

**Advocates for Highway and Auto Safety (Advocates) and  
Consumer Federation of America (CFA)  
Response to Request for Comments on Autonomous Vehicle Legislation  
August 2019**

**Basic Principles for AV Legislation:**

Legislation to encourage the successful development and deployment of autonomous vehicles (AVs) should advance a public safety agenda and not just an economic agenda because both goals are compatible and achievable. Any bipartisan, bicameral bill must ensure that the U.S. Department of Transportation (DOT) conducts serious oversight, establishes a regulatory structure that sets minimum safety standards and requires industry accountability *before* driverless cars are sold to the public.

Already there have been serious lapses in the reliability and readiness of self-driving technologies on vehicles that have resulted in crashes, deaths and injuries. Several National Transportation Safety Board (NTSB) investigations are underway and a bipartisan, bicameral bill should consider and reflect subsequent recommendations and findings. Furthermore, numerous industry executives and technical experts have stated that the technology is not ready and may not be for years ahead. And, Congress already has provided manufacturers with wide latitude to test an unlimited number of vehicles on U.S. roads and sell up to 2,500 vehicles with exemptions from FMVSS which, by and large, has not been used for AVs.

It is vital that Congress adequately address the broad range of impacts on safety, mobility and infrastructure rather than rush enactment of a flawed bill that jeopardizes public safety and consumer confidence. Multiple independent nationwide public opinion polls and consumer surveys support the following safety positions and proposals. (See attached.)

**Rulemakings, including updating existing standards and setting new standards:**

*New Rulemakings to set Performance Standards are Essential.*

Legislation should include requirements for DOT to issue minimum performance standards by a date certain before AVs are in the marketplace. This is similar to other lifesaving and cost-beneficial laws enacted by Congress resulting in airbags, tire pressure monitoring, rollover and ejection prevention and recently, rearview cameras. These include:

- **Human-Machine-Interface (HMI) for Driver Engagement:**

Research demonstrates that even for a driver who is alert and performing the dynamic driving task, a delay in reaction time occurs between observing a safety problem, reacting and taking needed action. For a driver who is disengaged from the driving task during autonomous operation of a vehicle (i.e., sleeping, texting, watching a movie), that delay will be longer because the driver must first be alerted to re-engage, understand and process the situation, and then take control of the vehicle before taking appropriate action. The failure of the automated driving system to keep the driver engaged in the driving task during the trip was identified as a problem by the National Transportation Safety Board (NTSB) in its investigation of the 2016 fatal crash in Florida involving a Tesla Model S. Furthermore, the Insurance Institute for Highway Safety (IIHS) highlighted this major safety problem in their August 7, 2018 Status Report:

“Experimental studies have shown that drivers can lose track of what automated systems are doing, fail to notice when something goes wrong and have trouble retaking control.”

- **Cybersecurity Standard:**

AVs must be subject to cybersecurity requirements to prevent against hacking. See below section on cybersecurity for more detail on this position.

- **Electronics Safety Standard:**

AVs must be subject to minimum performance requirements for the vehicle electronics that power and operate safety and autonomous driving systems. Electronic glitches are commonplace and relatively harmless in instances of computer or cell phone crashes. However, if an AV fails to operate properly on public roads, the outcomes could be catastrophic and result in mass casualties. Interference from entertainment functions and non-safety systems can affect the electronics that power critical safety systems if they share the same wiring and circuits. For example, in one reported instance a vehicle model lost power to its dashboard lights when an MP3 player was plugged in.

- **“Vision Test” for AVs:**

It is essential that driverless cars be subject to a “vision test” to guarantee an AV will properly detect and respond to other vehicles, pedestrians, bicyclists, wheelchair users, roadway infrastructure, interactions with law enforcement and first responders, and other objects in the operating environment. A failure to properly detect and react to any of these road users or conditions could have tragic results, as demonstrated by the March 2018 crash in Tempe, AZ that killed a woman walking a bicycle. According to the NTSB, the Uber vehicle in driverless mode misidentified the woman three times before the crash. Additional research showed that simple modifications of a standard stop sign could cause an AV system to interpret it as a 45-mile-per-hour speed limit sign.

- **Standard for Over-the-Air Updates:**

It is anticipated that updates will be made to AV systems over the air that may change the functionality, capabilities and operational design domain (ODD) of the vehicle. An over-the-air standard must provide that consumers be given timely and appropriate information on the details of the update and ensure any needed training or tutorials are provided. Safety upgrades should not be optional or force the consumer to incur additional expenses. Also, during the update process cybersecurity must be maintained.

