



The Transportation Policy Body for the North Central Texas Council of Governments
(Metropolitan Planning Organization for the Dallas-Fort Worth Region)

January 29, 2021

James C. Owens
Deputy Administrator, National Highway Traffic Safety Administration
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Deputy Administrator Owens:

The Regional Transportation Council (RTC) and the North Central Texas Council of Governments (NCTCOG), the Metropolitan Planning Organization for the Dallas-Fort Worth region (DFW), submit the following comments on the Advanced Notice of Proposed Rulemaking (ANPRM) for Advanced Driving System (ADS) Safety Framework, Docket No. NHTSA-2020-0106, issued by the National Highway Traffic Safety Administration (NHTSA).

Vehicle safety is a key concern for the RTC and NCTCOG. In the ANPRM, NHTSA outlines its vision for how ADS can improve safety on our streets and highways:

NHTSA's mission is to save lives, prevent injuries, and reduce economic costs due to road traffic crashes, through education, research, guidance, safety standards, and enforcement activity. If developed and deployed safely, ADS can aid in achieving that mission, given their potential to prevent, reduce, or mitigate crashes involving human error or poor choices. This potential stems from the substantial role that human factors (distraction, impairment, fatigue, errors in judgment, and decisions not to obey traffic laws) play in contributing to crashes.

The RTC has approved a vision zero goal and therefore, reinforces the importance of the US Department of Transportation's (USDOT) vision of zero deaths and serious injuries on the Nation's roadways. Currently, NCTCOG is providing funding for a regional planning effort to prepare the region for ADS vehicles and to support ADS vehicle deployments in the region. It is working with state and private sector partners on taking ADS into account in roadway design and facilitating data sharing partnerships between ADS developers and highway operators like the Texas Department of Transportation to improve roadway safety and operations.

NCTCOG suggests that NHTSA consider two things in connection with its proposed rulemaking. First, NHTSA should announce its long-term goal of holding ADS vehicles to a higher level of safety performance than human-driven vehicles through a phased approach that will encourage innovation. This should be able to be accommodated within NHTSA's existing regulatory authority. Second, NHTSA should use the rulemaking to begin to examine whether safe deployment of ADS requires an extension of NHTSA's regulatory scope beyond the vehicle and vehicle components to any roadway infrastructure elements that may become an integral part of

ADS. Such an inclusion of the infrastructure elements that may be part of ADS may require legislative involvement.

ADS Vehicle Safety Standard: Better Than Human-Driven Vehicle

NHTSA's statutory purpose is to "reduce traffic accidents and deaths and injuries resulting from traffic accidents" by "(1) . . . prescrib[ing] motor vehicle safety standards for motor vehicles and motor vehicle equipment in interstate commerce; and (2) . . . carry[ing] out needed safety research and development." 49 USC sec. 30101.

NHTSA's recognition of the potential for ADS to improve safety is echoed widely in the ADS industry. For example, the CEO of Mobileye, a leading ADS developer, wrote that his company is designing ADS vehicles so that their mean time between failure is 1,000 times better than human driven vehicles (<https://medium.com/@amnon.shashua/the-challenge-of-supporting-av-at-scale-7c06196cced2>). He stated that Mobileye has "ruled out being 'as good as humans,' we know we must be better."

NCTCOG suggests that through issuance of policy guidance, or other means, NHTSA makes clear that it intends over time to establish Federal Motor Vehicle Safety Standards (FMVSS) that will result in ADS vehicles performing substantially better than human-driven vehicles, thus meeting a higher safety standard. Simply put, it would be unreasonable to waste the safety potential of ADS by utilizing the current FMVSS safety standard applied to human-driven vehicles.

NCTCOG recognizes that the safety standard that NHTSA utilizes must be reasonable and technically feasible. In the ANPRM, NHTSA cites a cautionary example of moving too fast with technology requirements in an effort to raise the safety standard. Thus, NCTCOG suggests that NHTSA's ADS safety framework include the following elements:

- NHTSA policy guidance outlining NHTSA's goal of an ADS safety standard that will result in a transformational improvement in highway safety once ADS technology matures and ADS vehicles predominate.
- Certification by ADS developers that their vehicles meet current FMVSS requirements (subject to any exemptions granted).
- Extensive use of FMVSS exemptions for ADS vehicles to facilitate ADS vehicle testing and early deployments conditioned on (i) ADS developer certification that the exempted vehicle will perform no worse than a human-driven vehicle, and (ii) agreement to supply pertinent vehicle performance data to NHTSA.
- Requiring ADS developers to report key data on the performance of their vehicles such as their operational design domain, miles traveled, and the frequency and severity of crashes.
- Making a subset of this data available so that consumers can make informed choices among purchase of and travel on human-driven and ADS vehicles.
- NHTSA use of this performance data and other information gleaned from its research and development activities to (i) craft FMVSS and policy guidance in a highly iterative fashion based on actual ADS vehicle performance and ever-improving ADS technology and (ii) intervene via recalls and the like where safety defects are identified.

- In time, NHTSA might quantify the ADS minimum safety standard into something like crashes per 100 million miles and raise that standard gradually over time as technology and benefit-cost analysis indicate are reasonable.

NCTCOG believes that this data-driven and highly iterative approach informed by an overarching policy of driving transformational improvement in vehicle safety over time is the most reasonable way for NHTSA to fulfill its statutory mission and fully realize the potential of ADS for vehicle safety.

