary exemption; request for public comment
84 Federal Register 10182, March 19, 2019**

Advocates for Highway and Auto Safety (Advocates) files these comments in response to the National Highway Traffic Safety Administration's (NHTSA, Agency) notice of receipt of a petition for temporary exemption (Petition) and request for public comment from General Motors, LLC (GM).¹ Advocates opposes the granting of the petition as it fails to meet the statutory requirements for petitions for exemption from the Federal Motor Vehicle Safety Standards (FMVSS). Granting this petition would enable GM to place vehicles which fail to meet the safety needs addressed by the FMVSS into commerce and onto U.S. roads.

Evaluating Safety in a Petition for Exemption Under the Safety Act

A motor vehicle safety standard is by definition “a minimum standard for motor vehicle or motor vehicle equipment performance.”² These standards must be “practicable, meet the need for motor vehicle safety, and be stated in objective terms.”³ In light of these guiding principles, consideration of any exemption from a FMVSS should be examined closely and evaluated with the understanding that these standards specify only the minimum level of protection required for the motoring public. Any exemption which does not ensure that the safety need met by an FMVSS is addressed exposes the public to unreasonable risks of crashes, injuries or death.

The requirements for applications for exemption are specified clearly in the U.S. Code (USC) and the corresponding Code of Federal Regulations (CFR). In the case of the present petition, GM is applying for exemption under two different bases, that “the exemption would make easier

¹ General Motors, LLC – Receipt of Petition for Temporary Exemption From Various Requirements of the Safety Standards for an All-Electric Vehicle With an Automated Driving System, NHTSA, 84 FR 10182, March, 19, 2019, NHTSA-2019-0016. (Notice)

² 49 USC 30102 (a)(10), Definitions.

³ 49 USC 30111 (a), Standards.

the development or field evaluation of a new motor vehicle safety feature providing a safety level at least equal to the safety level of the standard”⁴, and/or that “the exemption would make the development or field evaluation of a low-emission motor vehicle easier and would not unreasonably lower the safety level of that vehicle”⁵. In either case, the USC enumerates the contents of the application. Under the basis of developing or evaluating a new safety feature, the application must include “a record of the research, development, and testing establishing the innovative nature of the safety feature and a detailed analysis establishing that the safety level of the feature at least equals the safety level of the standard.”⁶ Under the exemption basis of developing or evaluating a low-emission vehicle, the application must include “a record of the research, development, and testing establishing . . . that the safety level of the vehicle is not lowered unreasonably by exemption from the standards.”⁷

Likewise, the enabling regulations specify what information is required in applications for exemption under the different bases. For exemptions on the basis that the exemption would “make easier the development or field evaluation of a new motor vehicle or safety impact protection features providing a safety or impact protection level at least equal to that of the standard”⁸, the application must include:

- (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, including –
 - (i) A detailed description of how a vehicle equipped with the safety or impact protection feature differs from one that complies with the standard;
 - (ii) If applicant is presently manufacturing a vehicle conforming to the standard, the results of tests conducted to substantiate certification to the standard; and
 - (iii) The results of tests conducted on the safety or impact protection feature that demonstrates performance which meets or exceeds the requirements of the standard.⁹

Similarly, if the exemption is on the basis “that the exemption would make the development or field evaluation of a low-emission vehicle easier and would not unreasonably lower the safety or impact protection level of that vehicle”¹⁰ the application must include:

- (2) Research, development, and testing documentation establishing that a temporary exemption would not unreasonably degrade the safety or impact protection of the vehicle, including –

⁴ 49 USC 30113 (b)(3)(B)(ii).

⁵ 49 USC 30113 (b)(3)(B)(iii).

⁶ 49 USC 30113 (c)(2).

⁷ 49 USC 30113 (c)(3).

⁸ 49 CFR 555.6 (b).

⁹ 49 CFR 555.6 (b)(1-2).

¹⁰ 49 CFR 555.6 (c).