- **Manual Override:**

Occupants of a driverless car need the ability to assume control or shut the system down and get to a safe location in the event of a failure. A standard should be established to ensure the capability for a human to assume control of AV when it malfunctions or travels outside the ODD. The manual override must be accessible to all occupants, including people with disabilities, children, and other vulnerable populations.

- **Functional Safety Standard:**

Functional safety is a process by which a product is designed, developed, manufactured and deployed to ensure that the product as a whole will function safely and as intended.

Basically, a functional safety standard assures consumers that a vehicle will do what a manufacturer states it does, and does it safely, and that it does not operate outside of conditions under which it can operate safely. Legislation should direct NHTSA to establish a functional safety standard that requires a manufacturer to certify to the agency that an AV has been tested to ensure it will operate reliably and safely under the conditions the vehicle is designed to encounter. Additionally, NHTSA should confirm the manufacturer's certifications are accurate by conducting their own testing as needed.

- **Revising Federal Motor Vehicle Safety Standards:**  
Any actions by NHTSA to revise existing Federal Motor Vehicle Safety Standards (FMVSS) in order to facilitate the introduction of AVs must be conducted in a public rulemaking process and meet the safety need provided by current standards.

### **Federal, State and Local Roles and access to courts:**

*Federal, State and Local Roles Should Not be Altered.*

The statutory mission of NHTSA established by Congress in 1966 (P.L. 89-563) is to regulate the design and performance of motor vehicles to ensure public safety, which now includes automated driving system technology and driverless cars. For more than 50 years, the U.S. DOT through the NHTSA has issued safety standards for passenger and commercial motor vehicles. The role of states is to regulate road safety by the passage of traffic safety laws. However, in the absence of comprehensive and strong minimum federal standards and regulations to govern the driverless car rules of the road, the states retain a legal right and a duty to its citizens to develop proposals and implement solutions to ensure public safety. There should be no attempt in legislation to prohibit states in any way from advancing AV safety in the absence of federal rules.

### **Exemptions:**

*Broadening Statutory Exemptions from FMVSS is Unwise, Unnecessary and Unsafe.*

No demonstrable evidence has been presented to show that the development and deployment of AVs requires further exemptions from safety standards which are essential to public safety or merits changes in existing law to expand such exemptions. Current law already permits manufacturers to apply for an unlimited number of exemptions. For each exemption granted, manufacturers can sell up to 2,500 exempt vehicles.

Federal safety standards have been established by a robust and transparent process and ensure the safety of all road users. The exemption process and resulting huge numbers of exempt vehicles on the road (potentially millions) as proposed in prior House and Senate bills de facto turn everyone -- in and around exempted vehicles -- into unknowing and unwilling subjects in a risky experiment. Furthermore, the massive influx of new vehicles exempt from FMVSS likely will have ramifications for our Nation's infrastructure including signage, lane markings, traffic signalization, and others.

Other major problems relating to exemptions in prior AV bills, include:

- Allowing exemptions from occupant protection or crashworthiness standards, which are vital to protecting drivers and passengers in a crash.
- Under the Senate AV START Act:

- Exemptions were not capped after the fourth year meaning that a manufacturer could apply for an untold number of exemptions;
- Established an unreasonably short time frame of only 12 months for DOT to conduct a thorough and adequate safety review and analysis before granting even more exemptions; and,
- Imprecise legislative language as to whether the exemption numbers were per manufacturer. Without clarity, the actual number of exempt vehicles could be well beyond the numbers in the legislation if manufacturers sought up to 80,000 exemptions per model or per exemption.

**Testing Expansion:**

*Ensuring Proper Oversight of Testing is Fundamental.*

Under the FAST Act (P.L.114-94, Sec. 24404), automakers are permitted to test or evaluate an unlimited number of non-compliant vehicles. AV testing is already underway, as affirmed by the University of Florida Transportation Institute which recently noted that approximately 80 companies are currently testing autonomous technology and AVs in the U.S. Companies seeking to test AVs and vehicles with autonomous capabilities on public roads should be required to establish an independent Institutional Review Board (IRB) to oversee experimental design and execution to minimize dangers. This is a common and accepted practice in experiments involving human test subjects. In addition, manufacturers required to notify state entities that the testing of an AV is taking place under that state’s law should be required to provide a copy of such notice to NHTSA.

