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Rules Docket Clerk  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue, SE  
Washington, D.C. 20590

Docket Number NHTSA-2018-0092

The American Motorcyclist Association submits these comments to the above-referenced notice published in the Oct. 10 *Federal Register*. We applaud the National Highway Traffic Safety Administration for seeking public comments on its *Pilot Program for Collaborative Research on Motor Vehicles with High or Full Driving Automation* Advanced Notice of Proposed Rulemaking (NHTSA-2018-0092).

Founded in 1924, the nonprofit AMA is the premier advocate of the motorcycling community, representing the interests of millions of on- and off-highway motorcyclists and all-terrain-vehicle riders. Our mission is to promote the motorcycle lifestyle and protect the future of motorcycling.

Reducing the number of traffic crashes involving motorcycles and the number of motorcycle operators and passengers injured or killed each year is a top priority of the AMA. Through a comprehensive approach of promoting rider education and the use of personal protective equipment, increased motorist awareness and discouraging impaired motorcycle operation, the AMA seeks to enhance motorcycle safety in transportation and recreational activities.

NHTSA posed 22 questions in this Advanced Notice of Proposed Rulemaking to obtain comments for the development of a potential pilot program. The AMA has limited our comments to a select few questions that we believe could have a substantial impact on motorcyclist safety. Heeding our comments can greatly improve the interaction between Automated Driving Systems and motorcycles.

**Question 3: What specific difficulties should be addressed in designing a national vehicle pilot program for vehicles with high and full driving automation either through the exemption request process for FMVSS or more broadly related to other areas of NHTSA and/or other authorities.**

One specific area of difficulty that a potential pilot program could work to address is the safe interaction between motorcycles and automated vehicles. Motorcycles pose unique challenges to automated vehicles, separate from passenger vehicles and bicycles, and must have specific testing and research conducted to confirm the ability of automated vehicles to safely interact with them on the road.

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There is preliminary research being conducted that has shown that lower level automated systems and advanced driver assistance systems struggle to accurately and consistently detect motorcycles. A report titled “Preliminary Study of the Response of Forward Collision Warning Systems to Motorcycles” authored by John F. Lenkeit and Terrance Smith of Dynamic Research Inc.,<sup>1</sup> found that motorcycles were inadequately detected in 40 percent of trials. This is alarming to motorcyclists. Because this technology is already on the roads and will clearly provide the foundation for higher levels of automation. Dynamic Research Inc. has continued its work on this subject more broadly and would be a valuable resource for NHTSA to consider when designing a pilot program that includes motorcycle-specific performance measures for automated vehicles.

**Question 7: What types of performance measures should be considered to ensure safety while allowing for innovation of emerging technology in vehicles with high and full driving automation participating in a pilot program?**

The most critical performance measure should always be roadway fatalities and, specific to the AMA concerns, motorcyclist fatalities and injuries resulting from multiple vehicle crashes in which the other vehicle is at fault. The ability of automated vehicles to reduce, and potentially eliminate, this type of fatal crashes is extremely important and why the AMA is supportive of automated vehicle technology.

The specific performance measure is the vehicle's ability to detect and respond to a motorcycle in all conditions, whether the vehicle is highly automated or autonomous. It is vital that an automated vehicle is able to fully distinguish a motorcycle from passenger vehicles, bicycles and other road users, because motorcycles are unique in their physical appearance and dynamic handling characteristics and behaviors and rules of the road, even standing apart from passenger vehicles and bicycles (the two categories they share the most similarities with).

The NHTSB recently issued a Safety Report titled “Select Risk Factors Associated with Causes of Motorcycle Crashes,”<sup>2</sup> which included findings and recommendations to NHTSA that could become important performance measures for a pilot program that encompasses automated vehicles and motorcycles. The report’s conclusions include “vehicle-based crash warning and prevention systems will be most effective at preventing collisions when they can reliably detect all vehicle types, including motorcycles.”

