



ADVOCATES
FOR HIGHWAY
& AUTO SAFETY

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**General Motors – Receipt of Petition for Temporary Exemption
From Various Requirements of the Federal Motor Vehicle Safety Standards
for an Automated Driving System-Equipped Vehicle
Notice of Receipt of Petition for Temporary Exemption; Request for Public Comment
87 Federal Register 43595, July 21, 2022**

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 Petition for Temporary Exemption from General Motors (GM) for exemptions from various requirements of the Federal Motor Vehicle Safety Standards (FMVSS).¹

GM submitted this petition pursuant to Code of Federal Regulations Chapter 49 section 555 (49 CFR 555), seeking the exemption on either the basis that it would otherwise be prohibited from selling a vehicle whose overall level of safety or impact protection is at least equal to that of a non-exempted vehicle, or on the basis 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.²

Advocates opposes the petition which would enable further expansion of the operation on public roads of vehicles equipped with unproven automated driving systems (ADS). Any evidence of an equivalent level of safety or absence of an unreasonable lowering of a safety level as it relates to a certain federal safety standard is not the same as demonstrating that granting the exemption would be in the public interest and consistent with the objectives of United States Code Title 49 Chapter 301 (49 USC 301) “to reduce traffic accidents and deaths and injuries resulting from traffic accidents.”

Consistency With the Safety Act

The statutory requirements for exemptions are unambiguous in that the Secretary of Transportation must find that the exemption would be “consistent with the public interest and

¹ 87 FR 43595 (Jul. 21, 2022), (Notice).

² General Motors Part 555 Petition for Temporary Exemption for the Cruise Origin, NHTSA-2022-0067-0001.(Petition).

this chapter [49 USC 301].”³ The stated purpose of the chapter being “to reduce traffic accidents and deaths and injuries resulting from traffic accidents.”⁴ The petition claims that “[t]he Origin will build on our six years designing, developing, testing and refining our [GM’s] advanced automated driving system (‘ADS’), which has logged over three million miles of on-road autonomous driving with no incidents involving serious injury or death.”⁵ However, in mid-May an anonymous whistleblower sent a letter to the California Public Utility Commission (CPUC) raising concerns about Cruise operations and readiness for commercial deployment.⁶ In late June of this year, a fleet of Cruise vehicles clogged a San Francisco street for several hours before having to be manually operated to clear the traffic jam.⁷ In August, Cruise recalled the 80 vehicles in its AV fleet after a collision involving one of its vehicles.⁸ In early September, during a taping of a segment for the national television show “Today,” a GM cruise vehicle failed just after beginning a trip for a journalist, causing traffic and stranding the journalist until an employee intervened.⁹ Thus, it does not appear that the GM’s AV operations are going as well as claimed in the petition. These recent and repeated dangerous incidents are evidence that GM has failed to meet the requirement that the exemption would be consistent with the purpose of the Safety Act.

Concerns By FMVSS

FMVSSs 102 / 104 / 108

GM seeks exemption from several sections of various 100-series FMVSS including:

- *FMVSS 102: Transmission Shift Position Sequence; Starter Interlock, and Transmission Braking Effect*
- *FMVSS 104: Windshield Wiping and Washing Systems*
- *FMVSS 108: Lamps, Reflective Devices, and Associated Equipment*

In describing how an equivalent level of safety will be achieved as it relates to these FMVSS, GM often makes statements that the operation of the Origin by the ADS will obviate concerns addressed by the regulation. For FMVSS 102, GM states that the ADS “is programmed to always select the correct shift position.”¹⁰ In discussing FMVSS 104, GM states that “the Origin does not need a windshield wiping or washing system for driver visibility. The Origin does have an automated washing and drying system for its exterior-mounted sensors to help keep the sensors clean of debris.”¹¹ For FMVSS 108, GM states that the “ADS will exclusively control

³ 49 USC 30113(b)(3)(a).

⁴ 49 USC 30101.

⁵ Petition, p. 2.

⁶ California Regulator Looking Into Anonymous Letter Alleging Cruise’s Robotaxi Service Wasn’t Ready for Launch, R., Felton., Jul. 14, 2022, Wall Street Journal.

⁷ Cruise Robotaxis Blocked Traffic for Hours on this San Francisco Street, R. Bellan, TechCrunch, Jun. 30, 2022.

⁸ GM’s Cruise Recalls, Updates Software in 80 Robotaxis following crash, K., Korosec, Sep. 1, 2022, TechCrunch.

⁹ Are Self-Driving Cars the Future of Transportation? Today Show, Sep. 8, 2022

¹⁰ Petition, p. 7.

