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Submitted electronically

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Steven Cliff, Acting Administrator
National Highway Traffic Safety Administration
Docket Management Facility, M-30
U.S. Department of Transportation
1200 New Jersey Avenue S.E.
West Building Ground Floor, Room W12-140
Washington, DC 20590-0001

> **RE: Request for Comment on Framework for Automated Driving System Safety**
> **(Docket No. NHTSA-2020-0106)**

Dear Acting Administrator Cliff:

Thank you for the opportunity to provide comments on the National Highway Traffic Safety Administration's (NHTSA) Advanced Notice of Proposed Rule Making (ANPRM) concerning the development of a framework for Automated Driving System (ADS) safety published on December 3, 2020. State Farm has a long history of advocating for the improvement of auto and highway safety for the benefit of its customers and the general public and recognizes the work of NHTSA in seeking to balance innovation and safety considerations.

As the development of automated vehicles moves forward, the insurance industry will continue to play a leadership role within the transportation ecosystem as it has done historically to promote safety and reduce the number of accidents, injuries and deaths on our roads. Insurance protection for operators, passengers, and other people will be a critical component regardless of how ADS develops and is deployed. While we do not have technical recommendations in response to the ANPRM for an ADS safety framework, we want to emphasize several key issues: considerations involving data availability, safety self-assessment reports, cybersecurity, human factors, and federal, state, and local roles.

Background

State Farm has been the nation's largest auto insurer for over seventy-five years, with over 40 million auto policies in force. Its 19,000 agents and more than 57,000 employees serve approximately 85 million policies and accounts. While State Farm provides over a hundred product

lines, the majority of its over $70 billion annual revenue comes from auto insurance. Automated vehicle technology will significantly impact how insurers protect policyholders from financial loss and risk. To the extent ADS enhance auto and highway safety, State Farm is excited about and supportive of the technology.

State Farm has almost a century long heritage of innovation. Throughout its history, State Farm has supported technology advancements that improve safety for the benefit of our customers, including seatbelts, airbags, and child car seats. State Farm supports developments that have the promise of saving lives and avoiding injuries, including higher levels of automation associated with automated vehicles. While automated vehicles will reduce or eliminate some risks that drivers face today, they will still need protection from the unexpected.

In providing these comments, State Farm takes a data driven approach based on its active role in collaborative, multi-industry conversations and research. For example, State Farm has a unique role in co-chairing the Leadership Circle for MCity at the University of Michigan, which functions as its board of directors. This provides State Farm with access to the latest data and forward thinking expertise in the area of connected and automated ecosystems, including driver behavior, human factors, vehicle to vehicle communication, safety testing of AVs, cybersecurity, accessibility and public policy. State Farm partners with the Virginia Tech Transportation Institute (VTTI) to better understand driver and pedestrian behaviors related to various levels of vehicle automation. State Farm is also a member of the Center for Automotive Research at Stanford University (CARS) and has pursued sponsored research on automated vehicle simulation and functionality with Carnegie Mellon University (Carnegie Mellon). State Farm is a founding member company of the Insurance Institute for Highway Safety and Highway Loss Data Institute, and also serves on the board for ITS America.

In 2019, State Farm became the first insurance company to partner with the Arizona Institute of Automated Mobility (IAM). This consortium, which was established by executive order of the Arizona Governor, includes experts from private, public, and academic institutions who are focused on advancing research in automated vehicle science, safety, and policy. IAM focuses on a number of issues including creating facilities for complex research and testing, simulation labs, and research on infrastructure and its relation to automated vehicles.