**Advisory Committees:**

*Advisory Committees Should be Balanced and Subject to Basic Protocols.*

Advisory committees are unacceptable substitutes for the agency fulfilling its statutory mission and issuing safety standards through open public rulemakings. Moreover, the work of an advisory committee should in no way impair, constrain or supplant the authority of the Secretary or NHTSA to issue timely regulations for AVs. For example, DOT should not delay or defer regulatory actions on AVs pending any report, recommendations or approval from any advisory committees. In fact, advisory committees that include membership of the regulated industry or any individual or organization that receives monetary compensation from the auto/tech industries should not be charged with informing or recommending any regulatory action by the agency.

Furthermore, any advisory committee addressing issues related to AVs must be:

- Subject to the Federal Advisory Committee Act (FACA);
- Properly balanced with numerous stakeholders including representatives from safety and consumer organizations. All members of the advisory committee should be required to submit a financial disclosure form that is made available to the public.
- Properly structured, including the establishment of chairs, voting structure, consensus requirements and the ability for dissenting members to report;
- Given a sunset date not to exceed more than 2 years; and,
- Funded with a separate authorization that is not part of the agency’s O&R program budget so that any advisory committees established in law do not drain agency staff, time and funding for more important research and regulatory work.

**Cybersecurity:**

*Issuing a Cybersecurity Standard is Vital for Safety and Protection.*

NHTSA must issue a minimum cybersecurity standard by a date certain to protect against potentially catastrophic hacks of AVs. There have been numerous high profile cyber attacks on a variety of industries and AVs will not be immune to this threat. In 2015, hackers demonstrated their ability to take over the controls of a sport utility vehicle (SUV) that was traveling 70 miles-per-hour on an Interstate outside of St. Louis, MO by accessing the vehicle's entertainment system using a laptop computer located miles away from the vehicle. Moreover, traditional vehicles, which are less complex than AVs, have been weaponized and used in terrorist attacks including in New York City (2017), Toronto, Canada (2018), Berlin, Germany (2016) and Nice, France (2016).

**Privacy:**

*Privacy Protections Needed to Guard Against Misuse.*

AVs will be collecting significant amounts of personal data including the operation and location of the vehicle. Manufacturers must have robust safeguards and policies in place to protect this data from being stolen and/or misused. However, the ability of NHTSA, the NTSB and local law enforcement to access critical crash data in a timely manner must be preserved. In addition, the use of communication bandwidth needed for V to I communication must be limited to non-commercial use.

**Consumer Education:**

*Consumers Must Be Given Sufficient Information about AVs.*

Every manufacturer should be required to provide consumers with information about the capabilities, limitations and exemptions from safety standards for all vehicles sold in the U.S. During a September 2017 NTSB hearing on the 2016 fatal Tesla crash, the Board correctly criticized the lack of adequate and consistent consumer information about the capabilities, limitations, and any exemptions granted for AV systems.

- Consumer information should be available at the point of sale, in the owner's manual and in any over-the-air updates. NHTSA should be directed to immediately issue an interim final rule (IFR) requiring such readily available information be provided to consumers.
- Similar to the user-friendly safecar.gov website, NHTSA must establish a website accessible by vehicle identification number (VIN) with basic safety information about the AV level, safety exemptions, and limitations and capabilities of the AV driving system, including any changes made by over-the-air updates. The website will also allow NHTSA and other research groups to perform independent evaluations of the comparative safety performance of AV systems.

**Safety Evaluation Reports:**

*Safety Evaluation Reports Should be Informative and Include Sufficient Data. Moreover, a more accurate name for the document is Autonomous Technology Notice (ATN) as it requires autonomous technology manufacturers to give notice to NHTSA about their planned actions.*

The ATN is not designed to be, nor can it be, a substitute for NHTSA promptly issuing minimum performance standards through a public rulemaking process. The primary purpose of the ATN is to give notice to the agency and the public of the intention of the manufacturer to introduce an

AV or AV system into commerce and provide documentation of the work undertaken to ensure its safe performance. Any AV produced must still meet all of the FMVSS and the submission of an ATN alone, cannot permit, in any way whatsoever, the sale of an AV that does not meet all federal safety standards. In addition, if NHTSA finds that an ATN is deficient, manufacturers must be required to submit any additional information requested by the agency.

