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December 10, 2018

United States Department of Transportation  
1200 New Jersey Ave., SE  
Washington, DC 20590-0001

**Re: Docket Number NHTSA-2018-0092  
Pilot Program for Collaborative Research on Motor Vehicles with High or Full  
Driving Automation**

To Whom It May Concern:

Rails-to-Trails Conservancy (RTC) appreciates the opportunity to offer the following comments in response to the Advanced Notice of Proposed Rulemaking ("ANPRM") regarding the Pilot Program for Collaborative Research on Motor Vehicles with High or Full Driving Automation. Our nation is on the verge of a potential transformation as we prepare to accommodate autonomous vehicles on our roadways. These vehicles offer opportunities for safer roadways for all users, as well as a chance to rethink our infrastructure, but also great potential risk to safety. As the nation's leading advocacy group for building connected and safe trail networks to create healthy communities, RTC offers the following responses to questions regarding pilot programs involving automated driving systems (ADSs). While we acknowledge the great opportunity that ADS vehicles offer, we submit these comments so that the pilot programs will make the most of this opportunity to reduce injuries for on non-motorized users of the public right-of-way (ROW), including pedestrians, bicyclists and people with disabilities.

In general, RTC hopes to ensure that pedestrians, bicyclists and people with disabilities have access to safe infrastructure for walking, bicycling and rolling, reducing or even eliminating the possibility of injury or death. As the law currently holds human drivers legally accountable for acting in a way that puts other users of the right-of-way at risk, NHTSA should ensure that the operators and manufacturers of ADS vehicles respect and are held accountable for the safety of other users of the ROW. ADS vehicles should follow existing speed limits and be able to pass a "vision test" demonstrating that they are able to recognize pedestrians and bicyclists even at high speeds. They should keep an appropriate distance from bicyclists, pedestrians and people with disabilities to ensure that these individuals not only *are* safe but *feel* safe. NHTSA should only allow exemptions to safety standards regarding the design and operation of vehicles when there are adequate fallback measures to ensure that pedestrians, bicyclists and people with disabilities are safe. When there is a risk that automated operation of a vehicle will pose a threat to pedestrians, cyclists and people with disabilities, the ADS system should shut down and/or require a human operator for the vehicle to move forward.



Given the opportunities that ADS vehicles provide, ADS pilot communities should adopt the Vision Zero philosophy that every traffic injury and fatality is preventable. Additionally, ADS pilots will create relevant data and information that should be required to be made public so that communities can utilize it to address problems and eliminate risks to pedestrians and cyclists. NHTSA should also require that all pilot communities log all incidents in a publicly accessible database, including fatalities, injuries, near misses and system failures.

NHTSA should then encourage communities to use this data to improve infrastructure to enhance safety for all individuals, including pedestrians, cyclists and people with disabilities. Data and information from these pilots could help communities not only reduce injuries and fatalities, but also identify opportunities to enhance infrastructure for active transportation, promote healthy communities and ensure that all people have access to safe places to walk and bike to get to wherever they need to go. Pilot communities can then utilize this information to educate the public about the opportunities that ADS vehicles offer.

Specifically, RTC offers the following responses to the questions listed in the NPRM:

*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 relevant for FMVSS or more broadly related to other areas of NHTSA and/or other authorities?*

To fully realize the potential safety benefits of ADS vehicles, NHTSA must continue to hold those vehicles to the highest possible standards of safety. Particularly, NHTSA should ensure that autonomous vehicles pass a “vision test” that ensures that they are able to detect, recognize, anticipate and respond to pedestrians and cyclists, even at high speeds. Manufacturers of ADS vehicles that participate in the pilot program should be required to ensure that their vehicles are able to detect people walking and bicycling in the right of way at a rate that is on par with or higher than their abilities to detect other cars, particularly in level 4 and level 5 systems. Past news reports have indicated that vehicles have had markedly more difficulty detecting vulnerable users such as pedestrians and bicyclists, as opposed to cars. We recognize the need to test ADS vehicles in the “real world” as part of the pilot program but manufacturers should be required to develop and test on closed courses the technology to sense vulnerable users that is on par with how well the ADS vehicles are able to sense other cars before being considered for the pilot program.