¹¹ Petition, p. 7.

all aspects of vehicle lighting.”¹² In each of these cases, GM provides descriptions and sometimes data, on how the Origin, ADS, or its sensors / equipment will or has functioned, but in a number of instances, the information is redacted. The NHTSA must confirm that in those cases where the correct performance of the ADS is required to support the specified exemption, that the ADS does in fact perform as described, without failure and with acceptable means of a safety fallback. An ADS having a fault that results in the vehicle going backwards instead of forwards, failing to ensure headlights are on in appropriate conditions, or being unable to sense and respond to the conditions of the road because of weather or fouling are all serious safety concerns. As noted above, recent crashes, operational failures, and publicly expressed concerns raise serious doubts as to whether the Origin ADS is performing as GM is claiming.

FMVSS 111: Rear Visibility

FMVSS 111 “specifies requirements for rear visibility devices and systems,”¹³ the purpose of which is “to reduce the number of deaths and injuries that occur when the driver of a motor vehicle does not have a clear and reasonably unobstructed view to the rear.”¹⁴ The petition focuses on how the ADS is provided a “360-degree, live image of the surrounding area” using “a series of sensors, including cameras, radars, and LiDAR.”¹⁵ However, nothing in the petition describes how an equivalent level of safety will be achieved if the exemption is granted. According to 49 USC 30111(a), “each [motor vehicle] safety standard must be practicable, meet the need for motor vehicle safety, and be stated in objective terms.”¹⁶ In the case of rear visibility, the “need for motor vehicle safety”¹⁷ is “to reduce the number of deaths and injuries”¹⁸ which is only achieved when the driver has both “a clear and reasonably unobstructed view”¹⁹ and the driver acts upon that information and stops the vehicle before striking someone causing a death or injury. In fact, the cost benefit analysis of FMVSS 111 was dependent on an estimate of the effectiveness of rearview visibility systems considering the ability of average drivers to see and respond to objects observed in the rear visibility systems.²⁰ In the final regulatory impact analysis for the final rule, the executive summary discusses “System Effectiveness”²¹ in which it clearly states that “three conditions must be met for a [rearview visibility system] technology to successfully provide a benefit to the driver,”²² the third of which is that “the driver must both perceive this information and ***respond appropriately before impact with the pedestrian*** [emphasis added].”²³ GM has failed to address or provide any evidence that the ADS will be able to perceive, let alone respond accordingly to objects detected behind the vehicle. Thus, the

¹² Petition, p. 7.

¹³ 49 CFR 571.111(1).

¹⁴ 49 CFR 571.111(2).

¹⁵ Petition, p. 46

¹⁶ 49 USC 30111(a).

¹⁷ 49 USC 30111(a).

¹⁸ 49 CFR 571.111(2).

¹⁹ 49 CFR 571.111(2).

²⁰ Final Regulatory Impact Analysis – Backover Crash Avoidance Technologies FMVSS No. 111. NHTSA-2010-0162-0255. (FMVSS 111 FRIA).

²¹ FMVSS 111 FRIA, p. ii.

²² FMVSS 111 FRIA, p. ii.

²³ FMVSS 111 FRIA, p. ii., emphasis added

petition has failed to demonstrate that an exempted vehicle will meet the safety need addressed by the FMVSS and will achieve an equivalent level of safety to that of a non-exempted vehicle.

Substantiation that Compliance Would Prevent the Sale of the Vehicle

GM has filed the application for exemption, in part, under 49 CFR 555.6(d) the basis of which is “that the applicant is otherwise unable to sell a vehicle whose overall level of safety or impact protection is at least equal to that of a nonexempted vehicle.”²⁴ As noted above, in the case of several of the FMVSS, the petition provides limited, redacted, or no data or evidence to substantiate the assertion of an equivalent level of safety. GM fails to include evidence that granting this petition and thus allowing introduction of an ADS with an unproven and undocumented safety performance would not present an unacceptable risk to safety.

