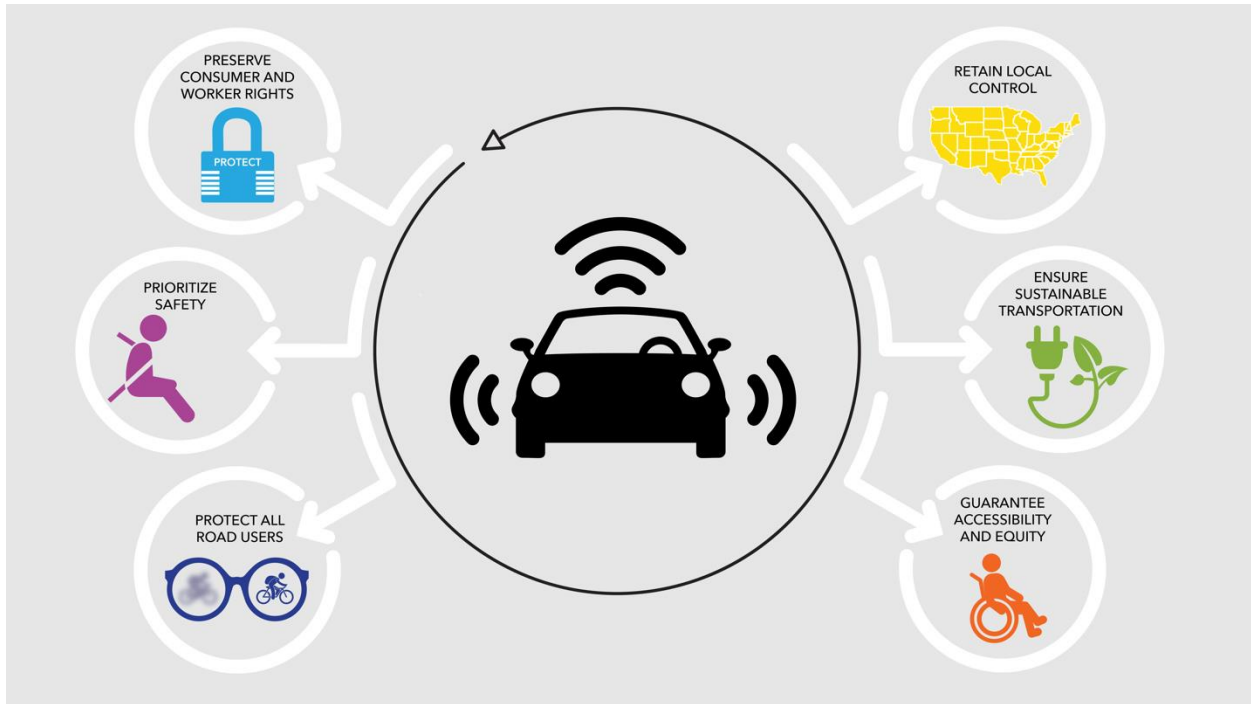


Introduction to Autonomous Vehicle (AV) Tenets By Advocates for Highway and Auto Safety

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In 2019, more than 36,000 people were killed and millions more were injured in motor vehicle crashes. The National Highway Traffic Safety Administration (NHTSA) currently values each life lost in a crash at \$9.6 million. Annually crashes impose a financial toll of over \$800 billion in total costs to society and \$242 billion in direct economic costs, equivalent to a “crash tax” of \$784 on every American. Additionally, crashes cost employers \$47.4 billion in direct crash-related expenses annually, based on 2013 data (Network of Employers for Traffic Safety (NETS)).

Many promises have been made about autonomous vehicles (AVs) bringing meaningful and lasting reductions in motor vehicle crashes and resulting deaths and injuries, traffic congestion and vehicle emissions. Additionally, claims have been made that AVs will expand mobility and accessibility, improve efficiency, and create more equitable transportation options and opportunities. However, these potentials remain far from a near-term certainty or reality. Without commonsense safeguards the possibilities are imperiled at best and could be doomed at worst. Additionally, the absence of protections could result in adverse effects including safety risks for all people and vehicles on and around the roads, job displacement, degradation of current mobility options, infrastructure and environmental problems, marginalization of certain users, and others. Requiring that AVs meet minimum standards and that operations are subject to adequate oversight throughout development and deployment will save lives as well as costs for both the consumer and the manufacturer.