Additionally, NHTSA should ensure they keep a certain minimum distance from other users in a way that ensures that pedestrians, bicyclists and people with disabilities feel safe. This can help ensure safety when different uses might conflict, such as at crosswalks or intersections or whenever a bicyclist is using or sharing the road or a person in a wheelchair has to ride on the roadway (e.g. due to obstructions or lack of facilities such as sidewalks). People are more likely to walk or bike when they can do so in a way that ensures their comfort, by, for example, ensuring a comfortable distance from moving vehicles. Simply reducing or eliminating crashes does not by itself ensure comfort if ADS vehicles do not assure a sufficient distance from other users of the right-of-way in a way that allows them to move freely without feeling like they are at risk. The distance that an

ADS vehicle may have to keep from other users of the infrastructure increases the faster that the vehicle is traveling. Additionally, NHTSA should require that ADS vehicles follow existing speed limits, not only to protect other users of the right-of-way from harm, but also to ensure that pedestrians, bicyclists and people with disabilities can utilize the right-of-way without coming close to fast-moving cars.

Additionally, NHTSA should require ADS vehicles to have ways to communicate with pedestrians, bicyclists and people with disabilities to ensure safe interaction. Safe interaction between different users of the right-of-way often relies on both direct and subtle communication, including eye contact, hand gestures, and signals. This communication can indicate to a pedestrian or cyclist when it is safe to cross or to move into a lane in front of a driver. Absent an active operator, an ADS vehicle must include other ways to communicate with other users of the right-of-way, through lights and other signals. NHTSA should ensure that any vehicle that receives an exemption from FMVSS at minimum include these measures as a precaution.

*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?*

Performance measures are important to help ensure the safety of non-motorized users in an ADS pilot program. NHTSA should ensure that these performance measures consider various aspects of safety and use of the right-of-way by non-motorized users. At minimum, all ADS pilots should track the impact that the use of ADS vehicles has on injuries and fatalities of pedestrians, cyclists, and people with disabilities. To capture the full range of impacts of ADS vehicles on safety, pilot communities should track the number of crashes, injuries, near misses and fatalities that non-motorized users of the right-of-way experience. NHTSA should require communities to track not just the incidents where an ADS vehicle is directly involved, but all incidents involving pedestrians, bicyclists and people with disabilities, to measure how introduction of ADS vehicles into a community impacts the overall safety for these users. The performance measure should track both the total number of incidents and the number of incidents per mile traveled.

To help focus on comfort and ease of use of the right-of-way by non-motorized users, pilot communities should also track mode share and number of people who use the right-of-way to walk, bike or use a wheelchair. ADS vehicles offer opportunities to rethink public infrastructure to encourage more people to travel by walking, biking or rolling. Pilot projects can be an opportunity for communities to explore the best ways to build infrastructure around autonomous vehicles that is safe and accessible for all users. As discussed more below, pilot communities can use data regarding who uses the right-of-way to test various measures to ensure safety and comfort for all users.

*Question 8. How should the Operational Design Domains of individual vehicle models be defined and reinforced and how should Federal, State and local authorities work together to ensure they are observed?*



In addition to the limitations discussed above regarding speed and safe distance from pedestrians, bicyclists and people with disabilities, the Operational Design Domain of individual vehicles should include specific measures in areas that are heavily trafficked by pedestrians and bicyclists. In those circumstances, an ADS vehicle should restrict its movements and speed to ensure minimal likelihood of conflict or incidents. When there is particularly heavy pedestrian or bicycle traffic, the vehicle should fall back to a “minimal risk” condition. When risk of an incident is especially high, the vehicle should transition come to a safe stop unless it is possible to transfer control to a receptive, fallback-ready operator.