- (i) A detailed description of how the motor vehicle equipped with the low emission engine would, if exempted, differ from one that complies with the standard;
- (ii) If the applicant is presently manufacturing a vehicle conforming to the standard, the results of tests conducted to substantiate certification to the standard;
- (iii) The results of any tests conducted on the vehicle that demonstrate its failure to meet the standard, expressed as comparative performance levels; and
- (iv) Reasons why the failure to meet the standard does not unreasonably degrade the safety or impact protection of the vehicle.¹¹

Both the USC and the underlying CFR regulations specify strict requirements for documentation and analysis of the proposed exemptions, regardless of the basis on which the exemption is predicated. The petition submitted by GM fails to meet these requirements.

GM devotes several pages attempting to define how the NHTSA should evaluate their petition. However, the USC and the CFR clearly define how petitions for exemption should be considered and specifies that applications must be detailed and contain documentation supporting claims that an equivalent level of safety has been achieved or the safety levels have not been unreasonably lowered. This includes documentation of research, analysis and testing far beyond simple assertions not based in fact.

Despite GM's insistence in the application, defect investigations and remedies available to the Agency are in no way comparative to strong government oversight and regulation which are necessary to prevent dangerous and deadly defects from being allowed on U.S. roads. For example, the 2014 GM ignition switch recall involved more than 2 million vehicles with model years ranging as far back as 2003. The length and expanse of this recall demonstrates how ineffective the recall process is at addressing unreasonably risky products in a timely fashion, let alone before serious injuries and fatalities have been sustained.¹² Similar examples may be found in the Takata airbag fiasco and many other previous safety recalls. While NHTSA's recall authority certainly is important, it is no substitute for strong effective regulations that establish a minimum level of safety required of vehicles on our roads.

The arguments put forth by GM opposing the promulgation of standards for automated driving systems (ADS) are gratuitous and without merit. First, as this is a petition for exemption from existing safety standards, it is the inappropriate venue to discuss the promulgation of new standards. If GM is in fact only seeking an exemption, and the vehicle "meets the safety purposes and objectives of all applicable FMVSS",¹³ then a discussion of new standards in the petition is not needed. Second, GM reiterates the argument that in the absence of a standard, "the Safety Act's requirement that manufacturers avoid putting a motor vehicle into commerce that creates an unreasonable risk to motor vehicle safety (and the corollary obligation to remedy safety-related defects) maintains motor vehicle safety."¹⁴ As previously noted, if this aspect of

¹¹ 49 CFR 555.6 (c) (1-2).

¹² NHTSA Campaign Number 14V047000, Ignition Switch May Turn Off.

¹³ Petition, p. 3.

¹⁴ Petition, p. 18

the Safety Act were alone effective, then the American public would not have been faced with the over 600 million vehicles that have been subject to a safety recall since 1997 nor would there be a need for FMVSS.¹⁵

Finally, GM states that the introduction of new technologies follows a pattern in which “after robust testing and validation, manufacturers introduce new vehicle technologies into commerce”.¹⁶ If GM has followed this “familiar paradigm”¹⁷ then there should be more than adequate documentation and an analysis accompanying the petition illustrating the robust testing and validation GM has undertaken to ensure they are not introducing dangerous vehicles onto American roads. However, a cursory review of the petition and the lack of additional documentation in the present docket demonstrate that this is not the case.

Basis For Exemption

GM notes in their Petition¹⁸ that they are applying on two independent bases, first that the exemption will make the development or field evaluation of a low-emission motor vehicle easier and would not unreasonably lower the safety level of that vehicle, and second, that the exemption would make easier the development or field evaluation of a new motor vehicle safety feature providing a safety level at least equal to the safety level of the standard.¹⁹

GM’s attempt to justify the exemption under the basis of making easier the development and field evaluation of a low emission vehicle is meritless. The Petition notes that the proposed vehicle would largely be based on an existing vehicle, the Bolt, which is already an all-electric vehicle. GM further notes that they have been testing these vehicles since June of 2016 in multiple locations and now have more of 50 of them on the road. Despite this admission, GM is now claiming that exemptions from a multitude of safety standards are necessary. The Petition contains no supporting data from these nearly three years of research to support any claim that safety exemptions are needed to support the development or field evaluation of the propulsion systems of these vehicles. The GM vehicle is not new in terms of propulsion or other technology related to emissions. Therefore, granting these exemptions on this basis is not warranted.

