



Comments submitted to: National Highway Traffic  
Safety Administration (NHTSA)  
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Submitted by: Community Transportation  
Association of America (CTAA)

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**Comments – Advance notice of proposed rulemaking (ANPRM): Pilot Program for Collaborative Research on Motor Vehicles with High or Full Driving Automation**

<u>CTAA AV PRINCIPLES</u>
Accessibility
Equity
Rural Connectivity
Safety

*Introduction*

The [Community Transportation Association of America](#) (CTAA) staff, board, state/tribal delegates, and members are dedicated to ensuring that all Americans, regardless of age, ability, geography or income, have access to safe, affordable and reliable transportation. CTAA members are in the business of moving people – efficiently and cost-effectively – by transit,

paratransit, volunteer transportation, and specialized transportation. Many of these rides are provided in conventional buses, cars or vans, or, when necessary, in vehicles retrofitted to be accessible for persons with disabilities. Our members’ transportation, therefore, spans multiple modes and a variety of populations with special needs.

CTAA represents the public and community transportation industry, which has an exemplary track record for safety, but CTAA is well aware that we are not experts in vehicular or technology engineering, testing, or standards. Like most Americans, we rely on NHTSA’s expertise and protection for improving the safety of motor vehicles of all types. As the Association works to support the advent of AVs, our goal is to increase the safety of the American transportation network, which unfortunately still witnesses thousands of deaths and injuries each year.

CTAA is a leader in providing resources and analysis of AVs and their impact on mobility options. We are educating transportation professionals across the United States, providing AV technical assistance, presenting at conferences, and engaging in discussions with companies developing different aspects of AVs and associated software. We monitor AV issues daily to stay abreast of technological, legislative, and regulatory updates. We have connected with other national organizations with an interest in how AV development affects their constituencies. Our work increasingly integrates emerging business models, public-private partnerships, and shared-use experimentation and advances.

CTAA supports the development of automated vehicle (AV) technology and AV transportation programs that offer accessibility, safety, convenience, and affordability wherever people live and whatever their financial positions, and their physical, sensory or mental conditions. CTAA enthusiastically supports the efforts of the US Department of Transportation (USDOT) to address the safety, regulatory, planning and

other issues that our nation must consider before AVs become a presence on public roads throughout the country.

We applaud NHTSA's leadership in addressing AV pilot program design frameworks and in examining the safety elements of such pilots at this early juncture in the transformation of the US transportation system. We respond to NHTSA's call for discussion of an appropriate, safe, and innovation-supportive framework for AV pilot programs.

**Organization of this comment:** CTAA recently published our [AV principles](#): (1) Accessibility, (2) Equity, (3) Rural Connectivity, and (4) Safety. Our comment in response to the ANPRM is divided according to those four topics. Though the first three are important and will be mentioned here, we offer the most detail and commentary about safety issues.

### *Accessibility*

CTAA would like the USDOT and NHTSA to require that accessibility for people with disabilities and older adults be embedded in AVs, AV pilot programs, and the design of AV networks so that we realize the USDOT's stated goal to vastly improve the quality of life for people with disabilities and older adults. When CTAA uses the term "accessibility," we mean both physical accessibility and accessibility of interfaces.

Title VI and USDOT regulations declare that "no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving Federal financial assistance from the Department of Transportation." (49 CFR 21.1; see also 42 U.S.C. § 2000d et seq.) USDOT regulations proscribe that "Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) as amended, to the end that no otherwise qualified individual with a disability in the United States shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." (49 CFR 27.1) Section 508 of the Rehabilitation Act requires that any electronic and information technology used, maintained, developed, or procured by the Federal government allow persons with disabilities comparable access to information and technology. (29 U.S.C. § 794 (d))

AV communication interfaces and the vehicles themselves implicate these laws and regulations so that people with disabilities will be provided with both physical accessibility and with technological accessibility for ordering, interacting with, and, in dire situations, stopping the operation of an AV. Please be mindful that all disabilities are not alike and that NHTSA should support research relating to interfaces for people with visual, auditory, cognitive, and physical disabilities.