AV legislation that requires a publicly-accessible submission to NHTSA must ensure that the report includes sufficient data and documentation necessary to adequately detail and evaluate the subject areas. Merely allowing manufacturers to “describe” their AV system has encouraged manufacturers to submit glossy, marketing-style brochures with little, if any, substantive or relevant information from which to ascertain critical information about safety and performance. As such, legislative language must direct companies to both “describe and document” how they are comprehensively addressing each issue area under the ATN, until a safety standard for that particular issue area has been established.

Detailed and documented information is also needed in light of past actions by several automakers to hide from the public and NHTSA known safety defects that have caused deaths and serious injuries and led to the recall of tens of millions of vehicles. It is essential that the ATN provision also require:

- Submission of false or misleading information must be subject to criminal penalties.
- The cap on civil penalties must be removed.
- NHTSA must be required to verify the level of automation being asserted by the manufacturer.
- Provide NHTSA with sufficient time, a minimum of six months, to adequately analyze the ATN and request additional information if necessary
- At a minimum the topics covered by the ATN should include: System Safety, Data Recording, Cybersecurity, Human-Machine Interface, Crashworthiness, Capabilities, Post-Crash Behavior, Account for Applicable Laws and Automation Function.(including a “vision test” for AVs).

**Crash Data, including reporting requirements:**

*Collect Standardized Data, Make it Publicly Available and Require EDRs.*

With the increasing number of AVs of different automation levels being tested and some being sold to the public, standardized recording and access to AV event data are necessary for the proper oversight and analysis of crashes.

The lack of standardization and collection of data is already hampering understanding and investigations of AVs. For example, as a result of the 2016 fatal Tesla crash in Florida, the NTSB has called for the U.S DOT to act on data collection. The NTSB recommended that NHTSA implement data collection requirements for all new vehicles equipped with AV control systems, and to define a standard format for reporting this data. The NTSB also called for this data to be readily available to, at a minimum, the NTSB and NHTSA. This data should also be made public.

Every vehicle should be equipped with an event data recorder (EDR). While there is currently a NHTSA requirement for what data voluntarily-installed EDRs must capture, this information is insufficient to properly ascertain information about crashes involving AVs. IIHS also reiterated the need for EDRs in the August 7, 2018, Status Report: “IIHS has asked the agency to require event data recorders to encode information on the performance of automated driving systems in the moments before, during and after a crash. This information would help determine whether the human driver or vehicle was in control and the actions each entity took prior to the event.”

#### Other Data Needs:

- Manufacturers must be required to report AV safety critical events to NHTSA, including crashes and disengagements.
- NHTSA’s crash databases should be updated to capture AV crashes. This includes a revision of Early Warning Data to ensure manufacturers provide more information about crashes and incidents that could indicate a safety defect and lead to a recall.
- A structure should be established to facilitate mandatory sharing of AV failures by manufacturers.

#### **Resources for NHTSA:**

##### *Provide Additional Resources and Enforcement Authorities.*

Ensuring NHTSA has adequate resources, funds, staff and enforcement authority is essential for the agency to successfully carry out its statutory mission and address the multiple challenges presented by the deployment of self-driving technologies. However, the agency is chronically underfunded. NHTSA’s Operations & Research budget is meager (only about \$350 million annually in the past 2 years) compared to the enormous and growing responsibilities of the agency, particularly with regard to AVs. In fact, this year, the Administration proposed a draconian \$50 million cut in NHTSA’s O&R budget. The agency cannot effectively oversee a multi-billion dollar industry and protect hundreds of millions of motorists without a significant increase in resources – both financial and staff. Currently, 95 percent of transportation-related fatalities and 99 percent of transportation injuries, involve motor vehicles. Yet, NHTSA receives only one percent of the overall DOT budget. Furthermore, it is estimated that there are currently more than 70 million cars on the road with an open recall.

AV legislation should include the following provisions to address inadequate funds, staff and enforcement ability:

- Significant increase in funding for NHTSA’s operations and research (O&R) budget
- Imminent hazard authority to take immediate action when the agency determines a defect substantially increases the likelihood of death and injury.
- Criminal penalty authority in appropriate cases in which corporate officers who acquire actual knowledge of a product danger that could lead to serious injury or death and fail to inform NHTSA and warn the public.