Moreover, on the path to AVs, proven solutions are currently available that can prevent or mitigate the exorbitant death and injury toll now while laying the foundation for AVs in the future. Available vehicle technologies, also known as advanced driver assistance systems (ADAS), should be standard equipment with minimum performance standards. Research performed by the Insurance Institute for Highway Safety (IIHS) has found that these systems can help to prevent and lessen the severity of crashes. For example, IIHS has determined that automatic emergency braking (AEB) can decrease front-to-rear crashes with injuries by 56 percent. In addition, the National Transportation Safety Board (NTSB) has included increasing implementation of collision avoidance technologies in its Most Wanted Lists of Transportation Safety Improvements since 2016.

It is a transformational time in transportation history. Yet, Benjamin Franklin's infamous quote from 1736, "An ounce of prevention is worth a pound of cure," aptly applies. We urge our Nation's leaders to use this document as the "GPS," the way to "guarantee public safety," as AV development and deployment moves forward.

Summary of Tenets of Autonomous Vehicle (AV) Legislation¹

Prioritizing Safety of All Road Users

Safety Rulemakings: All levels of automated vehicles² must be subject to comprehensive and strong federal standards ensuring they are safe and save lives. The rulemakings must address known and foreseeable safety issues, many of which have been identified by the National Transportation Safety Board (NTSB) and others, including:

- **Revising Federal Motor Vehicle Safety Standards:** Any actions by the National Highway Traffic Safety Administration (NHTSA, Agency) to revise or repeal existing Federal Motor Vehicle Safety Standards (FMVSS) must be through a public rulemaking. Any revision must meet the safety need provided by current standards.
- **Collision Avoidance Systems:** Certain advanced safety technologies, which may be foundational technologies for AVs, already have proven to be effective at preventing and mitigating crashes across all on-road modes of transportation and must be standard equipment with federal minimum performance requirements. These include automatic emergency braking with pedestrian and cyclist detection, lane departure warning, and blind spot warning, among others.
- **“Vision Test” for AVs:** AVs must be subject to a “vision test” to guarantee it will operate on all roads and weather conditions as well as properly detect and respond to all vehicles, people and objects in the operating environment.
- **Human-Machine Interface (HMI) for Driver Engagement:** AVs must provide adequate alerts to capture the attention of the human driver with sufficient time to respond and assume the dynamic driving task for any level of vehicle automation that may require human intervention.
- **Cybersecurity Standard:** Vehicles must be subject to cybersecurity requirements to prevent hacking and to ensure mitigation and remediation of cybersecurity events.
- **Electronics and Software Safety Standard:** Vehicles must be subject to minimum performance requirements for the vehicle electronics and software that power and operate vehicle safety and driving automation systems individually and as interdependent components.
- **Operational Design Domain (ODD):** The NHTSA must issue federal standards to ensure safeguards for driving automation systems to limit their operation to the ODD in which they are capable of functioning safely.
- **Functional Safety Standard:** Requires a manufacturer to ensure the design, development, verification and validation of safety-related electronics or software demonstrates to NHTSA that an AV will perform reliably and safely under the conditions the vehicle is designed to encounter.
- **Safe Fallback:** Every driving automation system must be able to detect a malfunction, degraded state, or operation outside of ODD and safely transition to a condition which reduces the risk of a crash or physical injury.
- **Crash Procedures Standard:** Requires manufacturers to have procedures in place for when an AV is involved in a crash to ensure the safety of all occupants of the AV, other road users and emergency responders.
- **Standard for Over-the-Air (OTA) Updates:** Requires consumers be given timely and appropriate information on the details of the OTA update and ensures any needed training or tutorials are provided.

Safety and Performance Data: With the increasing number of vehicles with different automated technologies being tested and some being sold to the public, standardized data elements, recording, and access to safety event data are necessary for the proper oversight and analysis of the performance of the driving automation systems. Safety and performance data should be made available to relevant stakeholders with appropriate privacy protections.