### *Equity*

CTAA understands that while it is not the role of NHTSA to pick winners and losers in terms of developing technology, the entire USDOT should be encouraging those who do and will provide AV transportation to ensure that it will be available to Americans wherever they live, whatever their income, and whatever their level of ability or disability.

## *Rural Connectivity*

CTAA asks that NHTSA ensure that AV pilot programs take place in rural and small-urban areas. Given the significantly higher rate of crashes on rural roads, AVs present the potential to save a disproportionate number of lives in these areas. NHTSA should require that AV pilot programs equally benefit rural and small-urban areas as well as their urban counterparts. Moreover, due to the unique topographies and road conditions in sparsely populated areas, AV pilots in those places will guarantee that data collected and technology tested in those environments will contribute greatly to the safe operation of AVs.

## *Safety*

Lack of vehicle safety was the motivating factor in the creation of NHTSA. As the first administrator of NHTSA, Dr. [William Haddon, Jr., MD, stated](#), “It is time for society to decide to promote and demand nothing less than vehicle packages and roadside environments that protect people.” AVs offer our nation an opportunity to vastly improve the safety record of vehicular surface transportation.

### **Federal Motor Vehicle Safety Standards**

CTAA refers to those Federal Motor Vehicles Safety Standards (FMVSS) that affect passenger perception of safety and actual safety in emergency situations. All of the following regulations are located in Title 49 of the Code of Federal Regulations. CTAA recommends that AVs retain the following safety equipment that is currently required according to the FMVSS.

#### **Bus Emergency Exits**

CTAA supports retention of § 571.217 – Bus emergency exits.

While AV experts expect AVs, including buses, to be safer than human-operated vehicles, it is important to keep in mind that emergencies will occur. Just as airplanes have emergency exits, it is important to retain the requirement for these exits for buses, which are vehicles that have the capacity to hold many passengers, who, due to internal or external circumstances, may have to quickly exit.

It is also important that emergency exits be accessible to ensure the safety of anyone in a wheelchair, with a stroller, or other wheeled mobility aid.

#### **Brakes**

Currently, the FMVSS include several regulations related to brakes (i.e., [§ 571.121 Standard No. 121; Air brake systems; § 571.105 Standard No. 105; Hydraulic and electric brake systems; § 571.106 Standard No. 106; Brake hoses; § 571.116 Standard No. 116; Motor vehicle brake fluids](#)), but there are no standards set or referred to for AVs that require emergency braking technology for passengers to operate. Every elevator and transit railcar is equipped with emergency brakes and AVs should also include this type of equipment in case of AV system failure or emergency circumstances exterior to a vehicle.

#### **Windshield and Windows**

For shared-use passenger transportation AV pilot programs, including, but not limited to transit, the FMVSS should continue to include the opportunity for passengers to see outside of the AV, whether through a windshield or a window. We therefore support the retention of [§ 571.103 Standard No. 103; Windshield defrosting and defogging systems](#); [§ 571.104 Standard No. 104; Windshield wiping and washing systems](#); [§ 571.212 Standard No. 212; Windshield mounting](#); and [§ 571.219 Standard No. 219; Windshield zone intrusion](#).

### Displays

CTAA recommends that the requirement in [§ 571.101 Standard No. 101; Controls and displays](#) regarding displays be retained, but that the specifications should be reconsidered for AVs because a display and other interface devices will no longer be geared for a human driver, but instead designed for passengers. It might be necessary, for example, for an interface with emergency instructions to be available when a vehicle system malfunctions. We recommend that NHTSA conduct a study to determine what displays are necessary and what additional interfaces should be required. NHTSA should take into consideration that some passengers have disabilities (perhaps visual, auditory, and/or cognitive), be quite young or be frail older adults. Redundant interfaces – both visual and auditory – should be evaluated.