#### **Disability Access:**

##### *Guarantee Access for Individuals with Cross-Disabilities.*

Autonomous technology has the potential to increase access to mobility for individuals with disabilities who may have varying needs. However, that goal can only be realized by congressional directive in legislation. People with disabilities have different needs – AVs may

help increase mobility for some members of the disability community but provide little or no assistance to others. Installing an automated system in a vehicle or removing the driver in a ridesharing service will not sufficiently eliminate mobility barriers. For example, wheelchair users may require a ramp or lift system as well as assistance in ensuring the wheelchair is properly secured or stowed during the ride. As such, full accessibility must be required for all types of common and public use AVs. Additionally, funding should be authorized to promote research and development of accessible AVs and standards, including vehicle safety and crashworthiness standards, and technical assistance.

As previously stated, allowing AVs to be exempt from safety standards is dangerous for all road users, but could pose even more serious problems for people with disabilities should the vehicle be involved in a crash, not function as intended, or have a defect. In the event of a failure, a person could be stranded in the vehicle with no driver. Additionally, the needs of diverse members of the disability community must be taken into account for systems that require human engagement as well as when developing a failsafe. Should there be an emergency that requires human intervention (such as a manual override), such a safeguard must be useable by any potential occupant of the vehicle regardless of a person's disability.

### **Maintaining DOT's existing authority over large vehicles:**

#### *Preserve and Enhance DOT's Authority Over AV Trucks & Buses.*

The emergence of experimental autonomous commercial motor vehicles (ACMVs) and their interactions with conventional motor vehicles, bicyclists and pedestrians pose numerous challenges and demand an enhanced level of federal and state oversight to ensure public safety. It is imperative that ACMVs be regulated before being widely operated on public roads. An 80,000 pound truck using unregulated and inadequately tested technology on public roads is a significant safety threat if these vehicles are only subject to voluntary guidelines. In addition, automated passenger carrying commercial motor vehicles that may carry as many as 53 passengers demand comprehensive safeguards unique to this mode of travel.

The advent of this technology must not be used as a pretext to eviscerate essential safety regulations administered by the Federal Motor Carrier Safety Administration (FMCSA). An autonomous driving system does not diminish or eliminate public safety protections provided by the Federal Motor Carrier Safety Regulations (FMCSRs).

Minimum performance requirements and protections include, but are not limited to:

- A driver with a valid commercial driver's license (CDL) behind the wheel for the foreseeable future and drivers operating an ACMV must have an additional endorsement on their CDL;
- Same minimum performance standards for commercial and passenger AVs (outlined above in section on rulemakings);
- Required submission of safety assessment report (i.e. SER) that includes documentation regarding the safety performance of the automated driving system;
- Reporting requirement to U.S. DOT for all fatal, injury and property damage crashes and other safety critical events involving ACMVs;
- Any safety defect involving an ACMV must be remedied before it is permitted to return to operation;

- FMCSA must establish appropriate and stringent out of service (OOS) criteria for ACMVs;
- U.S. DOT maintained database for ACMVs with information on limitations and capabilities, exemptions, and level of automation;
- Additional operating authority for motor carriers using ACMVs; and,
- No exemptions should be granted from safety standards. Sales of CMVs in the U.S. are significantly less than passenger vehicle sales and exempting large numbers of CMVs from the FMVSS is unnecessary and will result in a significant threat to public safety.

### **Non-AV safety requirements:**

*Other Vehicle Safety Requirements are Needed.*

Any AV legislation considered by Congress should also include the following safety provisions:

- **Rear Seat Occupant Detection System (Hot Cars Act, S. 1601/H.R. 3593):** Direct U.S. DOT rulemaking on detection and alert systems for occupants left unknowingly in or those who independently gain access to cars.
- **Minimum Performance Requirements for Advanced Driver Assistance Systems (ADAS):** Direct U.S. DOT to issue final rules by date certain to require as standard equipment on all new cars proven ADAS systems including automatic emergency braking, lane departure warning, blind spot detection, rear automatic braking and rear cross traffic alert.
- **Update Headlight Standard:** FMVSS 108 should be upgraded to improve headlight performance, this is especially important with AVs.
- **Seatback Strength:** FMVSS 207 should be upgraded to prevent instances of seatback failure that have resulted in death and serious injury particularly to small children in the rear seat.
- **Pedestrian Safety Upgrades:** Vehicles can be designed, specifically in the front end, to reduce the severity of crashes with pedestrians and bicyclists. NHTSA should be directed to issue minimum performance requirements for improved vehicle design to mitigate collisions with vulnerable road users.
- **Keyless Ignition Safety (PARK IT Act, S. 543/H.R. 3145):** Direct U.S. DOT rulemakings on keyless ignition safety to prevent instances of carbon monoxide poisoning and vehicle rollaway. Additionally, consumers must be provided with clear information about how keyless ignition systems work and the dangers associated with them.
- **Impaired Driving:** Direct U.S. DOT to issue a minimum safety standard requiring passive alcohol detection systems.
- **Update the New Car Assessment Program (NCAP):** Update the current NCAP to include consumer information on pedestrian and bicyclist safety, ADAS, and information specific to older occupants. The US NCAP is grossly behind other global programs and must be updated to encompass the performance of AVs and AV systems.
- **Standalone Safety Features:** NHTSA should be authorized to require safety equipment be sold separately instead of included in expensive, non-safety related packages.
- **SPY CAR Act of 2019 (S. 2182):** This bill would require a cybersecurity standard and other important safety upgrades to ensure that vehicles are protected from malicious hacking.