To that end, the report recommends that the NHTSA “incorporate motorcycles in the development of performance standards for passenger vehicle crash warning and prevention systems. (H-18-29)” The AMA strongly believes this recommendation should be implemented. But in addition, the demonstration of crash warning and prevention systems that incorporate motorcycles should be considered to participate in a pilot program.

**Question 12: Are there any additional critical areas in the design of a safe pilot program for the testing and deployment of vehicles with high and full automation?**

It will be of the utmost importance that any automated vehicle in a pilot program be familiar with motorcycle-specific laws and behaviors in the area it is operating, so the vehicle can predict these

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<sup>1</sup> See attached for complete study

<sup>2</sup> <https://www.nts.gov/safety/safety-studies/Documents/SR1801.pdf>

behaviors and properly respond. The clearest example is lane splitting – practiced extensively in California -- where motorcycles are able to operate between lanes of slowed or stopped traffic. Further demonstrating the need for the ability to detect and respond to lane-splitting motorcycles, there has been at least one documented crash between an automated test vehicle and a lane-splitting motorcyclist in San Francisco,<sup>3</sup> and Ford has patented a system to detect lane splitting motorcycles.<sup>4</sup> With several states having considering lane-splitting legislation in the past few years, this need will grow. There are additional motorcycle-specific behaviors that vary state to state, such as the ability to operate two abreast in a lane and the ability to treat a traffic-actuated signal as a stop sign when it fails to detect a motorcycle. Automated vehicles must be able to react appropriately to motorcyclist operating under these laws and others.

**Question 13: Which of the following matters should NHTSA consider requiring parties that wish to participate in the pilot program to address in their applications?**

The AMA’s main area of concern related to a pilot program is the safety of motorcyclists sharing the road with automated vehicles. Therefore, we are most interested in the NHTSA requiring parties that participate addressing **d. Considerations for other road users (e.g., impacts on vulnerable road users and proximity of such persons to the vehicle)**. Of course, we are specifically interested in how motorcyclists are being considered in their applications. Time and again, we see motorcyclists being left out of this discussion and, more importantly, the development of this advanced technology. We are either lumped in with passenger vehicles—with which we share most of the same rules of the road, but few of the vehicle characteristics—or vulnerable road users, such as bicycles, with which we share some characteristics, but fewer of the rules of the road.

It is crucial that motorcycles and motorcyclists must be addressed independently of other vehicles and road users. The specific way parties are considering our safety must be evaluated before they are permitted to participate in a pilot program.

**Question 15: What value would there be in NHTSA obtaining one or more of the following categories of data that should be considered? How should these categories of data be defined?**

Many of the categories of data listed in this ANPR appear to be of great value to any pilot program and the public at large to demonstrate the ability of automated vehicles to fulfill their safety potential. Of particular interest to the AMA would be **c. Vehicle/scene/injury/roadway/traffic data and description for each crash or near miss (e.g., systems status, pre-crash information, injury outcomes)**. If participants in a pilot program are able to demonstrate the ability of a vehicle to safely interact with motorcycles through this data, it would serve to reassure the motorcycling public that these vehicles will contribute to a safer riding future. If not, this data will be critical for determining the specific weaknesses of automated vehicles when it comes to detecting and reacting to motorcyclists on the road and identifying areas for improvement, as well as strategies for motorcyclists, to potentially increase their safety around automated vehicles.

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<sup>3</sup> [https://www.washingtonpost.com/news/innovations/wp/2018/01/25/after-crash-injured-motorcyclist-accuses-robot-driven-vehicle-of-negligent-driving/?utm\\_term=.53755aa638ac](https://www.washingtonpost.com/news/innovations/wp/2018/01/25/after-crash-injured-motorcyclist-accuses-robot-driven-vehicle-of-negligent-driving/?utm_term=.53755aa638ac)

<sup>4</sup> <https://www.cnet.com/roadshow/news/ford-motorcycle-patent-lanesplitting-2018/>

The AMA thanks the National Highway Traffic Safety Administration for the opportunity to provide input on this potential pilot program. The AMA is happy to provide any further assistance to support the inclusion of motorcycles in the development of this critical safety technology.

Sincerely,



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