¹ These tenets are limited to vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less unless otherwise noted; however, it is imperative that automated delivery vehicles (including those used on sidewalks and other non-roadways) and commercial motor vehicles be subject to comprehensive regulations, including rules regarding the presence of a licensed, qualified driver behind the wheel.

² Partially automated vehicles (SAE International Level 2) and conditional / highly automated vehicles (SAE International Levels 3, 4, 5).

Manufacturer Submissions to NHTSA: Any submission to NHTSA by AV manufacturers or developers must be mandatory, publicly available and include thorough and adequate data and documentation. Additionally, NHTSA must be directed to review and evaluate all submissions to assess whether an approach to automated driving system (ADS) development and testing includes appropriate safeguards for operation on public roads.

Proper Oversight of Testing: AV testing is already underway in many localities. Fundamental and commonsense safeguards must be instituted for testing on public roads including the establishment of independent institutional review boards (IRBs) to certify the safety of the protocols and procedures for testing of AVs on public roads.

Additional Resources and Enforcement Authorities for NHTSA: 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 testing and deployment of self-driving technologies.

Guaranteeing Accessibility for All

Access for Individuals with Disabilities and Older Adults: Autonomous driving technology has the potential to increase access and mobility for everyone including older adults and individuals with disabilities, including those with sensory, cognitive, and physical disabilities, wheelchair users, and people with neurological conditions, who have varying needs as well as traditionally underserved communities. This goal must be realized with appropriate federal action.

Access for Underbanked Populations: Access to on-demand transport services is often predicated on the ability to make digital payments. AV-based transport services must consider a variety of ways in which payment for service can be made to ensure that this technology supports equitable access and the inclusion of all.

Equity: As new modes of transportation continue to grow and evolve, investment and development must include a process where all people can safely participate.

Accessibility, Passenger Safety, and Transportation Services: There must be clear plans to ensure the safe transportation for all people, in particular for those who currently require assistance to do so or are part of marginalized communities, in the implementation of these transportation services.

Preserving Consumer and Worker Rights

Consumer Information: Consumer information regarding AVs should be available at the point of sale, in the owner's manual, and in any OTA updates. The vehicle identification number (VIN) should be updated to reflect whether certain features were built into the vehicle, either as standard or optional equipment. NHTSA must establish a website accessible by VIN with basic safety information about the AV level, safety exemptions, and limitations and capabilities of the AV.

Privacy: All manufacturers of passenger motor vehicles, including AVs, should be required to comply with robust data privacy safeguards and policies. The ability of NHTSA, the NTSB, and local law enforcement to access critical safety performance data, while preserving the integrity of personal, private or identifying data, in a timely manner for research, crash investigation and other governmental purposes must be preserved.

Workforce Protections: Absent strong leadership, AV technology risks worsening severe inequalities already inherent in our society, predominantly for blue collar workers. Existing and foreseeable issues which stand to be greatly exacerbated by this technology must be addressed before this technology is broadly deployed on our roads. Similarly, unforeseeable issues throughout deployment will need to be resolved with input from stakeholders.

Whistleblower Protections: Employees or contractors who want to report safety defects to NHTSA should not be prevented from doing so as the result of a non-disclosure agreement (NDA).

Consumer and Worker Rights³: The well-established rights of consumers to seek accountability in a court of law for injuries suffered as a result of AVs must be preserved. Moreover, exploitative independent contractor relationships that shield AV companies from liability and deny workers basic workplace rights should be explicitly prevented.

Ensuring Local Control and Sustainable Transportation

Local, State and Federal Regulatory Roles: In keeping with existing law and practice, the federal government should prescribe regulations for the performance of these vehicles, leaving regulation of the operation of these vehicles to the states.

In-Depth Study of AV Impacts on Transportation Systems and Environment: DOT must undertake a comprehensive study to inform policymakers and the public about how these vehicles will impact our existing transportation systems and ensure effective mitigation of problems identified.

NOTE: The AV Tenets outlined in this document do not constitute the entirety of each supporting organization's policy priorities related to AVs.

³ Advocates for Highway and Auto Safety does not take a position on this issue.