FMVSS Specific Responses

The following are Advocates’ comments on GM’s description of the exemption being sought for each specific FMVSS. GM mentions select portions of each FMVSS which its proposed vehicle would not comply with, at times claiming that the regulations would not apply to their vehicle. The NHTSA should review these claims to clarify that all FMVSS are applicable to these vehicles and that exemptions are thus required. Again, the statutory and regulatory requirements

¹⁵ NHTSA, All Recalls by Year (Jan. 18, 2018).

¹⁶ Petition, p. 18.

¹⁷ Petition, p. 18.

¹⁸ General Motors, LLC – Petition for Exemption, January 11, 2018, NHTSA-2019-0016-0002. (GM Petition).

¹⁹ Petition, p. 5-6.

specify that the manufacturer must provide documentation and analysis of their systems performance to illustrate compliance or comparative non-compliance with the requirements.

FMVSS 101: Control and Displays

The Petition indicates that the proposed vehicle “will not be equipped with most of the human-operated controls in the tables and will not have a human driver, so the location, visibility, symbols, color and illumination requirements for controls, telltales, and indicators meant for a human driver, as written, do not apply.”²⁰ This puzzling statement begs the question as to why GM would require an exemption from a standard that the company claims does not apply to its vehicle. As noted in other sections below, GM has not provided analysis of which telltales might provide insight to passengers and what affect that could have on their safety. Moreover, while GM has stated what the response of the ADS should be in reaction to the conditions triggering the different telltales, no test or evaluation data has been provided to prove that the vehicle will in fact take the steps described.

For example, in response to a brake system malfunction, GM states that the ADS would enter “Response State 3”²¹ which means the ADS would “[g]radually slow the vehicle to a stop while steering to a safe location at the side of the road. Engage ‘park.’ Activate hazard flashers.”²² However, no testing or evaluation has been provided showing that on a test vehicle, when a brake system malfunction is introduced, the vehicle will actually execute this maneuver. Moreover, no analysis has been provided to show the specifics of the maneuver indicated by “Response State 3” would be performed safely. If, as GM noted, this system is being introduced only after “robust testing and validation” then such testing, documentation, and analysis surely must be available for review. The NHTSA should evaluate the information conveyed to passengers as well as drivers by the telltales to determine whether exemptions from requiring their display could reduce safety by leaving passengers uninformed as to the operational status of the vehicle. While the FMVSS speak of informing drivers, the safety need is met by the driver taking an action in response to the warning (pulling the vehicle over, stopping, etc.). In the case of an ADS, it could be beneficial that in the absence of a driver to relay this information to the passengers that the information should be conveyed to the passengers. Moreover, in each case, GM has provided only claims (with no testing or verification) that the ADS is being provided the correct signals to trigger the response states claimed. Again, petitions for exemption are required to have documentation, testing, and analysis to confirm the performance of the proposed exempt systems to ensure that levels of safety are equivalent and are still providing overall protection against unreasonable risks.

FMVSS 111: Rearview Visibility

²⁰ Petition, p. 23-24.

²¹ Petition, p. AII-18.

²² Petition, p. AII-12.

GM claims that the rear facing sensor suite “which provides information to the ADS from its unobstructed sensor view to the rear of the vehicle”²³ meets the safety purpose of the mirror and rear camera display requirements of FMVSS 111. The safety need addressed by the requirements of FMVSS 111 are not only that the driver (or ADS in this case) be provided a clear and reasonably unobstructed view to the rear but also that the driver or ADS react and not collide with or run over the objects in that view. This requirement is essential to the effectiveness of the FMVSS 111 final rule for rear visibility systems. The final rule itself quantifies the annual benefits based on the analysis presented in the final regulatory impact analysis in which it notes that:

...three conditions must be met for a technology to successfully provide a benefit to the driver.

- 1) The crash must be one which is “avoidable” with the device. In other words, the pedestrian must be within the target range for the sensor, or the viewable area of the camera or mirror (at a point in time early enough so as to enable the system and driver to react appropriately to avoid the crash).
- 2) Once the pedestrian is within the system’s range, the device must actually detect and provide the driver with information regarding the presence of the pedestrian.
- 3) The driver must both perceive this information and respond appropriately before impact with the pedestrian.²⁴

In short, systems which fail to detect pedestrians in the field of view and cause the driver to perceive this information and respond appropriately before impact (e.g. apply the service brake) would fail to meet the safety need.²⁵ GM should be required to provide proof that their ADS will not only be provided sensor information regarding objects in the path of travel behind the vehicles, but should also prove that it can avoid the collisions in the same manner and with an equivalent or better effectiveness than those systems required by FMVSS 111.

