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May 20, 2019

The Honorable Heidi King, Deputy Administrator
National Highway Traffic Safety Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

RE: Petitions for Temporary Exemption from Various Requirements of the Safety Standards for an All-Electric Vehicle with an Automated Driving System (NHTSA-2019-0016 & NHTSA-2019-0017)

Dear Deputy Administrator King:

AAA appreciates the opportunity to provide input as NHTSA considers requests to be exempted from certain Federal Motor Vehicle Safety Standards (FMVSS) in order to develop new vehicles that are all-electric with advanced automated driving systems. Indeed, if granted these exemptions, the petitioners will take an important step in bringing the next generation of vehicle technologies to life – creating new interior designs for vehicles in their respective classes and demonstrating new consumer use cases. Because the petitions represent prototypes of new vehicle products that will give the public an opportunity to experience an automated future, AAA believes that NHTSA must work hand-in-hand with industry to ensure that the standards regime it develops makes safety paramount.

AAA urges the agency to use careful, thoughtful consideration as it reviews the petitioners' requests and public input. While there is much enthusiasm in the auto and technology industries to accelerate rapid development and deployment of automated vehicles, three in four Americans remain afraid of fully self-driving vehicles. This finding from AAA's 2019 annual automated vehicles survey reinforces the importance of understanding the consumer perspective and gaining consumer confidence along the way.¹ Missteps in the industry – as we have already seen from a number of high-profile incidents involving automated vehicles – could hamper future widespread consumer adoption. As a result, the potential benefits of these technologies may be delayed. Policymakers must proceed cautiously in order to facilitate safe innovation that demonstrates the value to consumers of using these new technologies.

With respect to NHTSA's approach to reviewing the requests for exemption, AAA suggests that the agency hold the following question as a central theme in its decision-making process: *What is the added safety benefit of exempting a petitioner from a particular FMVSS?* Validating the safety of an automated driving system (ADS) is a significant challenge. When seeking a petition for exemption

¹ <https://newsroom.aaa.com/2019/03/americans-fear-self-driving-cars-survey/>

under 49 U.S.C. § 30113(d) the statute identifies conditions under which temporary general exemptions from the FMVSS may be granted for vehicles including the “development or field evaluation of a new motor vehicle safety feature.”² The government defines this eligibility and specifies, “a manufacturer seeking to use this basis for exemption must provide documentation of the research performed already on the safety feature, how the safety feature is innovative, and how the safety level of the feature at least equals the safety level of the FMVSS for which exemption is sought.”³ NHTSA should ensure that the petitioner provides all the necessary testing results and data required to meet the specified eligibility prior to the exemption being granted.

We also recommend that NHTSA ensure a petitioner’s data include the safety case of an ADS made by a layered set of complementary test settings, wherein each setting progressively validates the functionality and safety with greater fidelity, as suggested in Koopman and Wagner.⁴ We note that a “testing regime” by manufacturers and/or third-parties incorporating simulation testing, closed-track testing, and on-road testing is complementary and that no one form of test setting alone is enough to make a credible safety argument. Thus, ADS developers should be required to develop and submit explicit explanations and data to NHTSA, detailing:

- The methodical exposure of the ADS to all expected driving maneuvers under all expected driving conditions in the vehicle’s operating environment, demonstrating the behavioral competencies of the ADS.
- Identifying the object and event detection and response (OEDR) capabilities of the highly automated vehicle (HAV), noting the ADS performance and identifying situations requiring supervisor intervention (“disengagement”).
- Iterative testing of scenarios, identifying edge cases that challenge ADS, recreating such edge cases in closed-course, and re-testing in the real-world.