State Farm was the only insurer to be appointed to the U.S. Department of Transportation's Advisory Committee on Automation in Transportation. State Farm also conducts automated vehicle research at its Vehicle Research Facility and The Research and Innovation Laboratory. In 2019, State Farm partnered with the Governors Highway Safety Association (GHSA) to convene a multi-stakeholder workshop to address automated vehicle safety issues.[1] In 2020, State Farm partnered with the Illinois Department of Transportation, the Illinois Department of Commerce and Economic Opportunity, and the Illinois Autonomous Vehicle Association and hosted a Framing the Future of Mobility Workshop to lay out the best way for Illinois to approach mobility and transportation issues.[2]

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[1] "Governors Highway Safety Association" Automated Vehicle Safety Expert Panel: Engaging Drivers and Law Enforcement (2019) (https://www.ghsa.org/resources/AV19)
[2] "Framing the Future of Mobility: State Farm Drives Technology and Transportation Conversation (https://newsroom.statefarm.com/framing-the-future-of-mobility/)

Comments

Regarding the ANPRM, State Farm offers the following comments and considerations:

a. *Data Availability*

Data availability is a key issue for the insurance industry. Data access is (1) critical for liability determinations, (2) essential to developing proper pricing and underwriting of vehicles, and (3) from the general public's perspective, important in determining the safety and reliability of technology. Insurers should have access to ADS information and data – including crash accident and incident information and data – that is timely, complete, and useful. It is important to note that access to data does not infringe on the proprietary nature of that data and the access is relevant to specific issues of, for example, underwriting and liability, as opposed to the wholesale collection of all data associated with a vehicle. In addition, the availability of data should be standardized to the extent that all providers are sharing data the same way.

As a key part of an ADS vehicle safety framework, State Farm supports automated vehicles having an "Automated Driving System data recorder" (or "Autonomous technology data recorder" or equivalent) as a mechanism, in addition to, and separate from, any other mechanism required by law, installed in an ADS to record technical information about the status and operation of the vehicle's ADS technology for 30 seconds prior to a collision and at least 5 minutes after a collision or until the vehicle comes to a complete stop, whichever is later.

Collecting data occurring after a crash is essential to helping determine causation and liability, and provides a more complete version of what factors were involved in an incident. The additional 5 minutes beyond initial impact can be critical to parsing the sequence of events in a multiple-impact accident, such as if a car were sideswiped before hitting several other vehicles or objects. It's important to understand that insurance investigations need to determine more than just the initial cause of a crash, but also what led to subsequently-occurring property damage or bodily injury.

Further, this language is consistent with federal standards regarding data collection and aligns with updated automated vehicle policy guidance recently issued by the U.S. Department of Transportation (U.S. DOT) and the National Highway Traffic Safety Administration (NHTSA). NHTSA's Automated Driving Systems 2.0 Policy Guidance (NHTSA Policy), issued in September 2017, specifically states:

> For crash reconstruction purposes (including during testing), it is recommended that ADS data be stored, maintained, and readily available for retrieval as is current practice, including applicable privacy protections, for crash event data recorders. Vehicles should record, at a minimum, *all available information relevant to the crash*, so that the circumstances of the crash can be reconstructed. These data should also contain the status of the ADS and whether the ADS or the human driver was in control of the vehicle *leading up to, during, and immediately following a crash.* (Emphasis added)

In drafting this policy, NHTSA references the federal regulation on Event Data Recorders, 49 *Code of Federal Regulations* Part 563, which forms the basis of the standard of capturing data 30 seconds before and 5 seconds after a crash.

In late 2018, State Farm started a sponsored research engagement with Carnegie Mellon on automated vehicle functionality in various situations. Working with the Pennsylvania Department of Transportation, Carnegie Mellon conducted testing in Pennsylvania and identified the following approach to handle information relevant to crashes. An ADS event data recorder should contain at a minimum:

- Individual sensor data (static and moving obstacles)
- Forwarding looking and in-cabin views
- Sensor fusion outputs (obstacle classification)
- Localization – where is the vehicle in terms of latitude and longitude
- Driving context – at intersection, lane change, speed, etc.
- Decision-making – traffic light status, slowing down
- Current and planned path and speed profiles
- Health status of hardware and software tasks
- V2X communications

In terms of duration, even capturing just the last 5 minutes (with a maximum of 10 minutes) of driving data is appropriate to store in the ADS data recorder according to Carnegie Mellon's research to date.

State Farm's position, consistent with the spirit of AV 4.0, is that NHTSA's future guidance can create a standardized framework for the availability of data. The principles for this data access framework can include:

- Focusing primarily on relevant data variables to help show the technology is safe, help determine liability (including exonerating manufacturers in many cases), and allow insurers to properly underwrite and develop products to help insure this technology.
- Exploring the appropriate process to obtain the relevant data (i.e., data exchange, event data recorder).
- Respecting proprietary data and identifying relevant data variables that are consistent with the types of information collected today in vehicles and made accessible to insurers and other third parties.