FMVSS 114 Theft Protection and Rollaway Prevention

GM claims that the descriptions provided in an appendix to the petition illustrate that the system will comply with the requirements of FMVSS 114. However, descriptions and claims are far from an equivalent of documentation of testing and analysis.

FMVSS 124 Accelerator Control Systems

²³ Petition, p. 26

²⁴ Federal Motor Vehicle Safety Standards; Rear Visibility, Final Rule, 79 FR 19178, Apr. 7, 2017, NHTSA-2010-0162, citing U.S. DOT/NHTSA – Final Regulatory Impact Analysis – Backover Crash Avoidance Technologies FMVSS N. 111, NHTSA-2010-0162-0255.

²⁵ 49 USC 30111 (a), Standards.

GM claims that the descriptions provided in an appendix to the petition illustrate that the system will comply with the requirements of FMVSS 124. However, descriptions are far from an equivalent of documentation of testing and analysis. While GM does mention that the system has validity checks, and fail-safe operational power and communication, evidence of the robust testing and validation of a traditional development paradigm, as described by GM elsewhere in the petition should be provided.

FMVSS 126 Electronic Stability Control (ESC) Systems

GM claims that the vehicle will be equipped with an ESC system that is “functionally similar to that on the Chevrolet Bolt EV” and that they “will run tests to ascertain the full functionality of the ESC system for the ZEAV [zero-emission autonomous vehicle] before the first deployment of the vehicles”.²⁶ In the appendix, GM notes that the “steering controllers have safe rate limits”.²⁷ Also in the appendix, GM notes that in order to test the ESC of the proposed vehicles, a test ZAEV with human control will be used to perform the test.²⁸ However, the petition fails to include a description of the “safe rate limits” and the impacts this could have on the effectiveness of ESC when the vehicle is being driven by the ADS and the steering maneuvers are executed by actuators as opposed to a human. FMVSS 126 specifies that the limit of the steering amplitude in the final run of the sine with dwell test is 300 degrees.²⁹ This limit is based on the testing of human driver capabilities.³⁰ Without verification, the ADS, through its actuators, could induce vehicle dynamics beyond the capability of human drivers and not considered in the development of the ESC final rule. Moreover, it is disconcerting that GM notes that they “will run tests...before the first deployment of the vehicle” implying that testing has not been conducted, or speculatively any tests have not been comprehensive enough to instill confidence, and the safe performance of the ESC system under ADS control has not been evaluated or tested.

FMVSS 135 Light Vehicle Brake Systems

GM claims that the description of the ADS and braking system meets the requirements of FMVSS 135. However, as noted in other sections, a description is far short of providing testing, documentation, and analysis. GM states that “the ZEAV will undergo brake testing as described in Appendix II to demonstrate that it meets the performance requirements before GM initiates deployment of the vehicle”. Such a statement implies that this testing has not be a part of the “robust testing and validation” paradigm described by GM elsewhere in the petition.

FMVSS 138 Tire Pressure Monitoring Systems

²⁶ Petition, p. 27.

²⁷ Petition, AII-10.

²⁸ Petition, AII-15.

²⁹ Standard No. 126; Electronic stability control systems for light vehicles, 49 CFR 571.126.

³⁰ Federal Motor Vehicle Safety Standards; Electronic Stability Control Systems; Controls and Displays; Final Rule, 72 CFR 17236, Apr. 6, 2007, NHTSA-2007-27662.

GM claims that its description of the ADS response to a low tire pressure monitor signal satisfies the requirements of FMVSS 138. Yet, GM has provided no documentation proving that the vehicle correctly signals the ADS when the tire pressure is low or that the maneuver described in order to remedy the situation will be executed safely.