Substantiation that the Exemption Would Enable Development or Field Evaluation of a Low-Emission Vehicle

GM has filed the application for exemption, in part, under 49 CFR 555.6(c) the basis of which is “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 of that vehicle.”²⁵ With the proliferation of electric vehicles (EVs) into the U.S. market, there is concern that this basis is being abused in this case as justification for experimenting with an ADS on U.S. roads. GM states that “the Origin is poised to generate benefits to the public related to on-road safety, transportation emissions reductions, economic development, accessibility, transportation equity, and long-term U.S. industrial competitiveness”²⁶ While GM provides descriptions of potentially how the introduction of the Origin could achieve these goals, there is scant information about how these goals will be achieved. The petition states that the Origin’s “environmental benefits [could] be amplified”²⁷ because the vehicle is designed to be shared but provides no specifics on how the operation will be designed to ensure that rides are shared and a benefit is realized. GM notes that “the AV industry must be deliberate in addressing the impacts of environmental inequality”²⁸ and discusses how they are engaging with community partners in San Francisco to understand needs, but again there is no plan put forward nor metrics on how GM will ensure that the introduction of the Origin will be used to generate these benefits. As noted earlier, GM Cruise AV operations recently experienced a failure which clogged a San Francisco street for several hours, leading to a recall of its fleet of 80 vehicles. The environmental impact of the emissions of the other vehicles sharing the roads when another such traffic jam occurs and vehicles have to be retrieved manually should not be discounted or ignored by the Agency. The NHTSA must require petitioners making claims about congestion, emissions, and environmental impacts, and other areas in support of their petitions to specify the estimated benefits and define how their operations will be designed to achieve these benefits. Petitioners must be held to their plans and a failure to achieve claimed benefits should be grounds for rescinding an exemption.

²⁴ 49 CFR 555.6(c).

²⁵ 49 CFR 555.6(d).

²⁶ Petition, p. 55.

²⁷ Petition, p. 58.

²⁸ Petition, p. 59.

Of additional concern regarding basing the exemption on the introductions of a low emission vehicle is the repeated assertions by GM that the Origin, due to its classification as a multi-purpose passenger vehicle (MPV) and or its curb weight / gross vehicle weight rating (GVWR) is exempt from several FMVSS.²⁹ According to 49 CFR 571.3(b), a multipurpose passenger vehicle is defined as:

a motor vehicle with motive power, except a low-speed vehicle or trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation³⁰

GM also notes that “the Origin’s GVWR is 3,640 kg (8,024 pounds); its curb weight in 3,084 kg (6,799 pounds).”³¹

FMVSS 208: Occupant Protection Section 14 specifies that the:

Advanced air bag requirements for passenger cars and for trucks, buses, and multipurpose passenger vehicles with a GVWR of 3,855 kg (8,500 pounds) or less and an unloaded vehicle weight of 2,495 kg (5500 pounds) or less, except for walk-in van-type trucks or vehicles designed to be sold exclusively to the U.S. Postal Service.³²

FMVSS 214: Side Impact Protection Section 5(b)(4) specifies that included in the list of vehicles exempt from the side impact moving deformable barrier test are:

Multipurpose passenger vehicles, trucks, and buses with a GVWR of more than 2,722 kg (6,000 lb).

Thus, due to classification as an MPV and based on curb weight (FMVSS 208) or GVWR (FMVSS 214), these vehicles would be exempt from those occupant protection regulations. Likewise, GM mentions multiple times that it will comply with all portions of regulations applicable to a MPV, and in some cases, an MPV of the Origin’s weight. However, it should be noted the weight of the battery in this vehicle, and potentially in other future EVs may be circumventing the original intention of exempting vehicles of these classifications and weight specifications from the occupant protection requirements. The Agency must consider the stringency with which it reviews applications for exemption on the basis of enabling the development or field evaluation of a low-emission vehicle. The Agency also should review the applicability of all of its safety regulation as it related to vehicle classifications, weight, or other specifications in order to ensure that the proliferation of EVs does not lower the level of occupant protection afforded the public.

²⁹ Petition, p. 22,

³⁰ 49 CFR 571.3(b).

³¹ Petition, p. 22.

³² 49 CFR 571.208(14)

This petition is focused on exemptions necessary to enable the introduction of an ADS driven vehicle. The exemptions sought are not necessary for or related to the electric propulsion or emissions aspects of the vehicle. For these reasons, Advocates opposes granting this exemption under the basis of 49 CFR 555.6(c).

Additional Safety Concerns with the Petition

The Origin's Exterior Design

GM provides multiple images demonstrating the outward appearance of the Origin vehicle.



Research has demonstrated that vehicle shape, such as the front-end design of sport utility vehicles (SUVs) may contribute to elevated risks of injury to pedestrians impacted by these vehicles compared to cars.³³ Based on the images above provided by GM the protruding sensor arms at the top front left and right of the vehicle may increase risks to pedestrians and cyclists in the case of a collision. The Agency must determine whether the design of the Origin will create an unnecessary risk and thus will not comply with the requirements for granting an exemption.