It is important to note that self-driving data access is a key issue for numerous stakeholders. The American Association of Motor Vehicle Administrators (AAMVA) issued its "Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles" highlighting in a number of sections the need to make crash related data available to law enforcement and other parties. [3] In addition, the GHSA Automated Vehicle Safety Expert Panel: Engaging Drivers and Law Enforcement workshop, highlighted data access as a critical issue for law enforcement and other stakeholders.

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[3] American Association of Motor Vehicle Administrators "Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles (2018) (https://www.aamva.org/default.aspx).

An additional element to consider with evaluating crash data is what type of automated components are part of the vehicle's ADS. One consideration to help address this issue is encouraging the development of a Vehicle Identification Number (VIN) process that helps identify the level of automation and what types of automated components are on the vehicle. Such a system can prove valuable to allowing key stakeholders beyond the insurance industry know exactly how a vehicle operates and what levels of automation it is capable of achieving.

b. Safety Self-Assessment Reports

As described in Section IV of the ANPRM, State Farm supports the concept of safety self-assessment reports as introduced in ADS 2.0 as an important tool in helping determine the effectiveness of automated vehicles. At a minimum, such safety self-assessment reports should be made mandatory in a safety framework for ADS. In addition, NHTSA should consider creating an assessment framework for the reports to help evaluate the safety and effectiveness of self-driving cars.

c. Cybersecurity

As discussed in Section III of the ANPRM, examining cybersecurity issues is critical, as there are growing concerns regarding the ability for a person, entity, or state to hack into an ADS, ultimately causing crashes. In addition, there is also concern that hacking the core systems behind an automated fleet of vehicles can cause widespread damage. These risks will increase the complexity of underwriting, liability considerations, and adjusting cyber insurance products, but may also provide opportunities for new product development and ways to better ensure security. To that end, State Farm supports state and federal authorities working together to develop clear and workable security requirements for automated vehicles balancing protection of infrastructure and data from attacks, without hindering access for lawful investigative purposes.

d. Human Factors

Section III of the ANPRM describes human factors as a key topic of consideration as automated vehicles continue to develop. State Farm's research shows that in a mixed fleet, drivers of existing vehicles may increase risk if they do not understand the capabilities and limitations of the automated vehicles around them. In order to better understand the safety impact of these automated systems (or any other unintended impact), it is critical to understand 1) how and when drivers use the systems; 2) whether they are using the systems appropriately and correctly; and 3) a complete and accurate understanding of the systems' capabilities and limitations. A potential positive outcome of additional human factors research is helping create standards so that automated vehicles can be designed with engineering requirements (e.g., time of how to take an unprotected left turn) that are in alignment with human driver behavior and expectations. In addition, human factors research is essential in helping bridge the different levels of automation that a single vehicle is able to achieve due to its different components.

e. Federal, State, and Local Roles

The ANPRM in Section IV discusses NHTSA's position that state and local authorities play a critical role in roadway safety. State Farm is supportive of NHTSA's role in ensuring the safety of the public as ADS technologies continue to be developed and deployed. NHTSA should provide guidance and regulation consistent within the current roles of federal and state government in regulating automated vehicles. NHTSA should have the authority to make determinations for the required performance and safety, including data integrity, of self-driving cars. States and localities should have the authority to make their own decisions regarding registration, licensing, and where self-driving cars can operate in their jurisdictions. States should continue to regulate insurance for automated vehicles. States should also define and address automated vehicle personal liability issues in state/tort law and regulation in line with existing liability constructs.

<u>Conclusion</u>

State Farm supports technology advancements that improve safety for the benefit of our customers, and is a key stakeholder in the development of automated vehicles. We commend your outreach to industry leaders, experts in the field, state government, the traveling public, safety advocates, and others. We look forward to continuing to help influence the safe development of these technologies. Please let us know if you have additional questions as we continue to work on these issues together.

Sincerely,

/s/ Maria L. Hagglund

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