FMVSS 208 Occupant Crash Protection

GM claims that the requirements of FMVSS 208 will be met by mirroring the right front passenger's seat protection requirements in the former driver's seat position. In previous sections describing FMVSSs 203, 204, and 207, GM specifically notes "[t]o verify occupant protection, GM began its crash testing with computer simulation tests of the ZEAV with its integrated ADS computer, sensor, and control components. GM has followed these computer simulation tests of the integrated ZEAV, which will establish performance of the entire vehicle, including the ADS and all of its components."³¹ However, there is no information or documentation of these tests or their results provided in the petition. In other sections of petition GM notes that "computer simulation crash tests and subsequent physical crash tests of the integrated ZEAV are planned to validate occupant impact protection in all seating positions, including verifying that the left front seating position safety equipment provides occupant protection comparable to that of the right front passenger".³² This statement again implies that the research, testing and analysis, which is a requirement of the application process, has yet to be conducted.

With respect to seatbelts, GM notes that "[t]he ADS will convey appropriate reminders and warnings to all vehicle occupants to fasten their seatbelts prior to initiating a ride."³³ In the appendix, GM notes that the vehicle:

"will not shift the transmission out of 'Park' unless all of the following conditions are met: The service brake is applied; all vehicle doors are closed; all occupants are buckled or they have dismissed the seat belt warnings using buttons on the in-vehicle tablets; an occupant has activated the "Start Ride" button"³⁴

While requiring all occupants to be properly restrained is not a part of the FMVSS, it raises the question of how GM's vehicle will comply with state laws, some of which require the "driver" of the vehicle to ensure that all or certain occupants are properly restrained.³⁵ Advocates believes that it would be unconscionable for a vehicle employing technologies as advanced as ADS, requiring so many exemptions from FMVSSs, to ever travel without ensuring that all occupants are properly restrained.

FMVSS 214 Side Impact Protection

³¹ Petition, p. 30

³² Petition, p. 30.

³³ Petition, P. 30.

³⁴ Petition, p. AII-14.

³⁵ See MD Transp Code 22-412; Utah Code Title 41 Chapter 6A Part 18; California Vehicle Code Sec. 27315.

As with other FMVSS exemptions, GM notes that they have “started computer simulation crash testing and will perform relevant physical crash tests of the vehicle with its integrated ADS computer, sensor, and control components to verify that occupant protection for the left front seating position is comparable to that for the right front seat passenger.”³⁶ Again, this claim falls far short of the documentation, testing, and analysis which are required by statute and regulation.

Summary of FMVSS Specific Responses

Despite claims by GM that their vehicle meets the safety purposes of the FMVSS from which they seek exemption, this burden has not been met. In many cases, GM has failed to meet the statutory requirements to document the research, development, and testing proving that the proposed system would provide an equivalent level of safety or not unreasonably lower the level of safety addressed by the FMVSS. While GM argues that “robust testing and validation” is part of the “familiar paradigm” before manufacturers introduce new vehicle technologies into commerce, the present petition does not support such claims. In some instances GM clearly indicates that testing has not taken place while in others they mention testing but have provided no documentation for review. As such, GM has failed to meet the statutory and regulatory requirements for a petition of exemption.

Public Interest

GM alleges granting the petition is in the public interest because “[t]he safety advances discussed [in the petition] have the potential to save many lives and reduce motor vehicle crashes and injuries, providing tremendous benefit to the public.”³⁷ However, yet again, GM fails to provide any proof or documentation to support this claim. While removing the human driver may eliminate human driving errors that cause crashes, it does not mean that errors in coding, design, or sensors will not occur. For example, despite the findings of the National Transportation Safety Board (NTSB) that in a 2016 fatal crash of a Tesla, the design of the system contributed to the driver’s overreliance, allowed the vehicle to be operated outside of its operational design domain (ODD), and failed to monitor driver engagement,³⁸ the NTSB is now investigating a nearly identical fatal crash three years later.³⁹

Automated driving systems have been involved in several other crashes also being investigated by the NTSB including a fatal collision with a roadside barrier, and at least one collision with a stopped emergency response vehicle. The fatal crash of an Uber vehicle in 2018 in Tempe, Arizona appears to be a combination of human errors, despite the vehicle being driven by the ADS. In that case, testing officials chose to disable the vehicle’s automatic emergency braking (AEB) system, disable the ADS’s ability to brake and provided no alerts to the operator when

³⁶ Petition, p. 32.