NHTSA should place the burden on the petitioner to prove (a) why the ADS behaves in a certain manner when subject to external objects and or events, (b) how a consumer will interact with the new technology, and (c) the safety benefit of removing traditional vehicle features. Requiring petitioners to provide this data will aid NHTSA and the public in considering exemptions and could ultimately help inform the development of future FMVSS and promote industry learnings that ensure the safe deployment of ADS vehicles on our nation’s roads. NHTSA should also encourage petitioners to consider scenario testing informed by various standards organizations and regulatory bodies, including EuroNCAP, ISO, SAE, the U.S. Department of Defense, and NHTSA’s own Framework for Automated Driving System Testable Cases and Scenarios.

Additionally, when NHTSA considers exemptions from FMVSS that eliminate telltales and affect the occupant/vehicle interface, we urge NHTSA to maintain a requirement that allows consumers to gather intelligence on the performance of an automated vehicle while in operation and to communicate occupant preferences. We note that many telltales that may seem purely operational actually serve safety needs. For example, while the fuel gauge/battery capacity seems operational rather than directly safety-related, the vehicle occupant should be aware if the vehicle is operating on

² https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/understanding_nhtsas_current_regulatory_tools-tag.pdf

³ Ibid.

⁴ Koopman and Wagner, Toward a Framework for Highly Automated Vehicle Safety Validation, 2018 SAE World Congress, SAE 2018-01-1071.

very low fuel/battery charge, which could lead to a safety incident. AAA believes that consumers will want and expect information regarding the critical safety systems of an automated vehicle, so that they can make an informed choice regarding their use of the vehicle and its systems.

If a vehicle's capabilities evolve from the initial design throughout the vehicle's service life, the ADS manufacturer should notify NHTSA about the changes to the vehicle's capabilities before it is deployed on public roads. This should include updates to the software that enables the ADS. Further, the vehicle manufacturer should perform additional testing to ensure that the vehicle's safety case is maintained or enhanced as new functionality is added or existing functionality is repaired. Among these considerations, NHTSA may also want to seek information from a petitioner that shows the vehicle's overall safety case is maintained should vehicle capabilities evolve.

The FMVSS development process is an important function of NHTSA on which the American public relies to ensure that vehicle features and technologies are safe, self-certified by auto manufacturers, and reflect the latest advances in the automotive industry. In previous requests for comment, NHTSA sought guidance regarding FMVSS that may pose barriers for the design, testing and deployment of some vehicles with high and full driving automation. AAA responded to that RFC⁵, stating that the current standards have been developed over time to protect consumers and as a result, should not be readily discarded. AAA further stressed that NHTSA should put the burden on commenters to justify why a particular standard is no longer applicable to automated vehicles. If the commenter does not meet this burden, NHTSA should maintain the current rule. When reviewing petitions seeking exemptions from current FMVSS, AAA strongly believes that NHTSA should take the same precautions. NHTSA should require exemption petitioners to provide justification and sound data for why an exemption should be granted and guarantee the equivalent level of safety to the exempted standard. To exempt a petitioner from a safety standard without this convincing evidence would be arbitrary. In the event that a petitioner does meet this burden, we expect that NHTSA would clearly explain the justification for the exemption in a rulemaking.

As NHTSA works to understand how the deployment of ADS will affect the FMVSS development process for automated vehicles, industry and consumer advocates are steadily working to assist policymakers and ADS developers in thinking through the myriad safety issues that will impact deployment. Specifically, AAA is engaged in research and engineering, public policy and consumer education. To help inform all motorists, AAA tests and evaluates emerging vehicle technologies, including automated vehicle features. Our goal is to educate consumers on the safety benefits, capabilities and limitations of these applications and to provide feedback to industry. Additionally, many recent and ongoing research projects at the AAA Foundation for Traffic Safety examine driver perceptions, understanding of, and their interactions with new in-vehicle technology^{6,7}. AAA clubs have followed suit, embarking on testing initiatives involving AVs that may inform the request for comment. Some examples include:

- AAA Northern California, Nevada and Utah (NCNU):

⁵AAA Comments submitted March 20, 2018 <https://www.regulations.gov/document?D=NHTSA-2018-0009-0068>