### **Infrastructure Requirements**

With legacy vehicles from small cars to large buses, interactions between motorized and non-motorized users has depended on traffic signals, stop signs, and, for the most part, on nods and eye contact between drivers and pedestrians or bikers. With AV pilot programs, we must include and collect data that replaces this human non-verbal communication and that ensures that such technological communication and signaling is available to people with various types of disabilities.

AV pilots and infrastructure should reflect that different types of roads present different challenges for interaction between motorized and non-motorized users. These differences are largely about the speeds of roads and the interaction with pedestrians, including older adults, children, and people with disabilities, as well as bikers. NHTSA is well aware that roadways are used every day for millions of people to walk, to cross streets, and to bike to transit stops and stations. Transit access requires safe access to our nation's roadway space.

CTAA recommends that AV pilot vehicles come equipped with some type of signaling technology to alert pedestrians and bikers whether the vehicle is slowing down and whether a person has been detected in the roadway. This required equipment would replace the eye contact that drivers engage in with pedestrians and bikers.

To reflect the fact that different types of roadways present different challenges for the interaction of motorized and non-motorized users, CTAA recommends that, for purposes of AV pilot programs, vehicular roadways be divided into three classes:

1. High speed roads of 40+ miles per hour (mph),
2. Medium speed roads of 25-40 mph, and
3. Slow roads of 0-20 mph.

For slow roads, AVs and other roadway users can coexist without traffic signals, whether or not there are sidewalks or bike lanes.

For medium speed roads, CTAA recommends that AV pilot specifications require that roadway space be separated for pedestrians and bikers and that either AV/CV dynamic traffic signals or current traffic signals be used to with sufficient time for non-motorized road users to cross at intersections or mid-block locations.

For high speed roads, CTAA recommends that NHTSA pilot specifications require physically-blocked infrastructure for pedestrians (sidewalks) and bikers (bike lanes with infrastructure separating motor vehicles) and that CV or traffic signals be in place with sufficient time for non-motorized road users to cross at intersections or mid-block locations.

CTAA recommends that NHTSA require that Operation Design Domain (ODD) for AV pilots near transit stops specify that there be pedestrian crossings within one-tenth of a mile. This will greatly enhance the safety of the pedestrian environment where AV pilots are in operation.

#### Safety Certification and Monitoring for AV Pilot Programs

CTAA recommends a revised system of vehicle safety certification and continuous monitoring as a condition of AV operation on public roads. Before an AV – whether a regular sedan or a transit bus or something in between – is permitted to operate on a public road, particular safety threshold performance measures should be met. Think of this as a driving test for an AV. CTAA recommends that these performance benchmarks create a minimum standard for safe operation within a given ODD. An AV slow-speed shuttle that will operate on a fixed route will be tested for safe operation within its ODD prior to operating on that road with other vehicles and interaction with pedestrians and bikers. Its certification should differ from that required of an AV that operates at high speeds and in a geo-fenced area.

If an ODD includes operation on a road with pedestrians, bikers, and others using low-speed modes of transportation, certification should include minimum measures to ensure the safety of those road users.

As a condition for AV pilot operations, data required should include, but not be limited to, any crashes or near misses; and injuries or fatalities of passengers or other road users in close proximity to an AV pilot vehicle. Software updates should be required as a condition of AV pilot operations, as should minimum benchmarks for maintenance and recalibration.

#### **Conclusion**

As our comment makes clear, the details of AV design are very important to the safety of all concerned. AV pilot programs will test vehicle and technology design on real roads as AVs interact with other road users and with the road network. These programs will also introduce the public to a new form of transportation. We urge NHTSA to carefully consider the aspects of AV transportation discussed above, while also encouraging technological innovation.

CTAA is very excited to be part of the transformation that is just beginning and we pledge to contribute our efforts to ensuring a safer, more accessible, more equitable, and more connected US transportation system.