³⁷ Petition, 35.

³⁸ Collision Between a Car Operating With Automated Vehicle Control Systems and a Tractor-Semitrailer Truck Near Williston, Florida, May 7, 2016, NTSB, Accident Report NTSB/HAR-17/02, Sep. 12, 2017.

³⁹ Preliminary Report Highway HWY19FH008, NTSB.

either system identified an object in the path. In addition, the vehicle had only one operator instead of two, requiring the operator to drive the vehicle and monitor the ADS system performance. As such, the driver was forced to look away from the road. These human choices combined with the distracted driving on the part of the operator all likely contributed to the fatal crash of this ADS driven vehicle.

GM also cites the work of Dr. Nidi Kalra and Dr. David Groves of the RAND Corporation, claiming that “[e]very day of delay in getting autonomous vehicles safely on American roads is a day in which we are losing lives that could be saved.”⁴⁰ However, GM appears to have missed a very important part of that research. The benefits of early introduction of AVs noted by Kalra and Groves were predicated on having a vehicle which has some measureable / provable level of safety compared to the average human driver. To date, no ADS manufacturer or developer has produced any evidence that their vehicles is 90 percent, ten percent or even one percent better than the average human driver, let alone as good as the safest human drivers. GM notes elsewhere in the petition that the proposed vehicles will demonstrate a statistical improvement to overall vehicle safety, yet they provide no indication of which measures will be used or what will be considered a statistical improvement. Without demonstrable proof these are nothing more than fanciful claims and cannot be the basis for granting the petition.

Operational Design Domain

Noticeably absent from the petition is any specific definition of the operational design domain (ODD) of the proposed vehicles. While GM mentions that the vehicles will be “weather restricted”⁴¹ and that the “planned deployment aligns” with certain criteria (urban environments, low speeds, etc.), there is no specific definition of where the vehicle will be operated and what will be its limiting conditions. As noted throughout this document, statutory and regulatory language requires research, documentation and testing to prove that the level of safety will be maintained or not unreasonably lowered if the exemption is granted. NHTSA cannot approve an application for an ADS with no specifically defined ODD in which to verify the claims made by GM. Moreover, GM should not be permitted to expand the ODD of the vehicle without filing an additional petition for exemption which must include the necessary documentation and testing to prove that the vehicle will meet the safety requirements in the expanded ODD.

Request for Comments and Information from the NHTSA

The following are responses to specific questions posed by the NHTSA at the end of the notice and not addressed by previous comments.

4. In lieu of either of the two bases relied upon by GM, would it be more appropriate to consider GM’s petition under 49 U.S.C. 30113(b)(3)(B)(iv) (authority to grant exemptions from FMVSS

⁴⁰ Petition, p. 3, citing Nidi Kalra and David G. Groves, *The Enemy of Good, Estimating the Cost of Waiting for Nearly Perfect Automated Vehicles*, Rand Corp. (2017).

⁴¹ Petition, p. 21

for vehicles with an overall safety level at least equal to the overall safety level of nonexempt vehicles low emission vehicles)? If so, why?

GM has specified that they do not intend to sell the proposed vehicles and as such this alternative basis is not appropriate. Likewise, GM claims a number of safety benefits from maintaining control of the vehicles which would be moot if the vehicles were sold and no longer within their control, which would require the NHTSA to reevaluate the petition and consider the impacts of such a different situation.

11. 49 CFR 555.6(b)(iii) requires the petitioner to submit “results of tests conducted on the safety or impact protection features that demonstrates performance which meets or exceeds the requirements of the standard” from which temporary exemption is sought. In the case of a petition submitted for a vehicle that has not yet been produced, and therefore, cannot be tested in order to compare its performance to that of existing vehicles, how should the agency evaluate the safety level of the vehicle? On what preliminary analyses, assumptions, and methodologies should the agency rely to assess whether such performance has been persuasively demonstrated? How would the answers to those questions change if a petitioner could demonstrate that the safety features and systems on the vehicle to be exempted are comparable in performance to those in a non-exempted vehicle and that the addition of the ADS to the vehicle to be exempted did not adversely affect the performance of those safety features and systems?