⁶ <https://aaafoundation.org/potential-reduction-in-crashes-injuries-and-deaths-from-large-scale-deployment-of-advanced-driver-assistance-systems/>

⁷ <https://aaafoundation.org/vehicle-owners-experiences-reactions-advanced-driver-assistance-systems/>

- Collaborated with the City of Las Vegas to introduce the nation’s first autonomous shuttle available to the public.⁸
- Partnered with Torc Robotics to examine AV safety assessment criteria⁹ and to test an AV against such criteria.¹⁰
- Operates GoMentum Station, one of the largest AV testing facilities in the U.S., where comprehensive closed-track testing can take place and vehicle and infrastructure technologies can be evaluated.¹¹
- Acted as a convenor and hosted a workshop in March 2019 on safety metrics for ADS-equipped vehicles. In this workshop, participants discussed how AV safety metrics should be valid, reliable, feasible, and non-manipulatable,
- Automobile Club of Southern California (ACSC) – Automotive Research Center (ARC):
 - Tested Level 2 automated vehicles to better understand the capabilities and limitations of these vehicles and published results to inform AAA members and the motoring public.
 - Tested individual ADAS technologies including blind-spot warning, rear cross-traffic warning, adaptive cruise control, and forward automatic emergency braking, and published the result to educate AAA members and the motoring public on system capabilities.

NHTSA also requested comment on how it should evaluate whether granting an exemption to the FMVSS is consistent with the “public interest.” AAA believes that the public interest should include the public safety impacts of operating exempted ADS-equipped vehicles on public roads, since they present a risk to other road users. Therefore, the extent to which petitioners have and plan to inform other road users about how their vehicles operate should be evaluated. Current petitioners provide some basic information on Human-Machine Interface, external signaling capabilities, and stakeholder outreach; they should also describe their efforts to inform not only their potential customers, but also the other road users in the areas in which they expect to operate, on how to safely interact with their vehicles.

For example, when AAA NCNU launched the first free, publicly-available ADS-equipped shuttle in Las Vegas in 2017, they partnered with the City of Las Vegas, the Regional Transportation Commission of Southern Nevada and Keolis North America, which operated and maintained the shuttle. The club worked with these partners on public-facing infrastructure, such as white zones, shuttle stops, and related signage. They also made sure the shuttles were clearly marked as automated vehicles. In addition, AAA NCNU provided brand ambassadors at each shuttle stop for the duration of the pilot, met with local business owners along the shuttle route, and sponsored local events, all to educate riders, community members and visitors about the technology. Furthermore, they conducted outreach to law enforcement and first responders in the area on how to interact with the vehicles.

⁸ <http://www.AAA.NCNUhoponlasvegas.com/>

⁹ <https://torc.ai/aaa-partners-torc-robotics-on-self-driving-car-safety-criteria/>

¹⁰ <https://torc.ai/torc-and-aaa-northern-california-nevada-utah-run-self-driving-car-through-hazardous-traffic-scenarios/>

¹¹ <http://gomentumstation.net/aaa-and-gomentum-station-announce-exclusive-partnership-agreement/>

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In closing, NHTSA must ensure that, as it thoroughly reviews these petitions, it does not compromise safety by rushing its decision-making process. The exemption review process should be robust, leveraging existing understanding of how to approach vehicle testing, and consider that these petitions present narratives on prototypes that could end up evolving into much different vehicles as they undergo the development and deployment process. The burgeoning automated vehicle industry is still too fragile to risk a rushed decision that may produce negative unintended consequences. If NHTSA finds itself in a position where it has to recall vehicles to which it granted FMVSS exemptions, it could take years to regain consumer trust. The American public expects NHTSA, through its exemption and FMVSS process, to assist automakers and other manufacturers in introducing safe products into the market. The federal government must safeguard the trust the American motorists place in it; without it, NHTSA will be unable to deliver on its mandate to keep our nation's roads safe.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jill Ingrassia".

Jill Ingrassia
Managing Director
AAA Government Relations and Traffic Safety Advocacy