- **SAFE TO DRIVE Act (H.R. 2416):** Improves state distracted driving grants and transparency within the highway safety grant process.
- **Cullum Owings Large Truck Safe Operating Speed Act of 2019 (S. 2033):** Requires new commercial motor vehicles (CMVs) to be equipped with speed limiting devices, those that have them to be set, and all CMVs to travel at 65 miles per hour.
- **Safe Roads Act of 2019 (H.R. 3773):** Directs NHTSA to issue a minimum performance requirement for all new CMVs to be equipped with AEB.
- **Stop Underrides Act (S. 665/H.R. 1511):** Requires comprehensive underride protection for large trucks to prevent fatalities and injuries resulting from crashes in which a passenger vehicle, pedestrian or bicyclist travels underneath a truck or trailer.
- **School Bus Safety Act of 2019 (S. 2278/H.R. 3959):** Provides important safety upgrades for school buses including seat belts, AEB, electronic stability control, fire prevention and other operational improvements.

#### **Other AV Issues That Should be Included in Legislation:**

- **Scope of Legislation:** Legislation should include partially autonomous vehicles (SAE Level 2s).
- **Protections for AV Fleets:** It is likely that fleets will be the first to deploy AVs on a large scale. Therefore, basic and needed NHTSA requirements must be in place to ensure that AV fleets experiencing dangerous operational conditions such as an unrepaired recall, low tire pressure, or other maintenance issues generally intended to be addressed by humans are remedied; and, people with cross-disabilities have equal access to ride-sharing AV fleets.
- **Whistleblower Protections:** Employees of manufacturers that wish to report serious safety defects to NHTSA should not be prevented from doing so as the result of a non-disclosure agreement (NDA). In addition, employees should be informed as to their rights and responsibilities when such a situation arises.
- **Close “Used” Car Loophole:** Similar to law recently enacted on rental cars, there needs to be a prohibition against the sale, lease or loan of a “used” vehicle with an open recall. (Used Car Safety Recall Repair Act, S. 1971).
- **Research Requirements:** AV legislation should require the following research immediately followed by rulemaking action:
  - AV interactions with law enforcement;
  - AV post-crash behavior and fail safe modes;
  - AV impacts on infrastructure, transit, the environment and vulnerable road users;
  - The safety, economic and societal implications of unmanned AVs used for the delivery of products or freight as well as the transportation of human passengers;
  - National Academy of Sciences study on benefits of and upgrades needed for NHTSA to receive crash data in real time as incidents occur; and,
  - Implications of AV use by minors.
- **Connected Vehicles:** Require NHTSA to complete the vehicle-to-vehicle communication rulemaking by a date certain and direct a study on the benefits of vehicle-to-infrastructure connectivity.
- **Infrastructure Needs:** Substantial infrastructure investments and improvements are necessary to ensure that AVs will operate safely on America’s roads. These include:
  - Capture AV data on interaction with roadway infrastructure;

- Require reporting on crash data that reflects interactions with roadway infrastructure; and,
- Require research on necessary upgrades and uniformity of roadway infrastructure for AVs to inform update of roadway design manuals.

**Conclusion:**

Advocates for Highway and Auto Safety and the Consumer Federation of America are grateful for the opportunity to submit these comments at the request of the House Committee on Energy and Commerce and the Senate Committee on Commerce, Science, and Transportation. As our organizations continue to be informed by researchers, issue experts, the media, the NTSB, manufacturers, suppliers, dealers and other stakeholders as well as crashes involving vehicles with autonomous capabilities, we may continue to expand, evolve, alter or add to the aforementioned positions. We look forward to working together with the Committees and others to achieve legislation that ensures the safe and secure deployment of AVs on our Nation's roadways.