As GM notes in their petition, “robust testing and validation” before introduction into commerce is a part of the “familiar paradigm” of the introduction of new vehicle technologies. As such, GM or any other manufacturer must be able to provide documentation of research and testing to illustrate compliance or comparative non-compliance with existing FMVSS to be given an exemption. Manufacturers perform research and testing on vehicle designs prior to production with traditional vehicles and the present case should be no different. In those unique cases where testing could absolutely not be performed for a valid reason, the burden is on the manufacturer to produce significant documentation justifying the assumptions and results proposed.

20. In the absence of real-world demonstration of quality of the decision-making by the ZEAV’s ADS, if the petition were to be granted, what terms and conditions, if any, should the agency place on the exemption, and any similar future requests, to protect public safety, facilitate agency efforts to monitor the operations of exempted vehicles, and maximize the learning opportunities presented by the on-road experience of the exempted vehicles during the exemption period and thereafter?

Advocates supports the Agency’s use of the exemption process to increase their understanding of AV operations through the monitoring of operations of exempted vehicles. Requiring data sharing would likewise contribute to this process. At all times however, the public must be protected from unreasonable risks through thorough review of petitions, oversight of vehicle deployment, and verification of compliance with the limitations of the exemption.

22. Please comment on the potential utility of NHTSA's placing terms and conditions on an exemption requiring the submission of the following categories of data...

Advocates supports establishing terms and conditions in the exemption process for the sharing of data with the Agency. As much as possible, the Agency should seek to make this data public and available for review by the public and researchers.

24. If the agency were to require the reporting of data, for what period should the agency require it to be reported—the two-year exemption period or the ZEAVs' entire normal service life?

Data should be reported for the life of the vehicle. While the exemption allows the introduction into commerce for the two years of the period, it does not prohibit the continued use of those vehicles and as such should be subject to reporting and any other requirements.

25. Given estimates that vehicles with high and full driving automation would generate terabytes of data per vehicle per day, how should the need for data be appropriately balanced with the burden on manufacturers of providing and maintaining it and with the ability of the agency to absorb and use it effectively?

The NHTSA should establish data retention requirements for vehicles subject to the exemption and establish requirements for access by NHTSA and any other appropriate agencies, such as NTSB.

26. If supporting information (including analysis, methodology, data, and computer simulation results involving proprietary systems or specialized computer programs) is submitted by a petitioner under a request for confidential treatment and relied upon by the agency in its determination whether to grant or deny a petition, how can the public be provided with an evaluation and a justification for the determination that are transparent, readily understandable and persuasive?

All information submitted to the agency should be made publicly available unless NHTSA determines that it constitutes confidential business information. Determinations by NHTSA regarding whether such information is in fact confidential should start with the premise that information submitted to the agency should be made public.

27. Are there any mechanisms that may help further mitigate the underlying safety risks, if any, presented by this petition? For example, what additional safety and engineering redundancies, if any, should NHTSA consider requiring as a condition to granting the exemption?

While the GM petition and the exemption process generally addresses compliance with existing requirements, the possible failures of the ADS or its components presents a dangerous unknown. While GM mentions system redundancy, among other methods, of

ensuring a fail-safe or fail-operational system, the agency should confirm that these systems exist and will perform as described. The recent Boeing crashes and surrounding controversy are indicative of the catastrophic results that can come from the misclassification of a hazard relating to the failure of a component, or the failure to inform operators about the performance of a system and how to disable same. Advocates has always been supportive of proven safety technology. While the safety benefits of AVs may be realized one day, the occurrence of additional preventable crashes in AVs as they are introduced will undoubtedly have a detrimental impact on consumer acceptance of the technology and potential lives saved and crashes prevented.

Conclusion

Advocates opposes the granting of GM's petition for exemption from a number of the FMVSS as noted in the petition. GM has failed to meet the statutory and regulatory requirements for a petition for exemption and as such the petition must be denied. In a number of cases, GM's constrained interpretation of the FMVSS and failure to account for the safety need met by the regulation would leave the public exposed to unreasonable risk of crashes, injuries and deaths. In light of this petition and the issues raised by it, Advocates once again calls upon the NHTSA to develop FMVSS that apply to automated driving systems to ensure public safety.



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