*Question 9. What type and amount of data should participants be expected to share with NHTSA and/or with the public for the safe testing of vehicles with high and full driving automation and how frequently should the sharing occur?*

As a general principle, ADS manufacturers and pilot communities should share all relevant data necessary to ensure a transparent and collaborative approach to solving problems and ensuring safe infrastructure for all users, including pedestrians, bicyclists and people with disabilities. Comprehensive data regarding incidents (including fatalities, injuries, near misses, and system failures) involving these users helps ensure broad understanding of the risks and opportunities of ADS vehicles. It can also ensure a transparent and constructive dialogue on infrastructure needs and how to best create infrastructure that ensures access to all people to travel in the public right-of-way by means other than by automobile. As the national standard setter, NHTSA can compile data on the national level to review overall trends and best practices. Local communities can use data in a more targeted way by reviewing specific problem areas and local practices that might have the greatest impact.

To ensure an open and collaborative process, NHTSA should ensure that pilot communities only collaborate with ADS vehicle manufacturers that are willing to make public data about the performance of their vehicles despite legal protections available for proprietary data. NHTSA should encourage communities and ADS manufacturers to work together to use this data to address safety problems and derive the greatest possible benefit of ADS vehicles. Willingness to share data should be a condition of participation in an ADS pilot.

*Question 15. What value would there be in NHTSA’s obtaining one or more of the following potential categories of data from the participants in the pilot program? Are there other categories of data that should be considered? How should these categories of data be defined?*

*b. Statistics and other information on outcome (e.g., type, number and cause of crashes, or near misses, injuries, fatalities, disengagements, and transition to fallback mechanisms, if appropriate.)*

*i. Information related to community, driver and pedestrian awareness, behavior, concerns and acceptance related to vehicles with high and full driving automation operation.*

As noted above, NHTSA can and should obtain data on incidents and their outcomes and use that data to ensure that communities derive the greatest benefit possible from ADS

vehicles. This data should include not just fatalities and injuries, but also near misses and occasions when ADS vehicles come into close contact with pedestrians, bicyclists and people with disabilities. Understanding these incidents will enable communities to explore the best ways to prevent recurrence and create a system with zero injuries or fatalities. Communities should also track incidents where safety and fallback mechanisms come into use – in addition to pointing out where there might be safety concerns, tracking these incidents can help understand how fallback mechanisms work and how these mechanisms might work better.

Pilot communities can also track community attitudes toward ADS vehicles. Understanding this would help communities understand how safe pedestrians, bicyclists and people with disabilities feel around ADS vehicles, and explore ways to ensure a greater level of comfort. Surveys exploring these attitudes could also solicit feedback from pedestrians, bicyclists and people with disabilities about enhancements to the infrastructure that they feel are necessary to ensure safety and help them feel more comfortable.

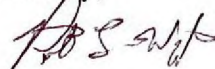
*Question 19. How could the exemption process in section 30113 be used to facilitate a pilot program?*

Although section 30113 exemptions may be necessary to allow vehicles to operate without user controls, NHTSA should limit exemptions from FMVSS standards vehicles that have demonstrated an ability to operate in a way that accommodates pedestrians, bicyclists and people with disabilities safely and comfortably. In order for NHTSA to issue an exemption allowing a vehicle to operate without driver controls, the vehicle should ensure that it is able to safely operate along all roadways without posing a potential threat to other individuals near the vehicle. The vehicle should also provide adequate fallback mechanisms to ensure that, whenever a conflict with other individuals in the vicinity of the vehicle is likely to occur, the vehicle either comes to a safe and complete stop, unless it is possible to safely transition control to a receptive and fully competent operator. Although exemptions may be necessary to facilitate a pilot operation of autonomous vehicles, NHTSA must also ensure that FMVSS standards continue to play the important role of ensuring safe operation of all motor vehicles.

### Conclusion

Rails-to-Trails Conservancy appreciates the opportunity to provide feedback regarding ADS vehicle pilot projects. Please do not hesitate to be in touch with me at 202-974-5111 or [patrick@railstotrails.org](mailto:patrick@railstotrails.org) if you have any questions or would like to discuss these issues in greater depth.

Sincerely,



Patrick L. Wojahn  
Director of Government Relations  
Rails-to-Trails Conservancy