Seat Belts and Child Restraint Accommodations; Seats; Airbags; Crashworthiness and Occupant Protection

GM devotes several pages in the petition discussing various aspects of vehicle crashworthiness and occupant protection, including mentions of physical testing, simulation, injury measures, and other related topics. However, limited information is provided on the actual or even simulated performance of the vehicle. It is further disconcerting that in the appendix, GM states that they are “evaluating the Origin’s occupant protection performance across a range of belted occupant crash conditions for both the first and second row seating” and that “as of the date of this submission, the occupant performance development is still in process.”³⁴ It is impossible for the public or NHTSA to confirm that the petition meets the requirements to prove an equivalent level of safety without a completed analysis and information provided by GM. For these reasons alone, the NHTSA cannot conclude that the exemption would be in the public interest and consistent with the objectives of United States Code Title 49 Chapter 301 (49 USC 301) “to reduce traffic accidents and deaths and injuries resulting from traffic accidents.”

³³ Pedestrian injuries from cars and SUVs: updated crash outcomes from the Vulnerable Road User Injury Prevention Alliance (VIPA), S. Monfort; B. Mueller, IIHS, May 2020

³⁴ Petition, B-2.

Plans for Further Action at the End of the Exemption

GM states that granting the petition would enable the collection of “real world operating data” that “can be used to develop and refine future regulations for automated vehicles.”³⁵ This statement should have no bearing on the decision by the Agency when considering the safety risks posed by the exemption. Research on the safe performance of ADS driven vehicles should be conducted on private rights of way or under close oversight with controls to limit exposing members of the public to unnecessary risks. There are multiple avenues available to NHTSA to gather this data outside of granting this petition which would needlessly threaten public safety.

Public Interest Considerations

Advocates concurs with the NHTSA’s assertion that “the broad authority to determine whether the public interest and general goals of the Safety Act will be served by granting the exemption allows the agency to consider many diverse effects of the exemption, including: the overall safety of the transportation system beyond the analysis required in the safety determination; how an exemption will further technological innovation; economic impacts; and environmental effects.”³⁶

Accessibility and Equity

Advocates supports the NHTSA’s consideration of accessibility and equity as part of the evaluation of whether an exemption is in the public interest and in setting conditions for granting an exemption. However, the NHTSA should not limit their consideration of these issues to collecting information after the granting of an exemption. The petition claims that accessibility and equity will be improved and as such, GM should be required to provide documentation demonstrating how their systems will achieve these goals.

The NHTSA must consider what unique challenges the operation of these new vehicles (without a human driver or human attendants) could pose to all individuals. Accessibility concerns go beyond the physical access to the vehicle and include but are not limited to interacting with the ADS and controls, entering destinations, securing wheelchairs, using restraints, and being able to respond to emergency situations. Operational aspects also will be important as decisions such as pickup and drop off locations at the curb, in the street, in the vicinity of an accessible curb, will all impact the achievement of accessibility. Likewise, the impact of introducing new mobility services could have on the availability of existing accessible services should also be considered. NHTSA must ensure that means by which occupants request an emergency stop is provided in an accessible way to all passengers. Further, the Agency should examine all these issues when considering the petition and request GM provide details on how accessibility will be achieved as well as goals and milestones to ensure that potential benefits claimed will be realized in a timely

³⁵ Petition, p. 55.

³⁶ Notice at 43607.

manner. Vehicles design with accessibility as part of its design that do not service the communities or individuals with need would not realize any benefits.

The NHTSA also should require petitioners to provide a plan and milestones for achieving equity. As ADS systems will be limited in their operational design domains (ODDs) for the foreseeable future, manufacturers should be able to clearly define how and where their vehicles will be operating and identify how the communities encompassing those ODDs will be impacted in order help achieve the equitable goals espoused. Accessibility and equity should be an integral part of the introduction of these vehicles and a required topic to be addressed during the petition and evaluation process.

Congestion / Environmental Impacts

The NHTSA should require petitioners to provide a detailed analysis illustrating how the granting of the exemption and introduction of ADS driven vehicles will result in less congestion and benefit the environment. The NHTSA should terminate any exemption and require all subject vehicles be removed from the road if compliance with the requirements or meaningful progress towards the proposed benefits is not achieved. Shareable vehicles transporting one person and ADS driven vehicles causing traffic jams are just two examples of how the proposed exemptions could fail to achieve the environmental benefits claimed.