This approach minimizes the barriers to ADS deployment on public streets and highways. It gives NHTSA access to ADS performance data and the opportunity to flex its regulatory muscle where necessary to curb ADS vehicle performance lapses that threaten public safety.

Sharing ADS vehicle performance data—and comparing ADS vehicle performance with that of human-driven vehicles—will create market incentives for ADS developers to make continued progress on the safety front and for consumers to gravitate to vehicles and travel modes that are safer. As NHTSA notes in the ANPRM, consumer demand for improved vehicle safety can prompt adoption of safety technology in advance of FMVSS requirements.

NCTCOG believes that ADS vehicles in time should meet a substantially higher safety standard than today's human-driven vehicles. The regulatory approach sketched out above is consistent with NHTSA's current approach to vehicle safety. NHTSA's regulation of ADS vehicles should roll out more smoothly, if it follows existing approaches to the extent possible. Creation of a fundamentally different regulatory stack for ADS vehicles poses both legal and institutional challenges that might impede the successful and timely integration of ADS vehicles into the nation's vehicle fleet.

In the ANPRM, NHTSA summarizes its suite of regulatory tools. NCTCOG believes that the regulatory approach sketched above can be accomplished under NHTSA's current regulatory authority.

ADS Vehicle Safety: Broadening Definition of Vehicle Equipment

In the ANPRM, NHTSA notes that it has statutory authority over "vehicle equipment" as well as vehicles as finally manufactured. NCTCOG urges NHTSA in this rulemaking to take a fresh look at the issue of what should be considered "vehicle equipment" for purposes of ADS vehicles and what should be the scope of NHTSA's regulatory authority with respect to such equipment.

For human-driven vehicles, the line of demarcation between vehicles and vehicle equipment and everything else is evident. Traditional vehicles rely on the human driver to do the sensing, perception, planning, and control functions. The vehicle is the physical object that carries out the control functions at the direction of the human driver and functions as the carriage for the driver and passengers.

As NHTSA sets out in the ANPRM, in ADS vehicles the sensing, perception, planning, and control functions are performed by the ADS, not the human occupants of the vehicle. NCTCOG believes that this fundamental difference in the nature of human-driven and ADS vehicles requires NHTSA to carefully examine whether its regulatory tools are sufficient to adequately regulate the safety of ADS vehicles.

For the past decade ADS developers have attempted to create ADS vehicles that can function without depending on infrastructure supports such as vehicle-to-infrastructure communications. ADS developers have cited the absence of V2X infrastructure, the lack of consistency in standards, the slow pace of roadway operators, and other factors as the rationale for attempting to bundle all ADS functions on board vehicles and eliminating all reliance on the infrastructure for ADS driving.

ADS developers have failed to deliver at scale Level 4 and Level 5 ADS vehicles using this vehicle-only approach thus far. There appears to be increasing recognition that successful deployment of vehicles at higher levels of automation may require vehicles and highway infrastructure technology elements to interact. A simple example is the sharing of traffic signal phase and timing data with ADS vehicles, which use this information as a backup to visual scanning of traffic signals.

What this means is that infrastructure technology elements such as roadside units may become integral parts of ADS driving. In other words, driving will happen not just in the piece of rolling technology that we now call a vehicle but will also include some external infrastructure elements. These infrastructure elements integral to the operation of ADS vehicles may include pieces of technology—e.g., roadside units and software and data transmitted from the Cloud—e.g., live high-definition maps.

Under this emerging technology regime, equipment necessary for performing the ADS driving task will no longer be limited to equipment that is physically incorporated into the vehicle. If NHTSA wants to effectively regulate and improve vehicle safety it needs to consider the performance of any infrastructure technology elements that become integral parts of how the ADS vehicle performs the sensing, perception, planning, and control functions.

Given what may become the tight integration of ADS vehicles with the roadway infrastructure technology elements, NCTCOG believes that NHTSA's jurisdiction over vehicles and vehicle equipment should extend to these key roadway infrastructure elements.

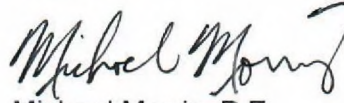
Giving NHTSA this jurisdiction is necessary to optimize ADS vehicle safety and allow the timely rollout of ADS vehicles. Infrastructure elements that are performing optimally will enhance the safety of ADS vehicles. Giving NHTSA jurisdiction over both ADS vehicles and essential infrastructure technology that supports such vehicles makes the most sense from operational and regulatory perspectives.

The alternative is to bifurcate responsibility for ADS vehicle safety, namely, continue to focus NHTSA on just the technology on wheels while leaving the infrastructure technology elements used for ADS vehicle operation for other parts of USDOT and other transportation agencies. NCTCOG believes that this alternative approach—which is akin to how today FHWA manages traffic control devices through the Manual on Traffic Control Devices while NHTSA manages vehicle safety—does not make technological or regulatory sense.

Instead, NCTCOG believes that emergence of ADS vehicles should prompt us to break down the barriers between vehicles and infrastructure and reserve to NHTSA all elements—including infrastructure elements—that directly relate to the operation of ADS vehicles. NCTCOG recognizes that legislation may be necessary to give NHTSA that jurisdiction.

We appreciate the opportunity to provide these comments to NHTSA. If you have any questions, please feel free to contact me at (817) 695-9241 or mmorris@nctcog.org.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Morris". The signature is fluid and cursive, with the first name "Michael" and last name "Morris" clearly distinguishable.

Michael Morris, P.E.
Director of Transportation

TB:kw