Shaping AV Norms and Standards

The NHTSA and the U.S. DOT are capable of continuing to develop standards for AVs without enabling manufacturers to conduct operations on public roads of unproven technologies through the granting of exemptions from safety standards. The Agency cannot grant an exemption based on concerns of international industrial pressures. In 2020, the United states was ranked 4th in global readiness for autonomous vehicles, coming in behind only Singapore, the Netherlands, and Norway.³⁷ A recent article in The New York Times similarly expressed succinctly why people “shouldn’t uncritically buy the narrative that a technology that will take many years to develop – and could have both profound benefits and fatal pitfalls – should be treated as a race.”³⁸ The safety of public road users should not be sacrificed based on unfounded hype and political talking points.

Fostering Public Acceptance

The history of seatbelt interlocks is an example of how public opinion could derail safety improvements. Rushing to introduce ADS driven vehicles before they are safe will endanger any safety and societal benefits that may eventually be realized by the introduction of AVs. Fatal crashes, needless injuries, cyber attacks, and many other pitfalls could turn public opinion against the technology. If AVs are eventually able to prevent crashes, injuries and fatalities, but

³⁷ 2020 Autonomous Vehicles Readiness Index, KPMG International.

³⁸ Driverless Cars Shouldn’t Be A Race, S. Ovide, Aug. 14, 2022, New York Times.

the public rejects their use because of safety related issues in their earliest introductions, then the benefits will be limited if not significantly delayed.

Statement of Terms

Advocates supports the addition of terms to any grant of exemption to ensure that petitioners are required to provide the necessary information to the Agency which will inform future rulemaking, ensure safety, and enable evaluation of the purported benefits of the exemptions. These reporting requirements should continue for the useful life of all subject vehicles. NHTSA should retain the ability to require the vehicles to be removed from the road should the petitioner fail to comply with any reporting requirements, the Agency identifies any safety concerns or determines that the continued operation of the exempted vehicles is not in the public interest.

The NHTSA must require the reporting of safety related data including timely crash reporting, periodic updates, cybersecurity events and other essential information. The data collected should include, but not be limited to, data from the event data recorder (EDR) and should include all pertinent information from the ADS as determined by NHTSA. Events including crashes, non-compliance with state and local traffic laws, near-incidents or incidents meeting certain dynamic thresholds such as sustained acceleration, interactions with public safety officials such as law enforcement, or instances requiring a fallback to minimal risk conditions would all be of interest to the NHTSA and should be required to be reported. The NHTSA should require reporting of data related to the public interest aspects of the exemption as well, including any data necessary for evaluating accessibility, equity, environmental impacts, or others. The Agency should also require all necessary additional operational data from which to evaluate all aspects of the exemption particularly for public interest and safety. As much as possible, data collected should be made public to allow further evaluation and study of the safety and societal implications of these exemptions.

Modification of the ODD without NHTSA oversight would be inappropriate for a vehicle operating under an exemption. The altering of the ODD would constitute the need for a reevaluation by the Agency and the public to ensure the continued use of the exemption remains in the public interest as the ODD has implications for both the safety of the vehicles and the achievement of the goals forming the basis for the exemption.

Advocates supports the requirements relating to cybersecurity including immediate cessation of operations, timely reporting, and coordination with the NHTSA prior to resuming operations. In addition, petitioner must be required to have the ability to issue a “stop order” ceasing all operations of subject vehicles in a safe manner in response to a determination that the vehicles present an unreasonable or unforeseen risk to safety. Petitioner must also be required to coordinate with State and local authorities and communicate effectively with the public in the localities where the exempted vehicles will be operating.

The NHTSA should require that any exempted vehicles be readily and individually identifiable. Moreover, NHTSA must establish a simple and accessible means by which the public can notify the Agency of any safety concerns regarding the operation of the exempted vehicles. Petitioners

should be required to maintain data on the operation of the exempted vehicles for a period of time sufficient to allow the Agency and the public to identify operations of concern and allow the NHTSA to request to review the data from the operation in question.

The NHTSA should establish data reporting requirements to evaluate all claims advanced by the petitioners or by the Agency to conclude that the exemption would be in the public interest. As noted earlier, the NHTSA should establish requirements for reporting and planned goals with respect to the claims of public interest as part of the petition process. Lastly, the Agency should require reporting of data to support evaluation of all claims and conclusions for the life of the vehicles exempted under the petition, if granted.

Conclusion

Advocates supports many of the NHTSA's proposals to establish reporting and operational terms for the granting of an exemption from the FMVSS. As noted above, the Agency must require that petitioners provide detailed plans and milestones for achieving any claimed benefits to allow the NHTSA and the public to properly evaluate such applications. GM has failed to meet the statutory requirements for the granting of an exemption. Therefore, the petition should be denied.

Sincerely,



Peter Kurdock
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